WHAT SHOULD YOU DO IF YOU ARE RAPED OR SEXUALLY ASSAULTED?

1. Go to a safe place where you can get help
2. Tell someone you trust what happened as soon as possible
3. Do not throw away your clothes or wash yourself
4. Put the clothes you were wearing in a paper bag or wrap them in newspaper
5. Go to a hospital as soon as possible
6. It is advisable to report the rape to the police
7. Tell the police if you are threatened by the perpetrator at any time
8. Get treatment and medication within 72 hours to prevent HIV, other sexually transmitted infections and pregnancy

REMEMBER, IT'S NEVER THE FAULT OF THE PERSON WHO WAS RAPED, ABUSED, VIOLATED OR HARASSED!

GET HELP AND SUPPORT

If you or someone you know is being sexually harassed or abused, get help to stop the abuse. Speak to someone you trust, tell your school, go to your local police station or phone one of the following national numbers:

SAPS Crime Stop:	**086 0010 111**
SAPS Emergency Number:	**10111**
Childline:	**0800 055 555**
Lifeline:	**011 781 2337/0861 322 322**

Department of Basic Education National Hotline: **0800 20 29 33**

ACT AGAINST ABUSE

Rainbow Workbooks

ISBN 978-1-4315-0037-6

MATHEMATICS IN ENGLISH
GRADE 6 – BOOK 1 • TERMS 1 & 2
ISBN 978-1-4315-0037-6
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Revised and CAPS aligned

ENGLISH

MATHEMATICS IN ENGLISH

Grade 6

Book 1
Terms 1 & 2

Name:

Class:

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

Contents

Mrs Angie Motshekga,
Minister of
Basic Education

Dr Reginah Mhaule
Deputy Minister of
Basic Education

These workbooks have been developed for the children of South Africa under the leadership of the Minister of Basic Education, Mrs Angie Motshekga, and the Deputy Minister of Basic Education, Dr Reginah Mhaule.

The Rainbow Workbooks form part of the Department of Basic Education's range of interventions aimed at improving the performance of South African learners in the first six grades. As one of the priorities of the Government's Plan of Action, this project has been made possible by the generous funding of the National Treasury. This has enabled the Department to make these workbooks, in all the official languages, available at no cost.

We hope that teachers will find these workbooks useful in their everyday teaching and in ensuring that their learners cover the curriculum. We have taken care to guide the teacher through each of the activities by the inclusion of icons that indicate what it is that the learner should do.

We sincerely hope that children will enjoy working through the book as they grow and learn, and that you, the teacher, will share their pleasure.

We wish you and your learners every success in using these workbooks.

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Rainbow WORKBOOKS

Grade 6

Mathematics

Book 1

1. Revision worksheets: R1 to R16
   Key concepts from Grade 5
2. Worksheets: 1 to 64

Book 2

3. Worksheets: 65 to 144

ENGLISH Book 1

Name:

The structure of a worksheet

Worksheet number
(Revision R1 to R16, Ordinary 1 to 144)

Worksheet title

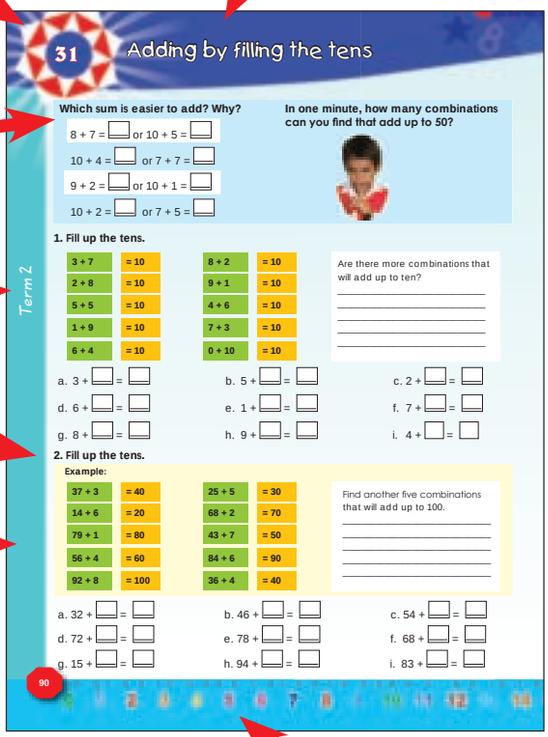
Topic introduction
(Text and pictures to help you think about and discuss the topic of the worksheet.)

Term indicator
(There are forty worksheets per term.)

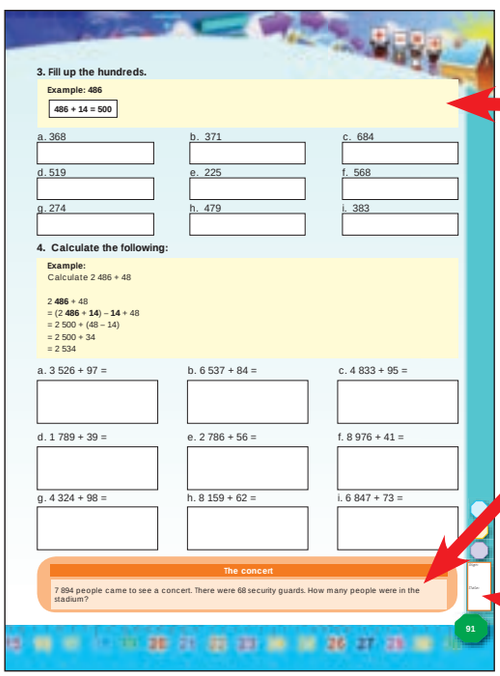
Questions

Colour code for content area

Content	Side bar colour
Revision	Purple
Number	Turquoise
Patterns and functions (algebra)	Electric blue
Space and shape (geometry)	Orange
Measurement	Green
Data handling	Red



Language colour code:
Afrikaans (Red), English (Blue)



Example frame (in yellow)

Fun/challenge/problem solving activity
(This is an end of worksheet activity that may include fun or challenging activities that can also be shared with parents or brothers and sisters at home.)

Teacher assessment rating, signature and date

Rainbow WORKBOOKS

Grade 6

Mathematics

PART 1

Revision

Key concepts from Grade 5

WORKSHEETS R1 to R16

ENGLISH Book 1

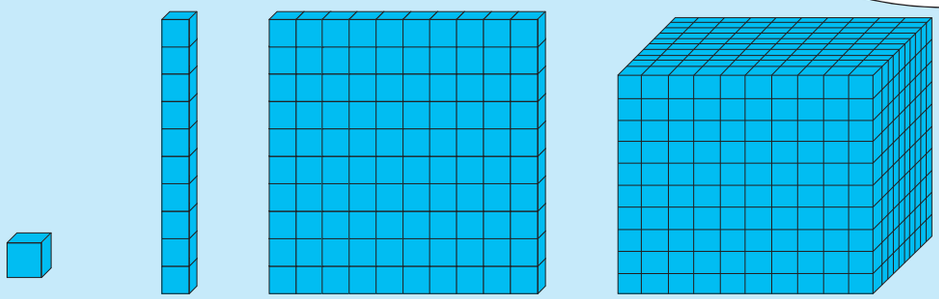
Name:

R1a Base Ten counting

Note that the first 16 worksheets will be revision activities.

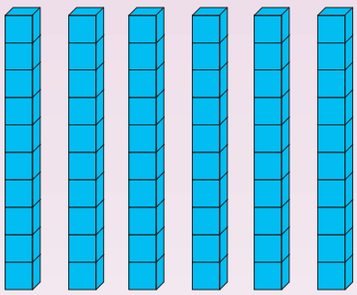
Revision

How many cubes are there?

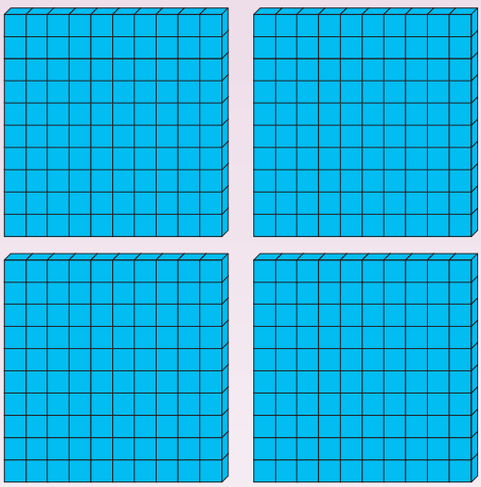


1. Write down how many cubes there are.

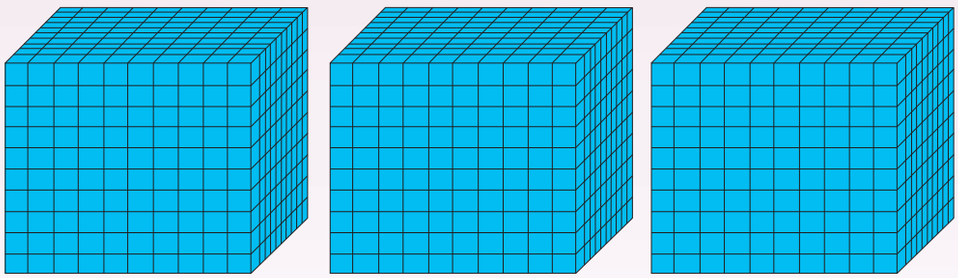
a.



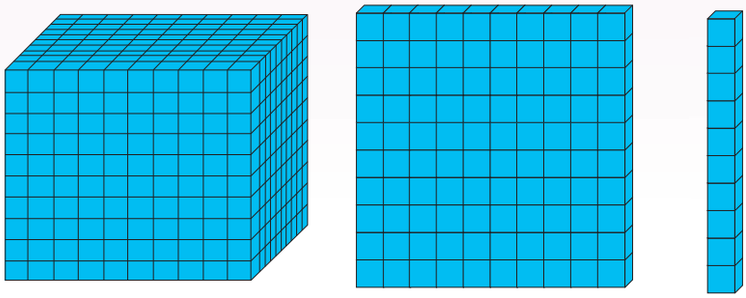
b.



c.

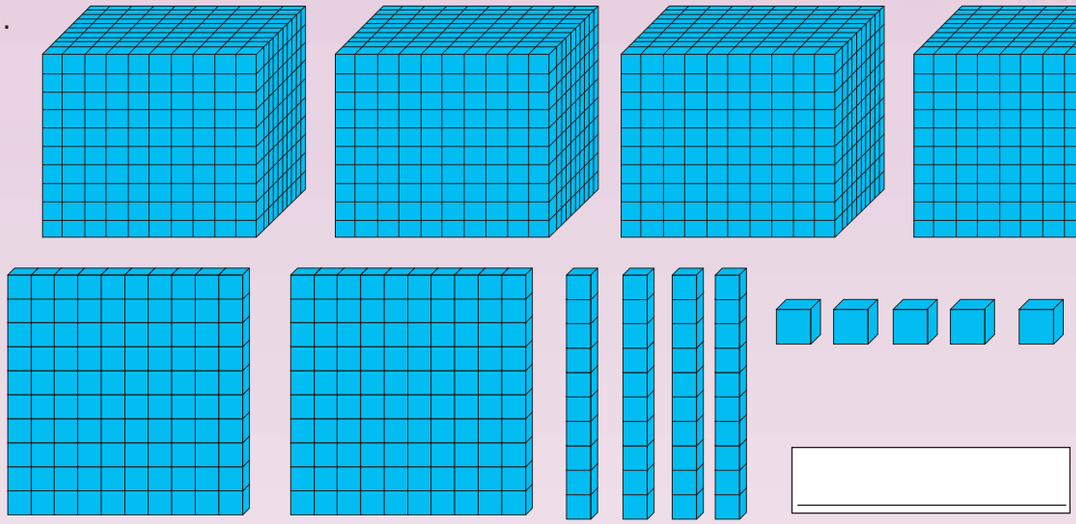


d.

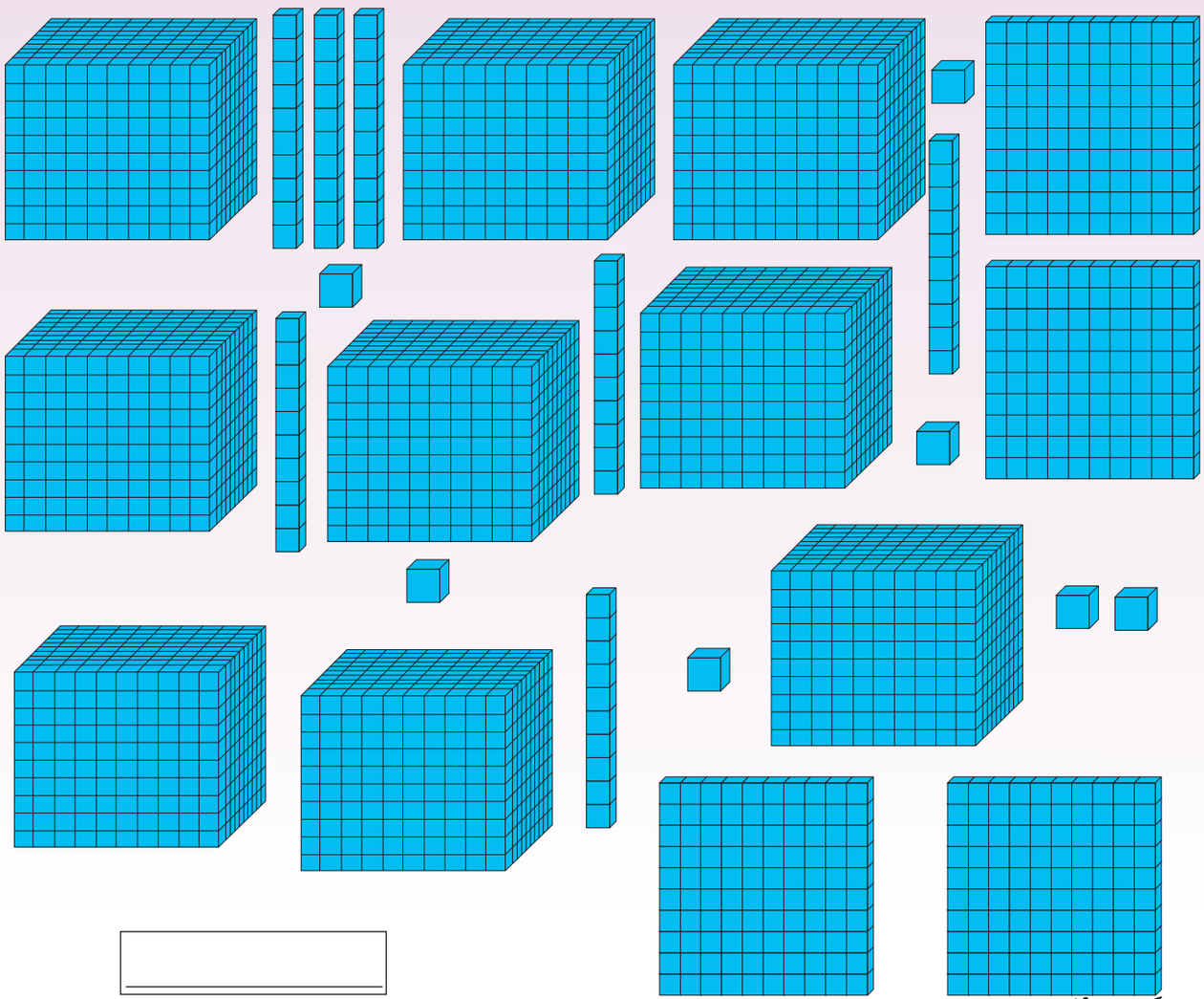


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

e.



f.



Sign:

Date:

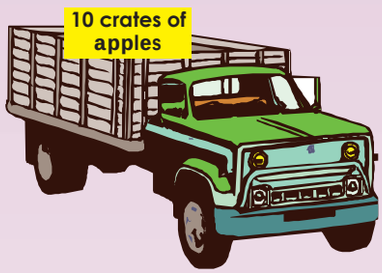
continued ☛

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R1b Base Ten counting continued

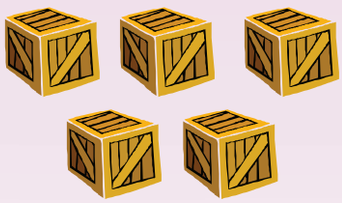
2. Write down how many apples you count.

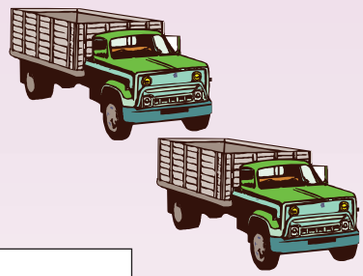
a.



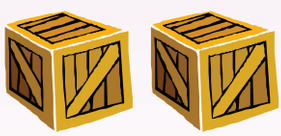
These bags, crates and trucks are filled with the same number of apples as above. Write down the total number of apples each time.

b.



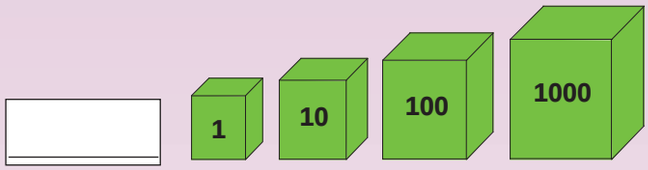


c.

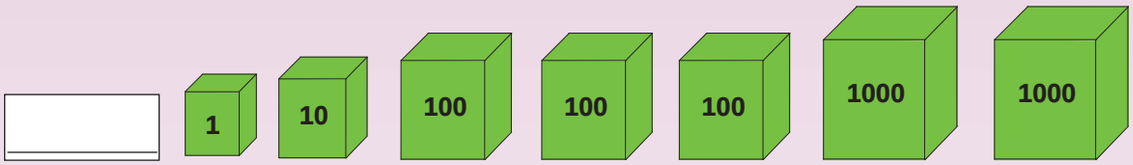


3. The number of objects in each box is shown. Write down the total number of objects in all the boxes.

a.



b.



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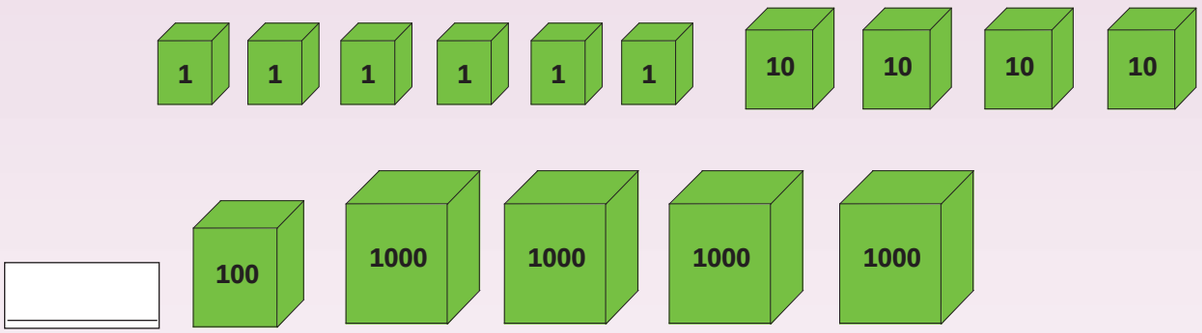
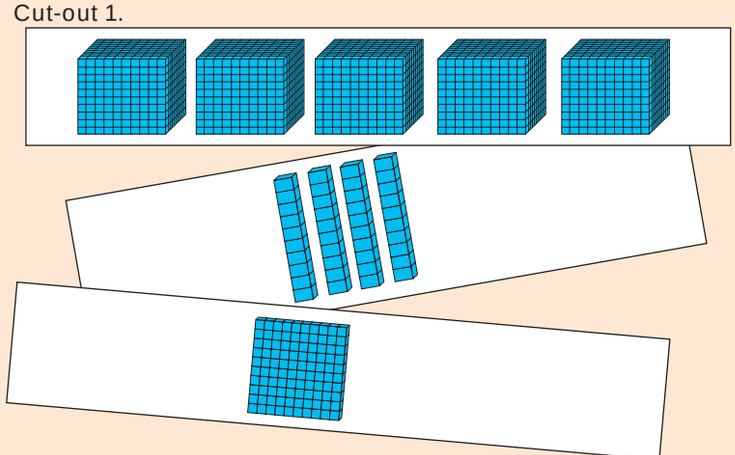


How quick are you?

What you need:

- Cut-out 1.



What to do:

- Cut out the cards from the back.
- Play in pairs.
- Place the cards face down on your desk.
- You choose five cards and your partner chooses five.
- See who can give the total the quickest.
- Check your partner's answer.
- Do the same with 6/7/8/9/10 cards.
- The person with the most correct answers is the winner.

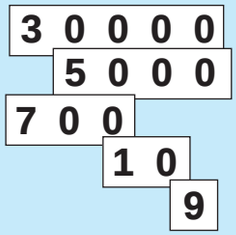
Sign:

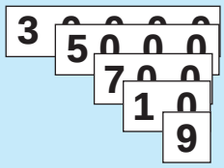
Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R2a Numbers 0 to 100 000

What number will these cards make?





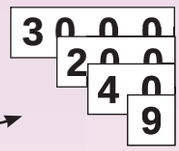
35 719

In words it is Thirty-five thousand seven hundred and nineteen

Use Cut-out 2 to show five different numbers.

1. **Complete the following:**

a. 3 000 + 200 + 40 + 9 = _____



b. 1 000 + 500 + 2 = _____

c. 70 000 + 2 000 + 400 + 30 = _____

d. 80 000 + 5 000 + 20 + 5 = _____

e. 60 000 + 4 = _____

f. 90 000 + 3 000 + 30 + 2 = _____

g. 5 000 + 300 + 20 + 7 = _____

h. 20 000 + 4 = _____

i. 20 000 + 3 000 + 10 + 1 = _____

2. Write the number in the correct column:

		Ten Thousands	Thousands	Hundreds	Tens	Units
a.	8 756		**8**	**7**	**5**	**6**
b.	4 089					
c.	63 108					
d.	59 290					
e.	30 100					
f.	48 300					
g.	92 520					
h.	6 100					
i.	81 150					
j.	75 230					

3. Complete the following using the first question to guide you.

a. 5 931 = 5 thousands + 9 hundreds + 3 tens + 1 unit

b. 1 457 = _____

c. 14 034 = _____

d. 68 301 = _____

e. 75 900 = _____

f. 25 420 = _____

g. 27 025 = _____

h. 30 205 = _____

Sign:

Date:

continued ☛

R2b Numbers 0 to 100 000 continued

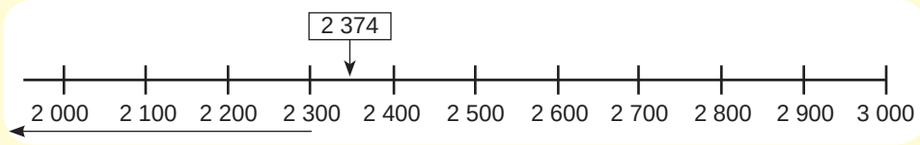
4. Complete the table below. The examples will help you.

		Expanded notation	Words
a.	5 689		
b.	3 089		
c.	40 312	40 000 + 300 + 10 + 2	
d.	70 001		
e.	98 304		Ninety-eight thousand three hundred and four
f.	60 244		
g.	50 025		
h.	32 344		
i.	22 999		
j.	100 304		

Rounding off to the nearest thousand.

If the **hundreds** digit is a 0, 1, 2, 3 or 4, round off the number to the previous (lower) thousand.

Example: 2 374 rounded off to the nearest thousand is 2 000.



If the **hundreds** digit is a 5, 6, 7, 8 or 9, round off the number to the next (higher) thousand.

Example: 2 674 rounded off to the nearest thousand is 3 000.

Looking at this example, can you still remember how to round off to the nearest 10 and 100?

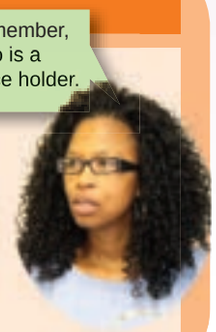
5. Complete the table. The examples will help you.

		Round off to the nearest 10	Round off to the nearest 100	Round off to the nearest 1 000
a.	38 764	**38 760**	**38 800**	**39 000**
b.	21 349			
c.	9 999			
d.	10 256			
e.	2 365			
f.	1 023			
g.	58 326			
h.	75 899			
i.	95 100			
j.	4 652			
k.	2 963			
l.	7 456			
m.	98 365			
n.	15 126			
o.	17 023			
p.	14 896			

What is the size of your number?

What you need:
- Cut-out 2
- Cut-out 3: Cut and fold the dice (units to ten thousands).

What to do:
- Play in pairs.
- Each player rolls the ten thousand (orange dice), thousands (purple dice), hundreds (yellow dice), tens (red dice) and units (blue dice) dice.
- Each player makes his or her own 5-digit number with the number (flard) cards.
- The winner is the player with the largest number.
- Do the same activity five times.



Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R3a Addition and Subtraction

Colour the addition words red and the subtraction words blue.

+ −

add | minus | altogether | take away | difference | sum of | plus | more than | total | subtract | fewer than | both

Add more of your own addition and subtraction words.

1. Complete the pattern:

a. + 1 000 | + 1 000 | + 1 000

2 000 | 3 000 | 4 000 | | | |

b. – 2 000 | – 2 000 | – 2 000

32 000 | 30 000 | 28 000 | | | |

c. – 5 000 | – 5 000 | – 5 000

95 000 | 90 000 | 85 000 | | | |

d. + 7 000 | + 7 000 | + 7 000

21 500 | 28 500 | 35 500 | | | |

e. – 7 000 | – 7 000 | – 7 000

77 500 | 70 500 | 63 500 | | | |

2. Fill in the next number:

a. 12 000, 15 000, 18 000, ____

b. 99 000, 88 000, 77 000, ____

c. 36 500, 42 500, 48 500, ____

d. 48 500, 45 500, 42 500, ____

e. 91 500, 88 500, 85 500, ____

3. Complete the table.

		Complete to the next 10	Complete to the next 100	Complete to the next 1 000
a.	348	348 + 2 = 350	348 + ____ = 400	348 + ____ = 1 000
b.	764	764 + ____ = 770	764 + ____ = 800	764 + ____ = 1 000
c.	3 549	3 549 + ____ = 3 550	3 549 + ____ = 3 600	3 549 + ____ = 4 000
d.	2 176	2 176 + ____ = 2 180	2 176 + ____ = 2 200	2 176 + ____ = 3 000
e.	5 398	5 398 + ____ =	5 398 + ____ =	5 398 + ____ =

Sign:

Date:

continued ☛

R3b Addition and Subtraction continued

Examples:

Example 1:

32 783 + 2 129
= 30 000 + 2 000 + 700 + 80 + 3 + 2 000 + 100 + 20 + 9
= 30 000 + 4 000 + 800 + 100 + 12
= 30 000 + 4 000 + 900 + 10 + 2
= 34 912

Example 2:

	3	1	2	4	7	
+		2	7	3	8	
				1	5	(8 + 7)
				7	0	(40 + 30)
			9	0	0	(200 + 700)
		3	0	0	0	(1 000 + 2 000)
+	3	0	0	0	0	(30 000 + 0)
	3	**3**	**9**	**8**	**5**	

4. Use both methods above to calculate the following.

Write down the steps in your calculation in the space below.

a. 42 742 + 52 = b. 38 137 + 251 = c. 72 483 + 6 213 =

d. 36 189 + 42 = e. 55 349 + 592 = f. 87 384 + 14 532 =

Continue on an extra sheet of paper.

Examples:

Example 1:

48 342 – 2 131

= 40 000 + (8 000 – 2 000) + (300 – 100) + (40 – 30) + (2 – 1)

= 40 000 + 6 000 + 200 + 10 + 1

= 46 211

Example 2:

	4	8	3	4	2	
-		2	1	3	1	
					1	(2 – 1)
				1	0	(40 – 30)
			2	0	0	(300 – 100)
		6	0	0	0	(8 000 – 2 000)
-	4	0	0	0	0	(40 000 – 0)
	4	**6**	**2**	**1**	**1**	

5. Choose one of the methods above to calculate the following.
Write down the steps in your calculation.

a. 98 293 – 71 =

b. 76 543 – 412 =

c. 57 893 – 5 381 =

d. 62 387 – 93 =

e. 44 764 – 999 =

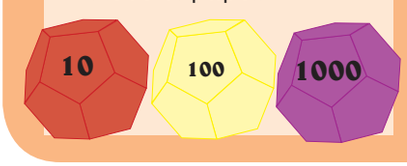
f. 83 759 – 4 793 =

Continue on an extra sheet of paper.

+

What is the size of your number:

What you need:
- Use the 10s, 100s and 1 000s dice you made in the previous activity.
- Piece of paper.



What to do:
- Roll the tens (red) dice.
- Add the number landed onto the first number on the blue card.
- Write your addition sum on a piece of paper.
- Do the same with the next four numbers on the blue card.
- Learners check each other's additon sums.
- The winner is the person with the most correct answers. Repeat the activity with the 100s and 1 000s dice.

18 478
32 121
43 352
51 576
28 375

-

Repeat the activity using subtraction.

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R4a Multiplication and multiples

Revision

Colour the boxes with multiplication words yellow.

X

divided by

divisible by

times table

multiply

product

divider

share equally

lots of

share

groups of

Add more of your own multiplicaton words.

Multiples example:

- Some multiples of 7 are 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, …
- Some multiples of 700 are 700, 1 400, 2 100, 2 800, 3 500, 4 200, 4 900, …

1. Fill in the missing numbers and then use the multiplication boards to answer the questions. Write the answers in the spaces provided.

X	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2		6	8	10	12	14	16		20
3	3	6	9	12	15		21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5		10	15	20	25	30	35		45	50
6	6	12	18	24			42	48	54	
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64		80
9	9	18		36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

a. Why are these boards called 'multiplication boards'?

b. Write down 10 of each:

i. Multiples of 8.

ii. Multiples of 80.

iii. Multiples of 800.

iv. Multiples of 50.

v. Multiples of 100.

X	10	20	30	40	50	60	70	80	90	100
100	1000	2000	3000		5000	6000	7000	8000	9000	10000
200	2000	4000	6000	8000	10000	12000		16000	18000	20000
300	3000	6000	9000	12000	15000		21000	24000	27000	30000
400	4000		12000	16000	20000	24000	28000	32000	36000	40000
500	5000	10000	15000	20000	25000	30000	35000	40000		50000
600	6000	12000		24000	30000	36000	42000	48000	54000	60000
700	7000	14000	21000	28000	35000	42000	49000	56000	63000	70000
800	8000	16000	24000	32000	40000	48000	56000		72000	80000
900	9000	18000	27000	36000		54000	63000	72000	81000	
1000		20000	30000	40000	50000	60000	70000	80000	90000	100000

Sign:

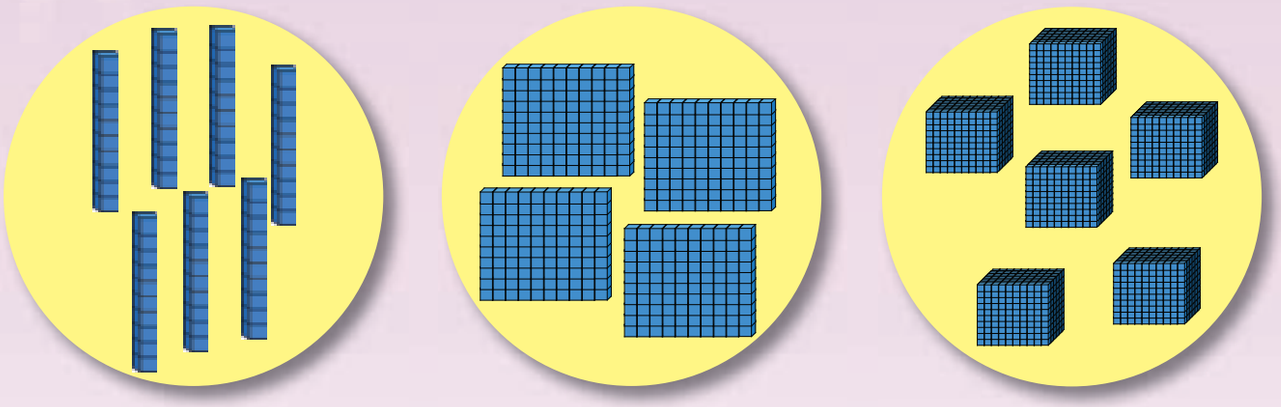
Date:

continued ☛

R4b Multiplication and multiples continued

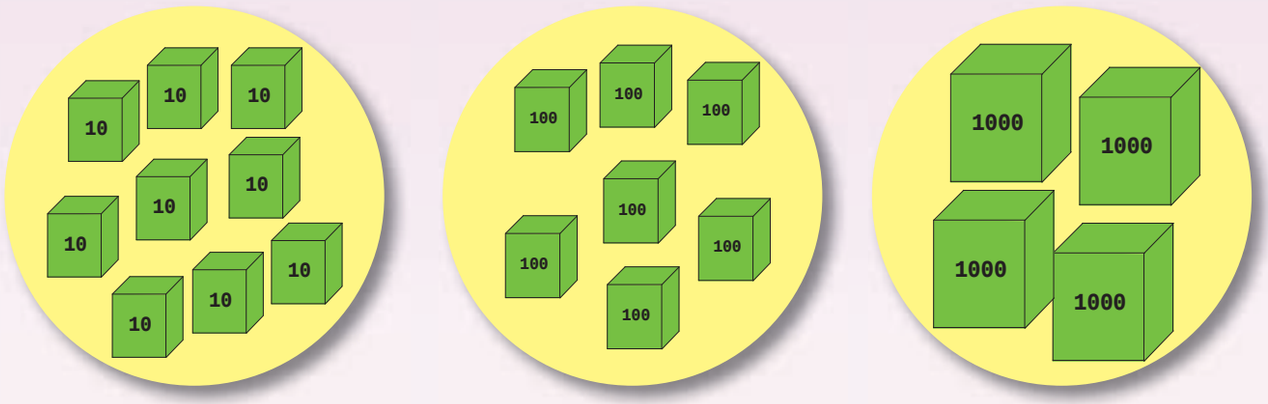
2. Write a multiplication sum and answer for each circle.

a. 7 x ☐ = ☐ b. ☐ x ☐ = ☐ c. ☐ x ☐ = ☐



If you cannot remember how many cubes are in each object, go back to Worksheet 1.

d. ☐ x ☐ = ☐ e. ☐ x ☐ = ☐ f. ☐ x ☐ = ☐



Examples:

Example 1:

43 x 26

= (40 + 3) x (20 + 6)

= (40 x 20) + (40 x 6) + (3 x 20) + (3 x 6)

= 800 + 240 + 60 + 18

= 800 + 200 + 40 + 60 + 10 + 8

= 1 000 + 110 + 8

= 1 000 + 100 + 10 + 8

= 1 118

Example 2:

		5	7	
x		3	8	
		5	6	(7 x 8)
	4	0	0	(50 x 8)
	2	1	0	(7 x 30)
+ 1	5	0	0	(50 x 30)
	2	1	6	6

3. Use both methods on the previous page to calculate the following. Write down the steps in the space below.

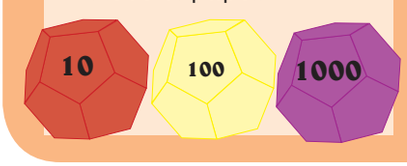
a. 22 x 24 = b. 54 x 36 = c. 3 214 x 2 = d. 4 378 x 9 =

Continue on an extra sheet of paper.

X

In one minute I can ...

What you need:
- Use the 10s, 100s and 1 000s dice made in the previous activity.
- Piece of paper.



What to do:
- Roll the tens (red) dice and then a 100s dice.
- Multiply the two numbers.
- Write your multiplication sum on a piece of paper.
- Repeat doing this until your teacher says stop.
- Learners check each others' multiplication sums.
- The winner is the person with the most correct answers.
- Repeat the activity with the 100s and 1 000s dice.

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R5a Division and factors

Term 1

Colour the blocks with division words yellow.

÷

multiply

divided by

divisible by

times table

share equally

product

divider

lots of

groups of

share

Add more of your own division words.

Example of factors:
The factors of 24 are 1, 2, 3, 4, 8, 12 and 24. That means that 24 can be divided by all of those numbers.

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

1. **What are the factors of 12, 15, 16? Colour the correct numbers.**

a. 12

1	2	3	4	5	6	7	8	9	10	11	12

b. 15

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

c. 16

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

2. **Complete the pattern in this table, listing some of the factors for the following four numbers.**

12	120	1 200	12 000
1	10	10, 100	
2	2 and 20		
3	3 and 30		
4	4 and 40		
6	6 and 60		
12	12 and 120		

Sign:

Date:

continued ☛

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

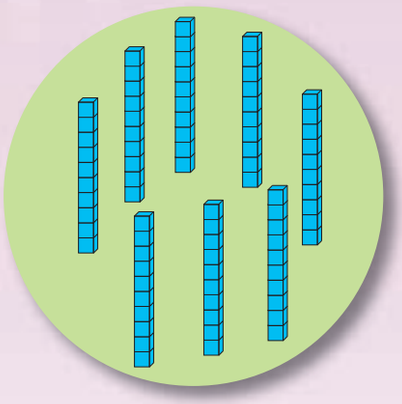
R5b Division and factors continued

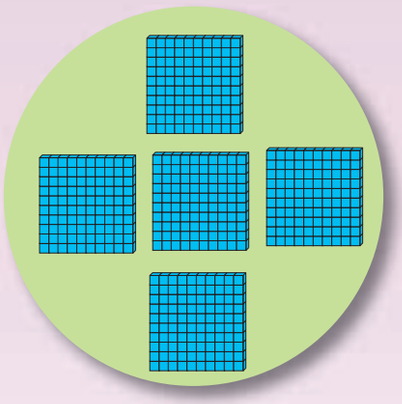
3. Write a division sum and answer for each circle.

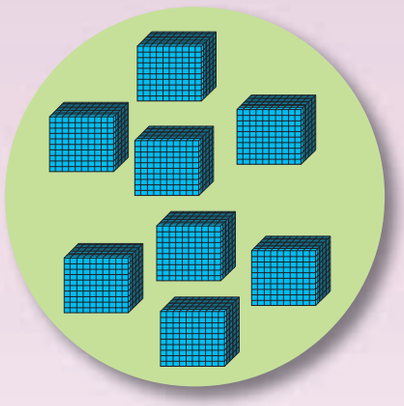
a. 80 ÷ 8 = 10

b. ☐ ÷ ☐ = ☐

c. ☐ ÷ ☐ = ☐





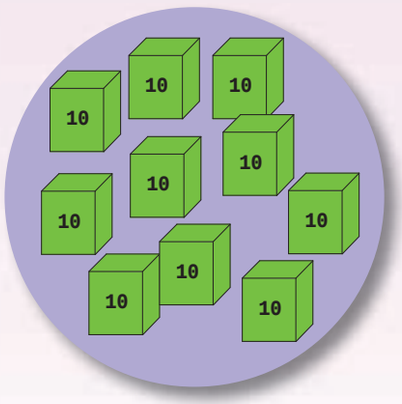


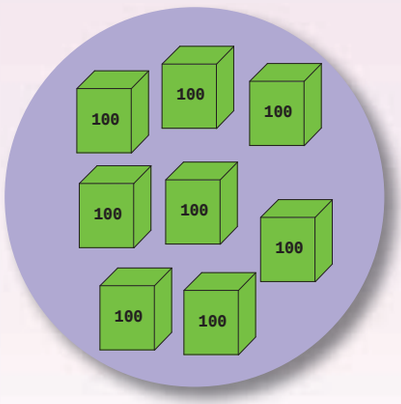
If you cannot remember how many cubes are in each object, go back to Worksheet 1.

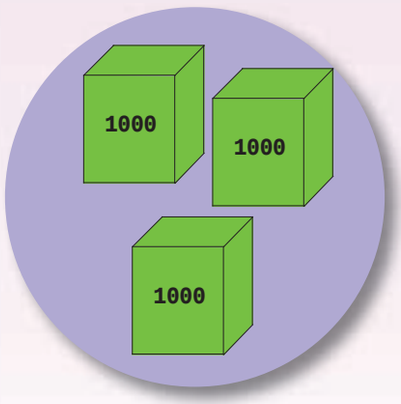
d. ☐ ÷ ☐ = ☐

e. ☐ ÷ ☐ = ☐

f. ☐ ÷ ☐ = ☐







Examples:

Example 1:

93 ÷ 3
= (90 + 3) ÷ 3
= (90 ÷ 3) + (3 ÷ 3)
= 30 + 1
= 31

Example 2:

950 ÷ 50
= (900 + 50) ÷ 50
= (900 ÷ 50) + (50 ÷ 50)
= 18 + 1
= 19

Example 3:

450 ÷ 25
= (400 + 50) ÷ 25
= (400 ÷ 25) + (50 ÷ 25)
= 16 + 2
= 18

4. Use the examples on the previous page to help you. Write down the steps you take.

a. 84 ÷ 4 = b. 750 ÷ 50 = c. 650 ÷ 25 =

Continue on an extra sheet of paper.

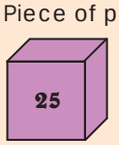
d. 90 ÷ 6 = e. 550 ÷ 50 = f. 850 ÷ 25 =

Continue on an extra sheet of paper.

÷

In one minute I can ...

What you need:
- The dice.
- Ordinary pink dice from Cut-out 3
- Piece of paper.



What to do:
- Roll a 100s dice and then the pink dice (Cut-out 3).
- Divide the bigger number by the smaller number.
- Write down the division sum with its answer.
- Repeat doing this until your teacher says stop.
- Give your division sums to your friend to mark.
- The winner is the person with the most correct division sums.

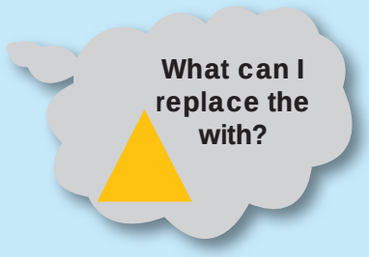
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R6 Operations

With what number can you replace the shape?



$4 + \triangle = \triangle + 4$

$5 \times \square = \square \times 5$

$(4 \times \hexagon) \times 6 = \hexagon \times (4 \times 6)$

$(a + b) \times \pentagon = a \times \pentagon + b \times \pentagon$

1. Replace the place holder with a number.

a. $3 + \square = 5 + 3$

b. $\square + 4 = 4 + 6$

c. $5 \times \square = 6 \times 5$

d. $7 \times 4 = 4 \times \square$

e. $(2 + \square) + 6 = 2 + (4 + 6)$

f. $(7 + 8) + 6 = 7 + (\square + 6)$

g. $(3 \times \square) \times 2 = 3 \times (4 \times 2)$

h. $(5 \times 1) \times 6 = 5 \times (\square \times 6)$

2. Complete the sums by replacing the shape with the number.

$\bigcirc = 2$ $\triangle = 3$ $\square = 4$ $\pentagon = 5$ $\hexagon = 6$

a. $\bigcirc + 4 = 4 + \bigcirc$	b. $5 \times \square = \square \times 5$
c. $(3 + \pentagon) + 4 = 3 + (\pentagon + 4)$	d. $(5 \times \triangle) \times 3 = 5 \times (\triangle \times 3)$
e. $9 + \hexagon = \hexagon + 9$	f. $(\square \times 2) \times 4 = \square \times (2 \times 4)$
g. $\bigcirc \times \triangle = \triangle \times \bigcirc$	h. $\pentagon + \hexagon = \hexagon + \pentagon$
i. $(\square + \bigcirc) + \triangle = \square + (\bigcirc + \triangle)$	
j. $(\square \times \pentagon) \times \hexagon = \square \times (\pentagon \times \hexagon)$	

3. Match the sum in column A with the correct one in column B.

Column A	Column B
4 + 3 =	(6 + 4) + 5
5 x 6 =	(■ x ⬢) x ⬟
3 x (2 x 1) =	3 + 4
6 + (4 + 5) =	⬟ x ⬢
▲ + ■ =	■ + ▲
⬢ x ⬟ =	6 x 5
■ x (⬢ x ⬟)	(⬢ + ▲) + ■
⬢ + (▲ + ■)	(3 x 2) x 1

4. Answer true or false. If it is false change the sum to make it true.

a. 6 – 5 = 5 – 6 — False — 6 + 5 = 5 + 6

b. 20 ÷ 5 = 5 ÷ 20

c. 3 x (2 + 1) = (3 x 2) + 1

d. 8 + (5 - 4) = 8 – (5 + 4)

e. 3 x 2 x 4 = 3 x (2 x 4)

f. 6 – ■ = ■ – 6

How many sums can you find?

We have found the first two sums for you:
4 x 9 = 9 x 4
9 ÷ 3 = 3

How many similar sums can you find?

4	+	=	5	+	4	2	4	□	3
x	3	9	+	7	x	4	=	7	4
9	6	+	4	□	5	+	2	=	9
=	8	9	÷	3	=	3	÷	9	0
9	2	+	6	□	5	=	6	□	5
x	1	2	+	3	x	5	=	4	+
4	4	=	1	+	4	4	2	=	0
5	+	2	4	=	4	+	3	1	=
2	3	+	8	=	8	□	3	3	0
1	+	9	x	8	=	8	x	9	5

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

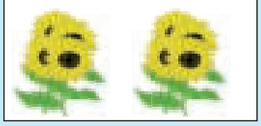
R7a Ratio and Rate

Look at the pictures and answer the questions.



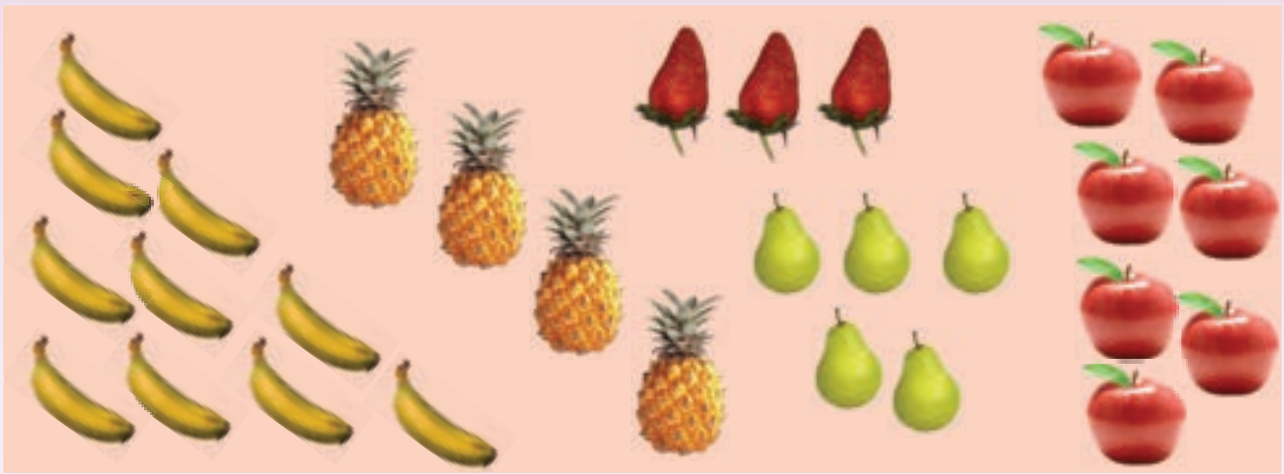
How many sunflowers are in each of the pictures? How many bees?

R25/bunch


How much will you pay for 4 bunches?

1. A ratio is a comparison between two numbers. Look at the picture below and answer the questions.



1.1 The ratio of the number of:

a. apples to the number of bananas is _____

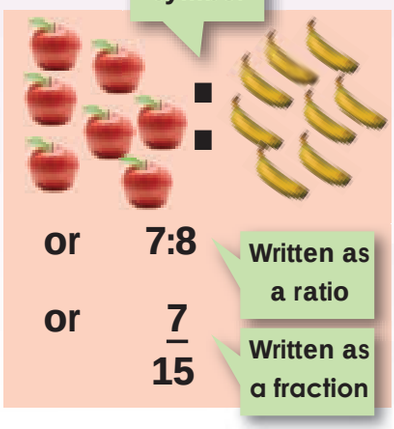
b. pineapples to the number of strawberries is _____

c. pears to the number of strawberries is _____

d. bananas to the number of pears is _____

e. apples to the number of pears is _____

f. pears to the number of apples _____



1.2 Make drawings to show answers 1a to f, and also

1.3 Write the ratio as a fraction.

1.4 What is the ratio of the number of apples to all the fruit shown? _____

1.5 What is the ratio of the number of bananas plus the number of apples to all the fruit shown?

Sign:

Date:

continued ☛

/ Per symbol

2. Look at the table and answer the questions about rate.

Payment	Speed	Measurement
R50 per hour  	60 kilometres per hour  30 skips per minute  	R45 per kilogram  R9,50 per litre 

2.1 Write each statement above using the 'per' symbol.

a. R50 per hour is the same as R50/h.

b. _____

c. _____

d. _____

e. _____

2.2 Read the section on the right and answer the questions.

a. How far do I travel to class? _____

b. How much money do I earn per month? _____

c. How much do I pay for chicken per month? _____

d. How much do I pay for milk per month? _____

e. How many times do I skip per month? _____

It takes me 30 minutes to travel to school each day. I work 20 hours part time per month. I love eating chicken and drinking milk. I buy 4 kg of chicken and 20 litres of milk each month. I also exercise by skipping 150 minutes per month.

Shopping exercise

What to do:

- Bring an example or rands/kilogram from your home or from a shop.
- Back in class, compare your prices.
- Do all shops ask the same price?

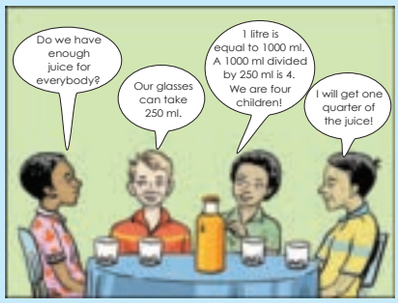
Sign:

Date:

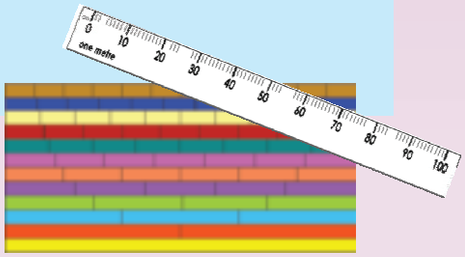
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R8a Fractions

Look at the picture and use words such as half, quarter and eighth.



- Look at the picture and discuss it in a group.
- What does it mean when the boy says "I will get one quarter of the juice."
- Show this statement by doing the activity practically.



1. Cut the fraction board and two rulers from Cut–out 4 to help you to complete the table below, and to answer the other questions.

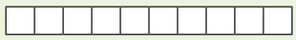
	mm	cm	___ mm = ____ cm
One half ($\frac{1}{2}$) of a metre.	500 mm	50 cm	500 mm = 50 cm
Two quarters ($\frac{2}{4}$) of a metre.			
Three sixths ($\frac{3}{6}$) of a metre.			
Four eighths ($\frac{4}{8}$) of a metre.			
Five tenths ($\frac{5}{10}$) of a metre.			
Six twelfths ($\frac{6}{12}$) of a metre.			

Is this true or false?

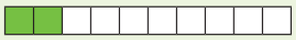
a. $\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12}$	True	False
b. 500 mm = 50 cm	True	False
c. 500 mm = 1m	True	False
d. $\frac{1}{2}$ or $\frac{2}{4}$ or $\frac{3}{6}$ or $\frac{4}{8}$ or $\frac{5}{10}$ or $\frac{6}{12}$ km = 500 m	True	False
e. $\frac{6}{12}$ is bigger than $\frac{2}{4}$.	True	False

2. Look at the example and answer the questions below.

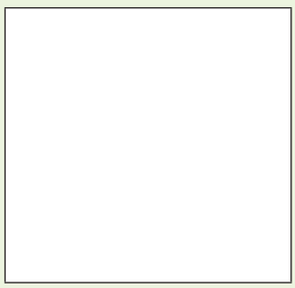
Example:



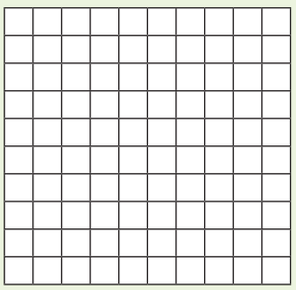
If I divide a strip of paper into 10 equal pieces it could look like this.



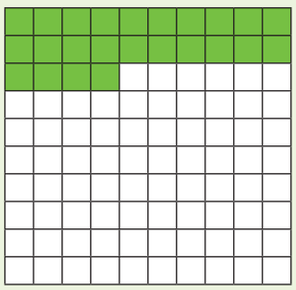
If I colour 2 of the 10 squares, I can say I have coloured 2 out of 10 squares.
I can also write it as: $\frac{2}{10}$ or 0.2



If I divide a piece of paper into 100 equal pieces it could look like this.



If I colour 24 of the 100 squares, I can say I have coloured 24 out of 100 squares.
I can also write it as: $\frac{24}{100}$ or 0.24



Change these fractions into decimal fractions.

a. $\frac{4}{10}$ = 0,4

b. $\frac{2}{10}$ = _____

c. $\frac{5}{10}$ = _____

d. $\frac{37}{100}$ = _____

e. $\frac{19}{100}$ = _____

f. $\frac{25}{100}$ = _____

3. Write a plus and minus sum for each of the following, using the green and red shaded squares.

a. 

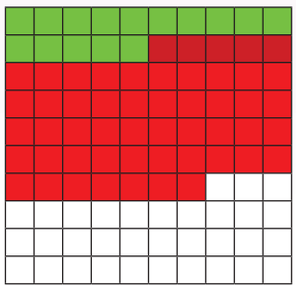
$\frac{2}{10} + \frac{8}{10} = \frac{10}{10}$ $\frac{10}{10} - \frac{8}{10} = \frac{\square}{10}$

b. 

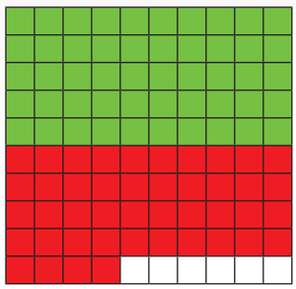
_____

c. 

_____

d. 

_____

e. 

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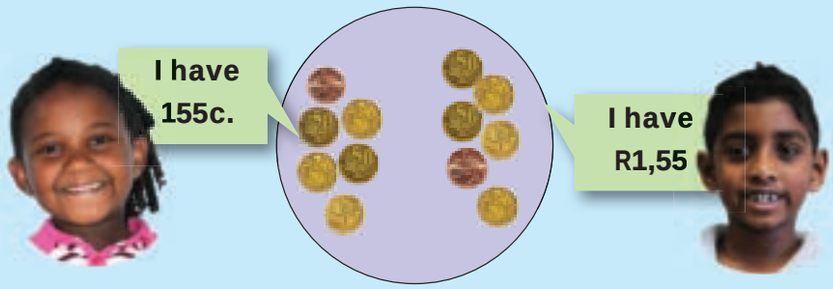
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

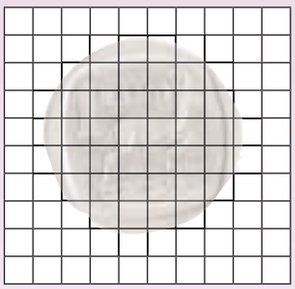
R8b Money and fractions

Look at the picture and discuss it in pairs or groups.



Look at the picture and discuss it in a group. Are they both correct? Explain your answer.

1. Answer the following questions:



a. Imagine the whole diagram of a square represents a R1.
What will each small square represent? _____

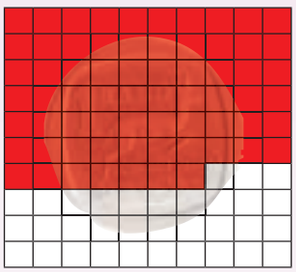
b. How many cents are there in R1? _____

c. Write the following in Rand: ii) 43c = _____ ii) 5c = _____

d. Write the following in cents: ii) R0,25 = _____ ii) R0,09c = _____

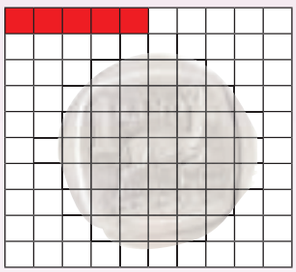
2. Look at the diagrams below that represent R1. What does each red square represent? Write your answer in Rand and cents.

a.



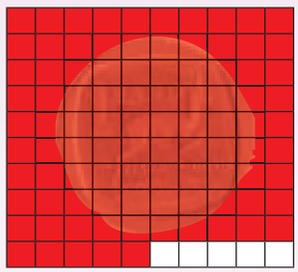
Rand: _____
cents: _____

b.



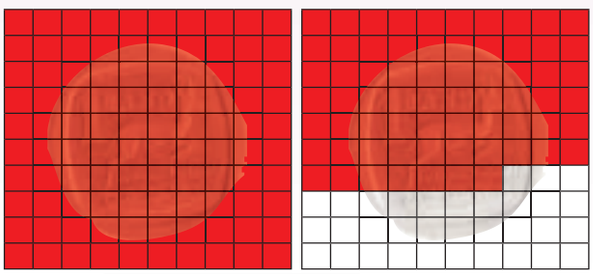
Rand: _____
cents: _____

c.



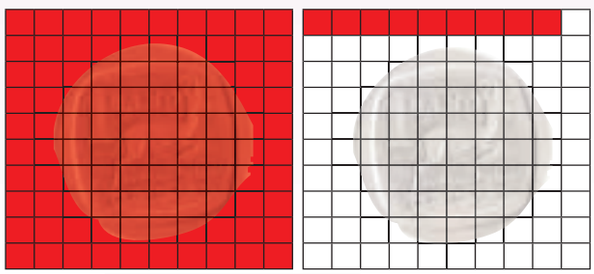
Rand: _____
cents: _____

d.



Rand: _____
cents: _____

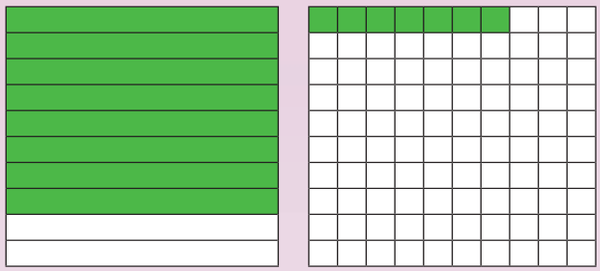
e.



Rand: _____
cents: _____

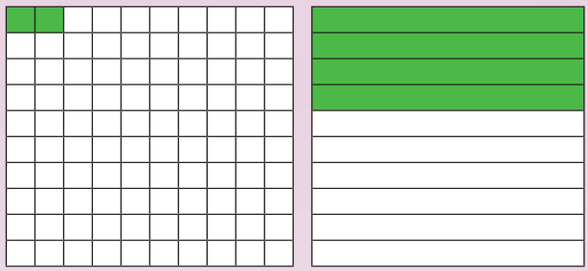
3. Use the diagrams to write your own addition sums.
We have done the first one for you.

a.



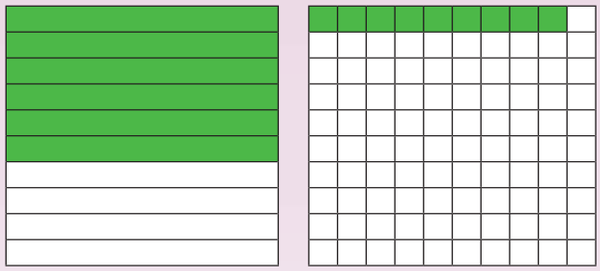
0,8 + 0,07 = 0,87

b.



_____

c.



_____

d.

_____

4. Answer the following:

a. 0,001 + 0,7 = _____ b. 0,02 + 0,9 = _____ c. 1 + 0,4 + 0,05 = _____

How much money is there?

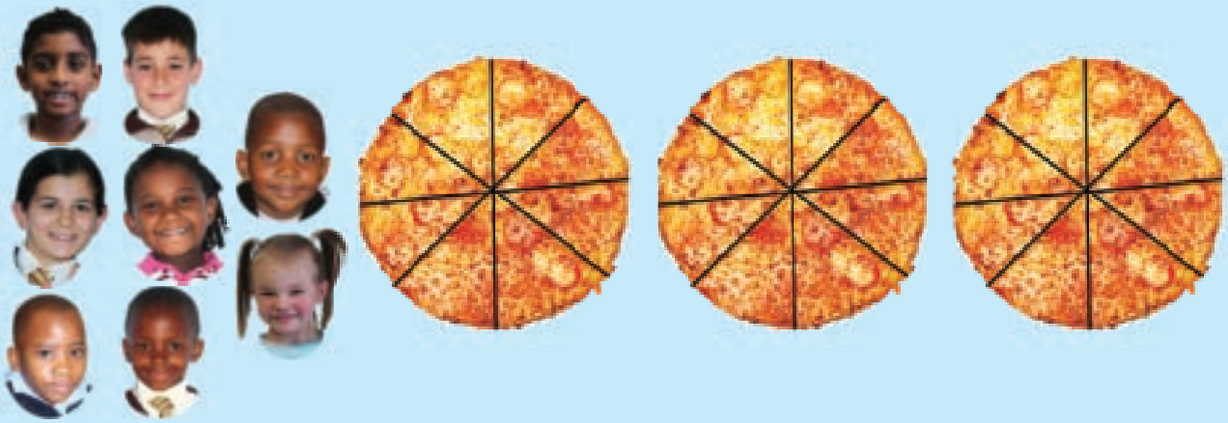
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R9 Party time with fractions

We can each get three pieces. Explain this.



1. Some children are going to hold different parties. Make your own drawings to solve the following:

a. Party 1: Each child must get one quarter of a pizza. How many children can get slices from 3 pizzas? We have cut the first one for you.

_____

b. Party 2: Do the same activity but this time each child must get one sixth of a pizza. How many children can get slices from 3 pizzas? _____

c. Party 3: This time each child must get one fifth of a pizza. How many children can get slices from 3 pizzas? _____

d. Which party would you like to join? Why? _____

e. You plan a party. You want to invite 30 children. You want to give them each one fifth of a pizza.

- How many pizzas do you need? _____
- You have one pizza left after the party. How many children did not come? _____

2. There are ten children at my party.

a. Two cakes are shared equally between ten children. What part of a cake will each child get?

b. At the party they also have 20 cup cakes on two plates. If the cup cakes are shared equally between the 10 children, how many cup cakes will each child get? What fraction of each plate will each learner get?

c. If you want to give each child one seventh of a cake:

- How many children can you invite to your party if you have 4 cakes?
- One whole cake and one seventh of a cake are not eaten. How many children did not eat cake?
- If 35 children arrived at your party, how many more cakes do you need?

Fraction fun at home

- With the help of an adult find as many things you can at home that are divided into equal pieces.
- Name each object and say how many pieces it is divided into.

Sign:

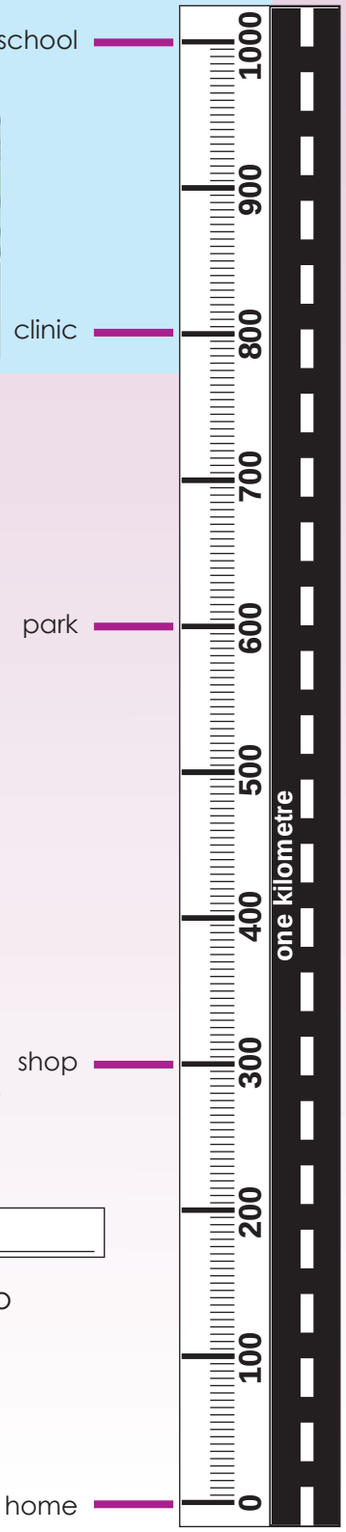
Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R10 How far for how long?

Look at the street and talk about the following places.

Make use of words such as:
– kilometre – kilometres – metres



1. Write the following in kilometres:

a. 1 000 m = _____
b. 700 m = _____
c. 150 m = _____
d. 270 m = _____
e. 100 m = _____
f. 920 m = _____

2. Write the following in metres:

a. 1 km = _____
b. 0,5 km = _____
c. 0,250 km = _____
d. 2 km = _____
e. 1,4 km = _____
f. 1,25 km = _____

3. Do this practical activity in your class.

Part 1:

a. How many metres is it from the back of your class to the front? _____

b. How many metres is it from the one side to the other side of your class? _____

c. If a classroom is 10 m long, how many classrooms can you fit into 1 km? _____

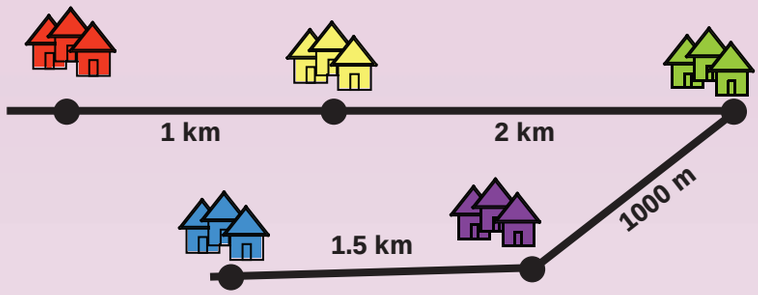
Part 2:

a. How long is a second? _____

b. Guess how many seconds it will take to walk from the front to the back of the class.

– Write down your estimate. _____
– Measure it with a watch or a stopwatch and write down your answer. _____
– What is the difference between your estimate and the measurement? _____

4. Look at the picture and complete the table.



It takes me one minute to travel one kilometre.

Distance from:	Kilometres (km)	Metres (m)	Seconds
The red town to the yellow town.			
The yellow town to the green town.			
The green town to the purple town.			
The purple town to the blue town.			

5. A fence was built around this. How long is the fence?
Write your answer in kilometres and metres.

_____ km

_____ m

Fun with length

Remember road safety and stay with your teacher.

- How long do you think will it will take to walk 1 kilometre?
- Go for a one kilometre walk. Time it.
- How long did it take?
- What is the difference between what you thought it would take and the time it took?

Sign:

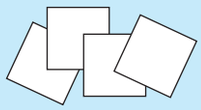
Date:

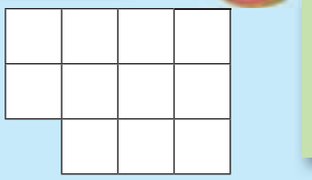
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R11 Area and perimeter

How could you measure the area of a rectangle in square centimetres? Discuss this.

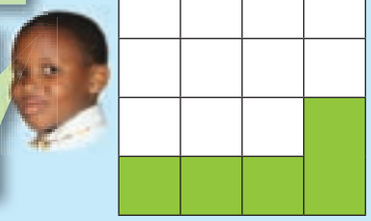
Cut out square centimetres and lay them on rectangles.





This is a square cm, because all the sides are equal to 1 cm.

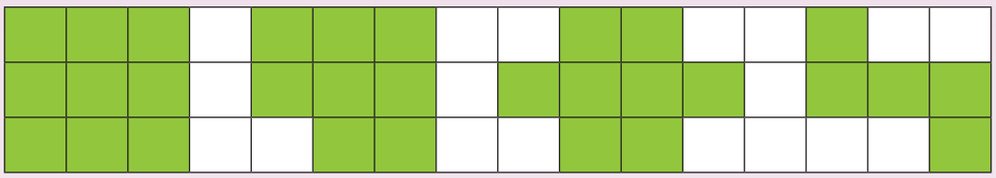
Cut out the squares and place them on the rectangle as if you are tilling a floor.



24 square cm will cover the whole rectangle.

1. Find the area of each shape in square units.

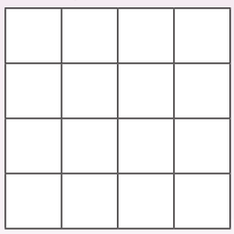
a. b. c. d.



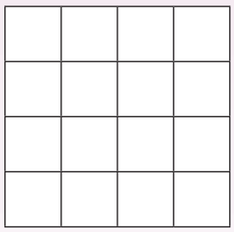
a. _____ b. _____ c. _____ d. _____

2. Draw the shape described on the grids below.

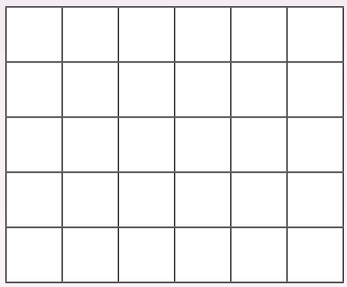
a. A square with an area of 4 square units.



b. A rectangle with 8 square units.



c. A triangle with 9 square units.

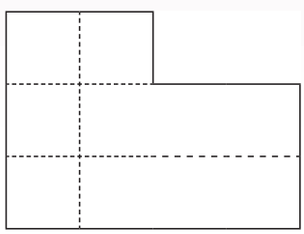


3. Use your ruler to draw the following:

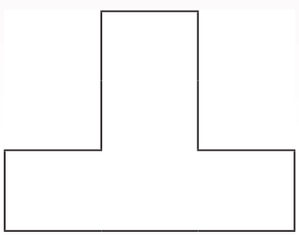
a. One square unit inside the coloured block.

b. Draw dashed lines to find the area. We have started the first one for you.

i.

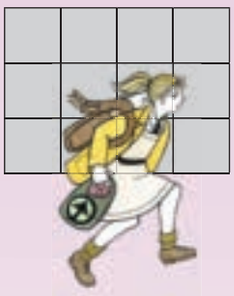


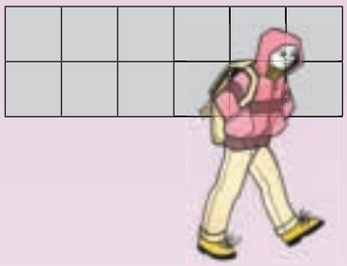
ii.

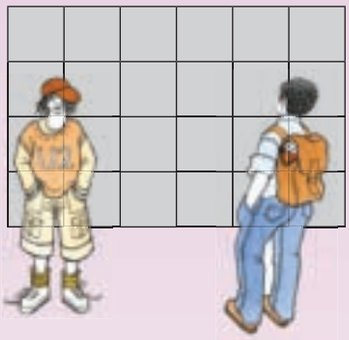


4. Find the area of each shaded rectangle in square units. Make sure you count the parts you cannot see.

a. _____ b. _____ c. _____

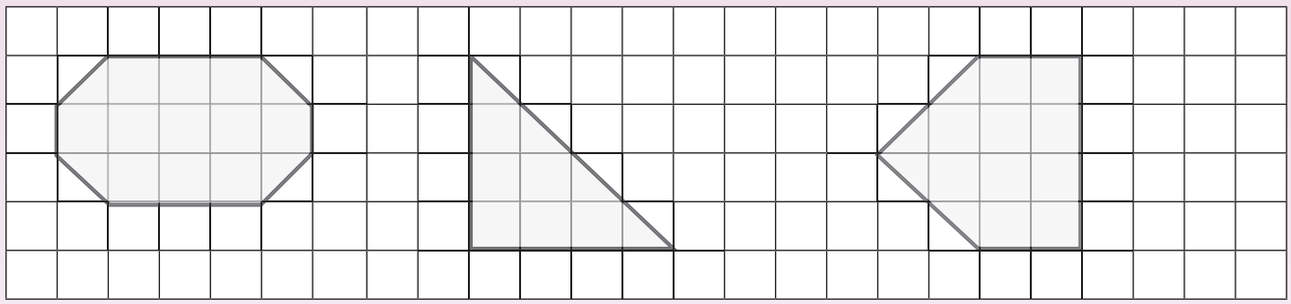






5. What is the area of the following shapes in square units.

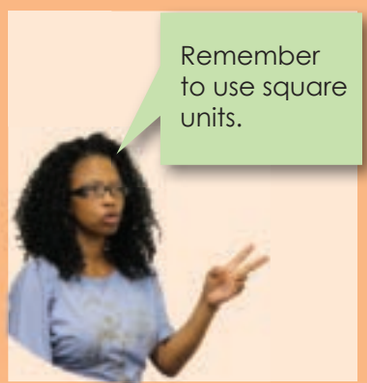
a. 12 b. _____ c. _____



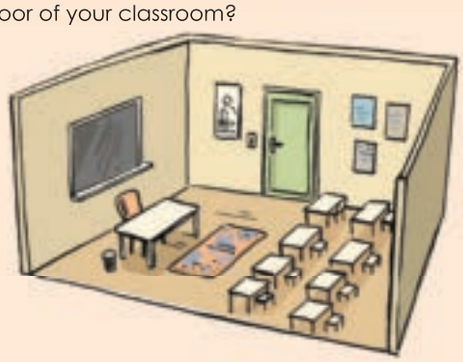
6. The distance (perimeter of the shape) of 5a is approximately 9,6 cm. What is the perimeter of 5b and 5c?

a. 9,6 cm b. _____ c. _____

Area fun



- What is the area of the floor of your classroom?
- How did you work it out?



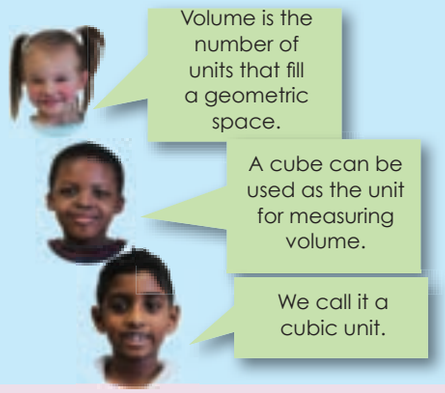
Sign:

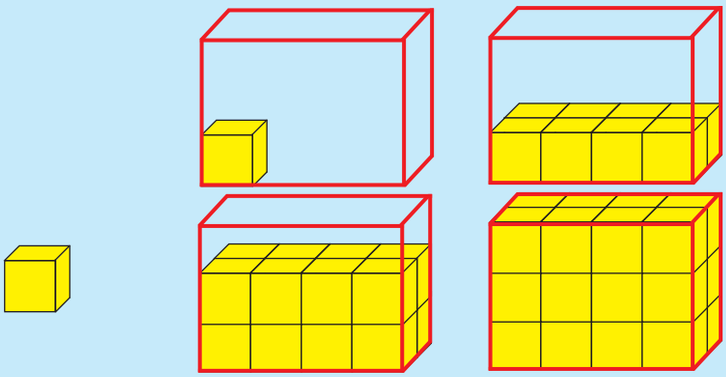
Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

R12 Volume

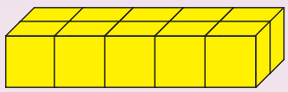
What is volume? Look at the pictures below and discuss it.



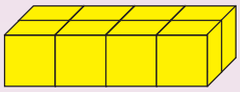


1. Find the volume of each object in cubic units.

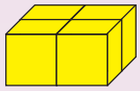
a. ☐ cubic units



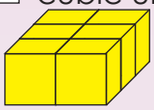
b. ☐ cubic units



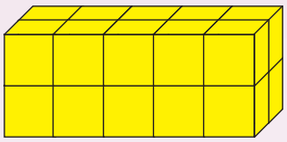
c. ☐ cubic units



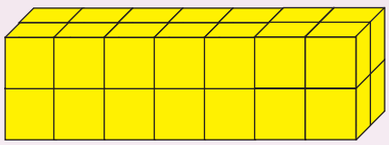
d. ☐ cubic units



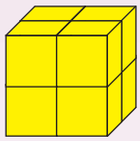
e. ☐ cubic units



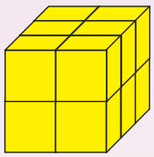
f. ☐ cubic units



g. ☐ cubic units

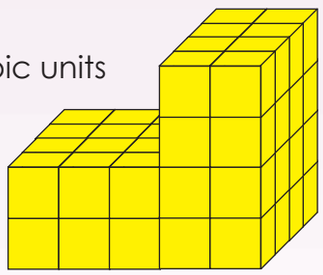


h. ☐ cubic units

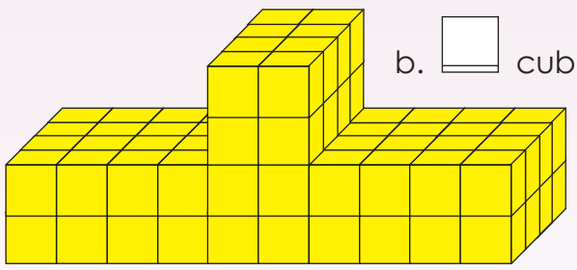


2. Count the cubic units in each object. Remember to count the cubic units you cannot see.

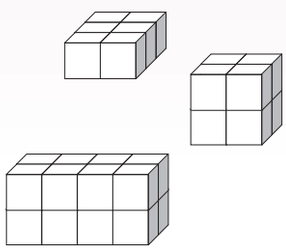
a. ☐ cubic units

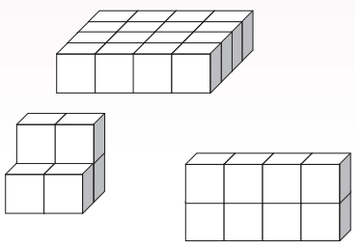


b. ☐ cubic units



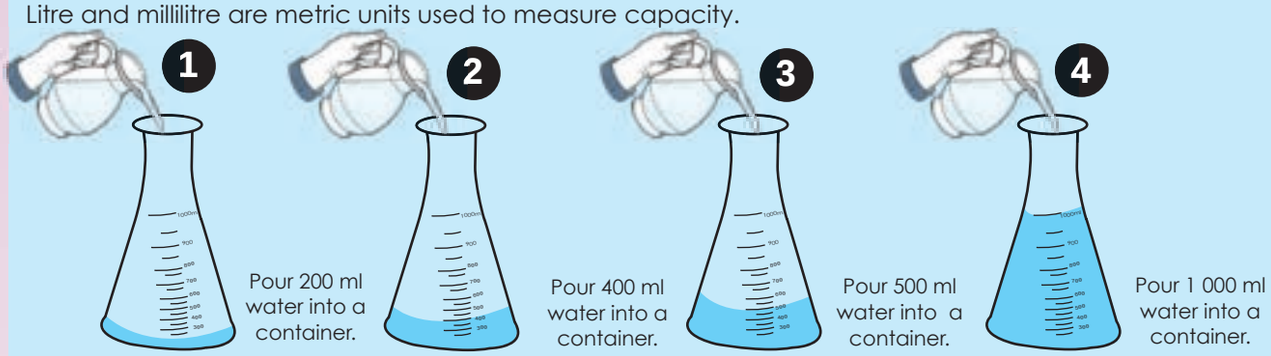
3. Match an object on the right that has the same volume as an object on the left.





What is capacity? Look at the pictures below and discuss it. Use words such as:

Litre and millilitre are metric units used to measure capacity.



Pour 200 ml water into a container.

Pour 400 ml water into a container.

Pour 500 ml water into a container.

Pour 1 000 ml water into a container.

4. Write the following in litres:

a. 1 000 ml = _____ b. 600 ml = _____ c. 250 ml = _____

d. 370 ml = _____ e. 100 ml = _____ f. 810 ml = _____

5. Write the following in millilitres:

a. 1 ℓ = _____ b. 0,5 ℓ = _____ c. 0,250 ℓ= _____

d. 3 ℓ = _____ e. 1,2 ℓ = _____ f. 1,25 ℓ = _____

6. Use the container on the left to estimate whether the object holds more than, less than, or about the same as 1 litre or 1 000 millilitres.

1 litre

a.  _____

b.  _____

c.  _____

d.  _____

e.  _____

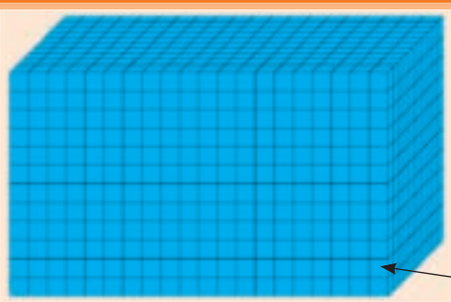
5 millilitres

x.  _____

y.  _____

z.  _____

Fun with a small fish tank



- What is the volume of the fish tank?
- What is the capacity in litres of the fish tank?
- What do you notice?

Each cubic unit represents 10 ml of water.

Sign:

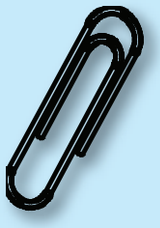
Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

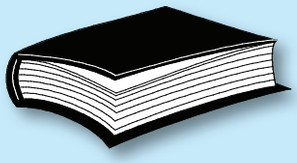
R13 Mass and weight

What is mass? Look at the pictures below and discuss it.

Grams and kilograms are metric units used to measure how heavy objects are.



A paper clip is about 1g.



A book is about 1 kg.

1. Write the following in kilograms:

a. 1 000 g = _____ b. 600 g = _____ c. 350 g = _____

d. 210 g = _____ e. 100 g = _____ f. 720 g = _____

2. Write the following in grams:

a. 1 kg = _____ b. 0,5 kg = _____ c. 0,250 kg = _____

d. 3 kg = _____ e. 1,9 kg = _____ f. 1,8 kg = _____

3. Use the object on the left to estimate whether the objects on the right are heavier or lighter than a kilogram or gram.

a. 

_____

b. 

_____

c. 

_____

d. 

_____

a. 

_____

b. 

_____

c. 

_____

d. 

_____

4. Look at the scales and answer the questions.

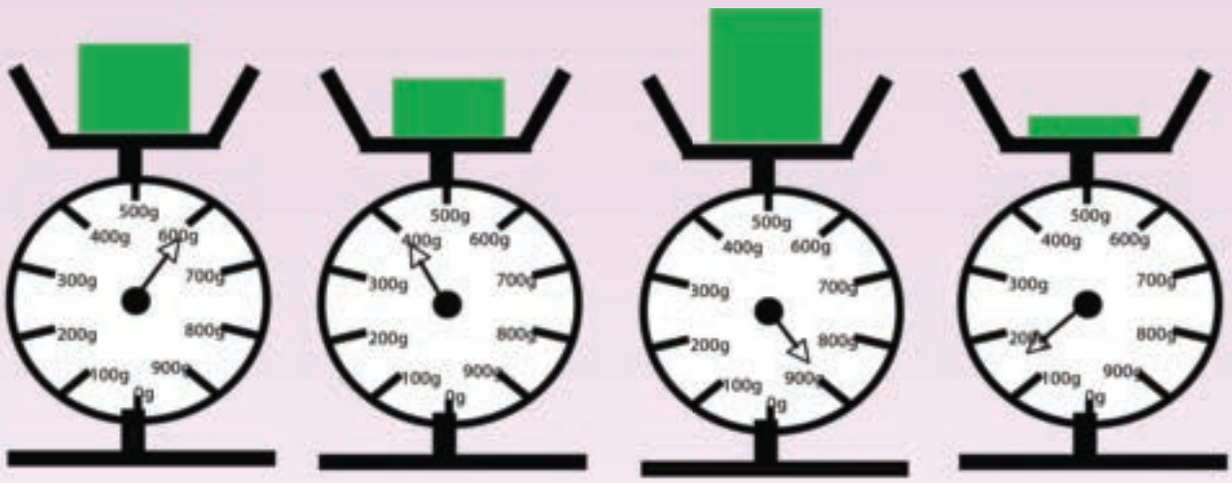
a. Which objects weigh less than a kilogram? _____

b. Which objects weigh between 500 g and 1 000 g? _____

c. Which is the heaviest object? _____

d. What is the total mass of objects A and B? _____

A B C D



5. Simon weighs 30 kg on a bathroom scale.

How much will he weigh if he picks up one foot and stands on one leg instead of two? _____

The winning bag

- Gather different objects from around the classroom. Place them in a bag. Fill your bag until you estimate that it weighs about 1 kilogram.
- Weigh the bag and write down the weight.
- The winner is the learner whose bag weighs closest to 1 kilogram.
- You can repeat the activity by filling your bag with other objects.

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

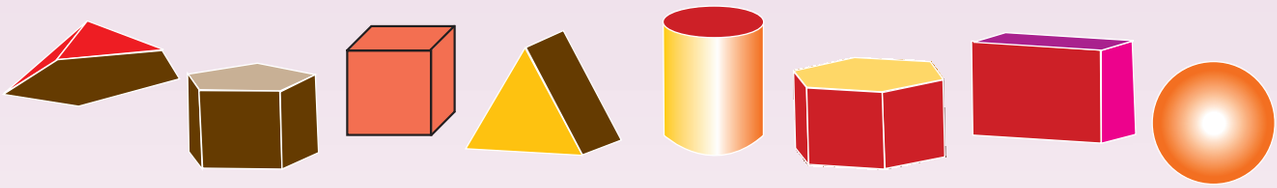
R14 2–D shapes and 3–D objects

Identify the object. What shape do you see? In which country will you find these?

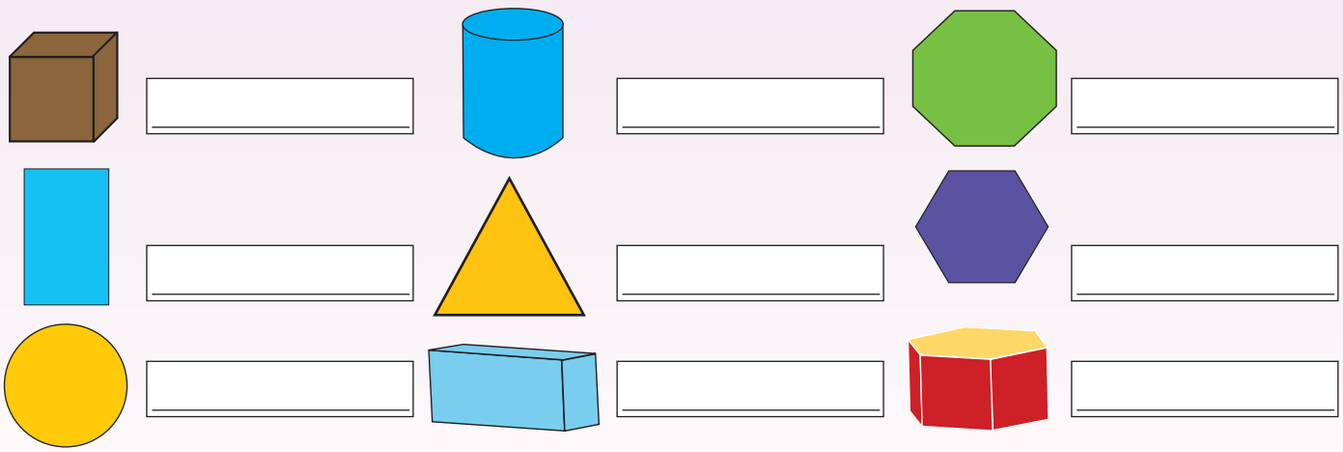
1. Look at the following pictures and identify a:

a. sphere b. rectangular prism c. cylinder d. pentagonal pyramid

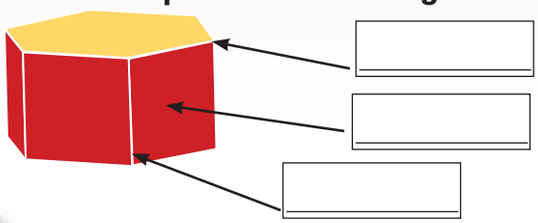
e. cube f. triangular prism g. pentagonal prism h. hexagonal prism

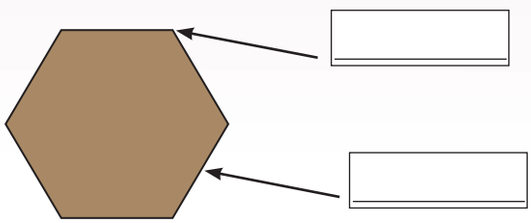


2. Name the 3–D object or 2–D shape:



3. Label the parts of these diagrams.

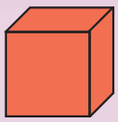


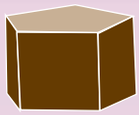


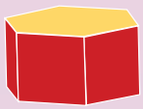
4. Choose the correct net to go with the correct prism or pyramid.

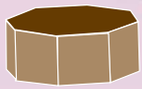

a. Triangular prism


b. Rectangular prism


c. Cube


d. Pentagonal prism


e. Hexagonal prism


f. Octagonal prism

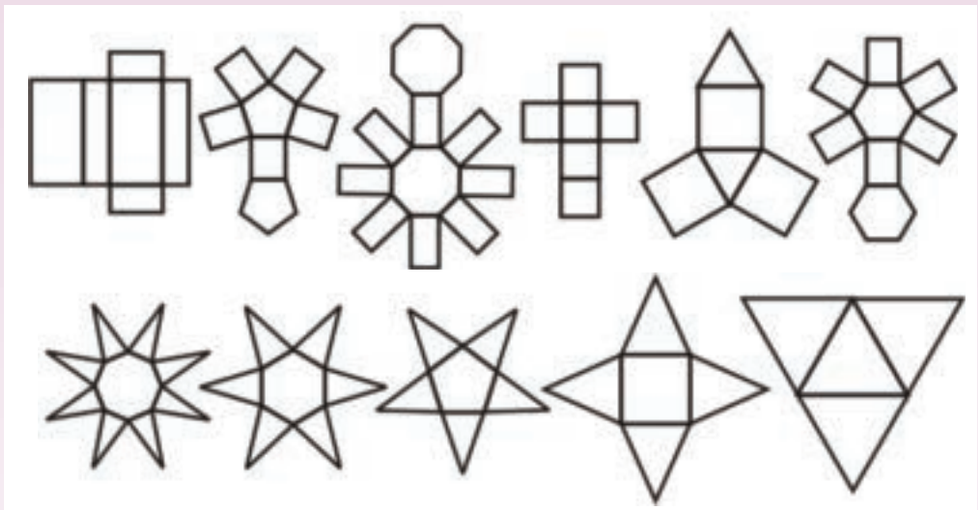

g. Tetrahedron/ Triangular pyramid


h. Square pyramid


i. Pentagonal pyramid


j. Hexagonal pyramid


k. Octagonal pyramid



5. How are these nets similar or different?

Shape hunt

There are road signs everywhere. Go on a field trip in your area. How many different shapes can you find? What do the signs mean?

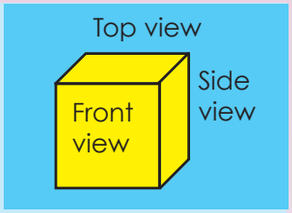
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

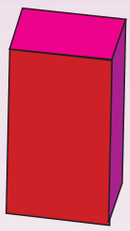
R15a Shapes

What shapes do they see? Discuss this.



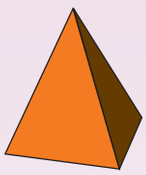
1. Draw the shape you will see from the view indicated.

a.



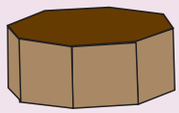
Top view

b.



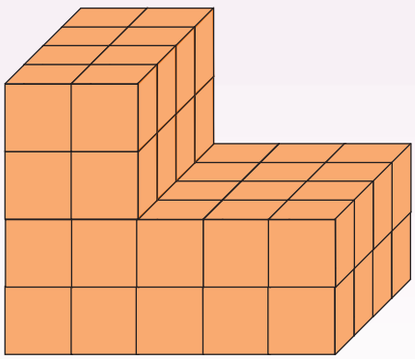
Front view

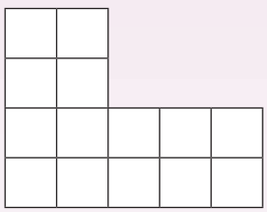
c.



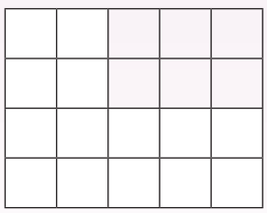
Side view

2. How does this building look from the front, side and top view? Choose the correct answers.

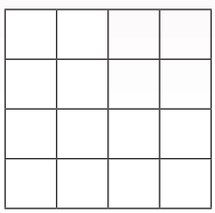




front view
top view
side view

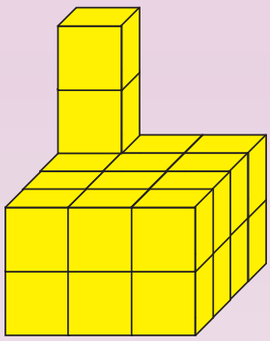


front view
top view
side view



front view
top view
side view

3. How does this building look from the front, side and top view? Draw the correct answers.



Top view

Front view

Side view

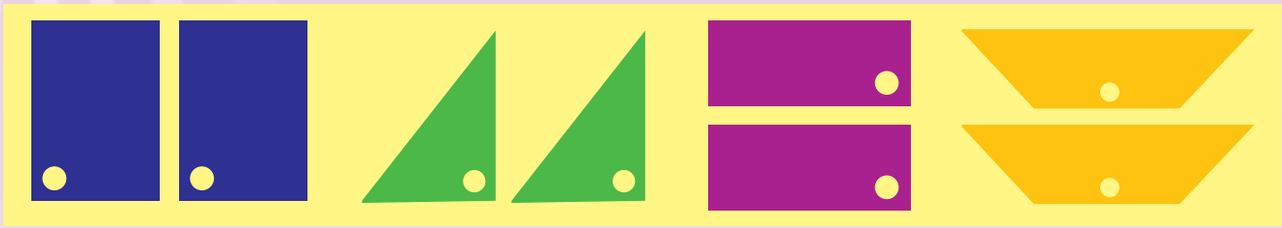
Sign:

Date:

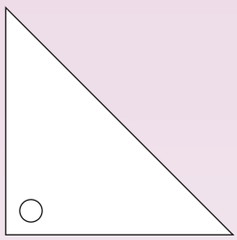
continued ☛

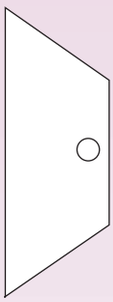
R15b Shapes continued

4. These shapes are copied and are placed next to each other.

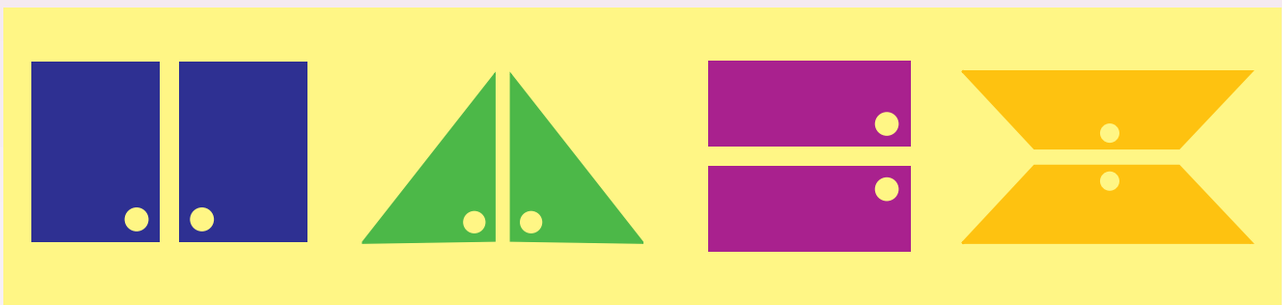


Place a copy next to these shapes and make your own drawing like the sample above.

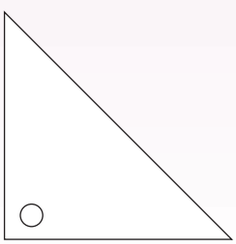
a. 

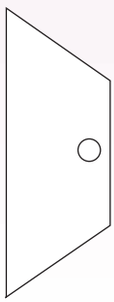
b. 

5. The copy of each shape is flipped.

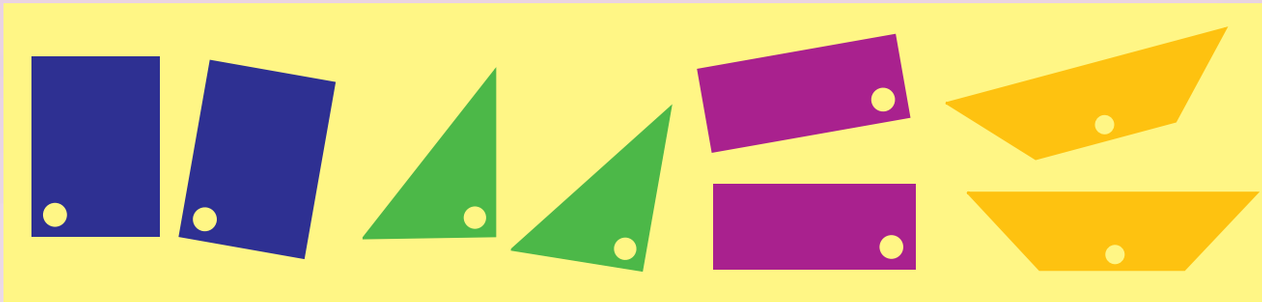


Flip these shapes and make your own drawing.

a. 

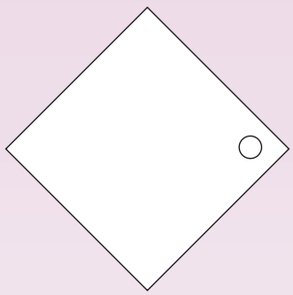
b. 

6. The copy of these shapes is turned.

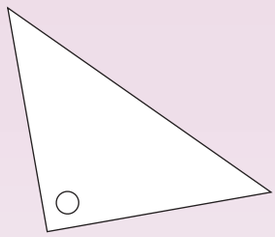


Turn these shapes and make your own drawing.

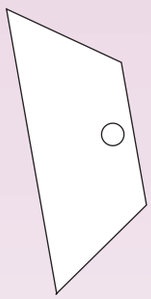
a.



b.



c.



Be an artist!

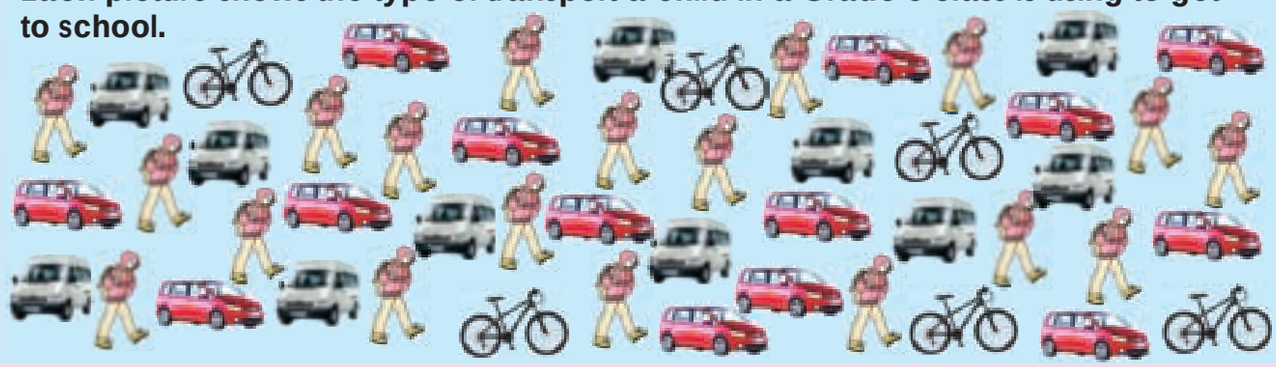
- Take paper and a pencil.
- Go and sit outside a building. Make a drawing from the side and from the front.
- Show it with to the rest of the class.

Sign:

Date:

R16 Data handling

Each picture shows the type of transport a child in a Grade 6 class is using to get to school.



1. Sort the types of transport taken by a Grade 6 class of learners by completing the table.

Transport type	Number

2. Use the information in the table above to draw a bar graph.

3. Answer the following questions from your bar graph:

a. How many children use buses to go to school? _____

b. How many children use cars to go to school? _____

c. How many children use bicycles to go to school? _____

d. How many children walk to school? _____

e. How many children are in Grade 6? _____

f. What type of transport is the most popular in Grade 6? _____

g. What type of transport is the least popular in Grade 6? _____

4. Drop a coin on the ground 100 times and record the actual outcome of each trial in a tally table. Drop it from different heights, drop it from different holding positions, sometimes flick it, sometimes throw it, etc.

Heads	
Tails	

a. How many times did you see heads? _____

b. How many times did you see tails? _____

c. Do you and your friend have the same answers? _____

d. Do you and other children in the class have the same answers? _____

e. Why or why not? _____

Who is lucky?

- Play in pairs.
- Use a coin again. Start the game by asking: "Who is lucky?"
- The first player tosses the coin ten times. Before tossing it he or she must guess on which side the coin will land most often. If the player is correct the player will get 1 point.
- The second player does the same.
- Do this ten times. The player with the highest score is the winner.

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Notes

Rainbow WORKBOOKS

Grade 6

Mathematics

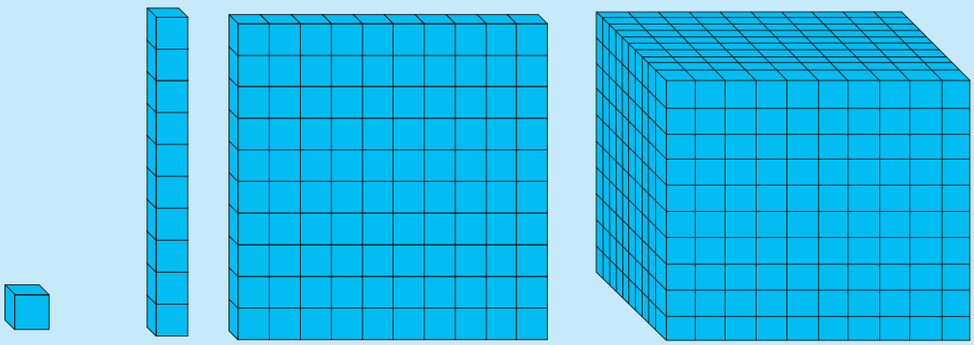
PART 2

WORKSHEETS 1 to 64

ENGLISH Book 1

1a How many do you count? Numbers to 10 000

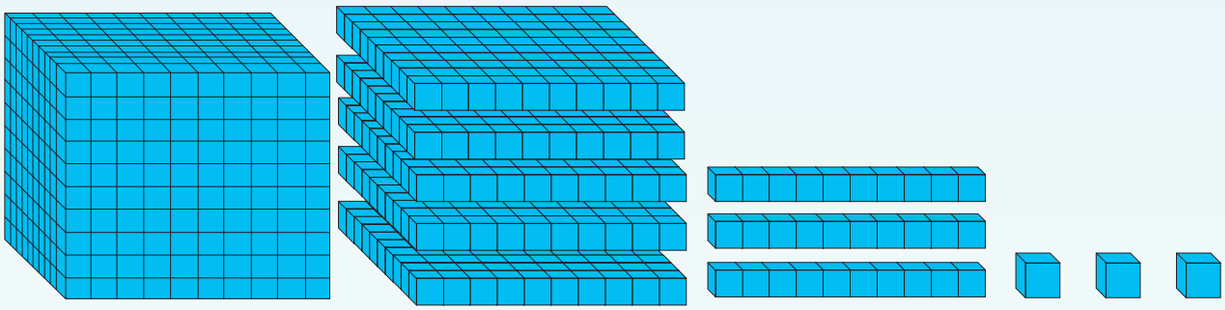
How many cubes are there in total? Match the base ten place value cards with the blocks.



1	0	0	0
1	0	0	
1	0		
1			

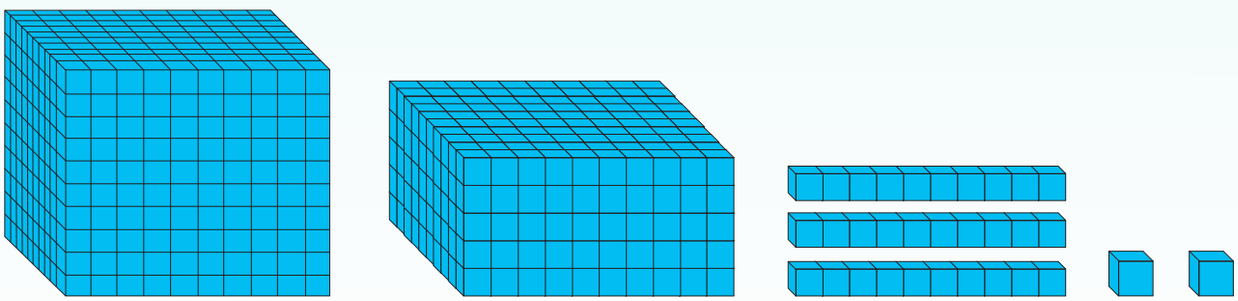
1. Count the cubes.

a.



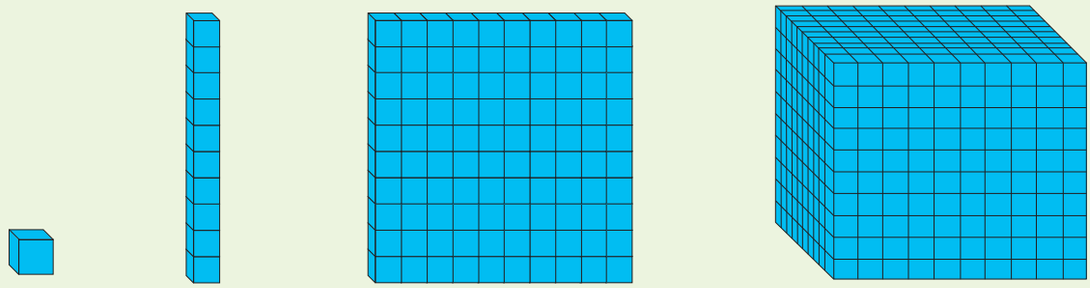
_____

b.

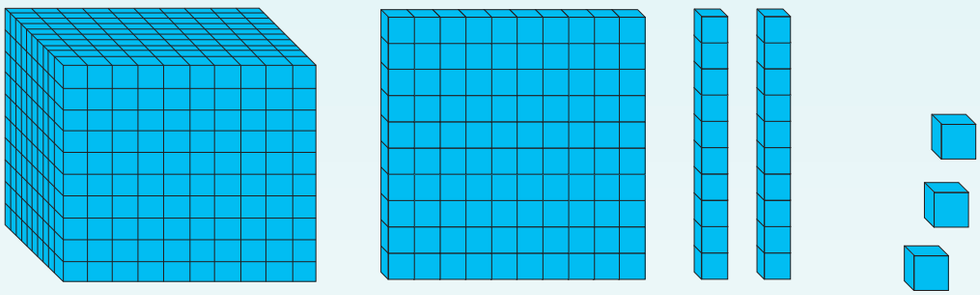


_____

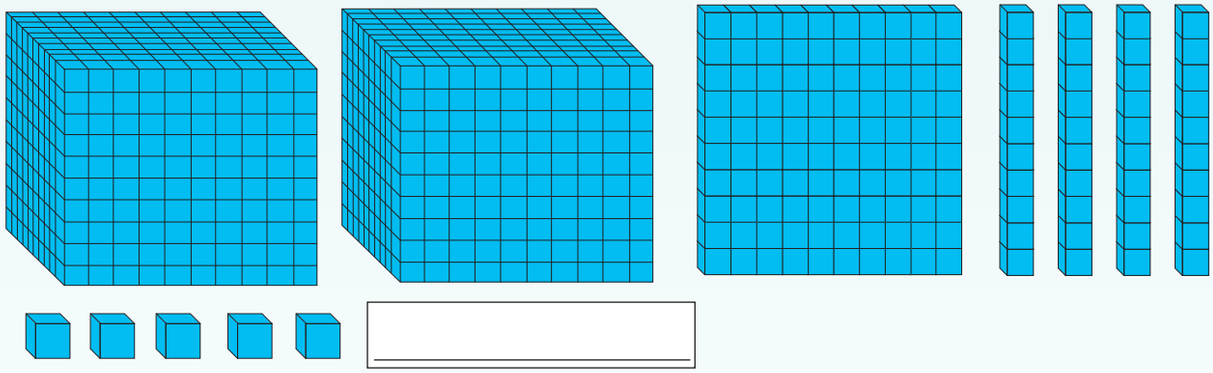
2.How many cubes are there in total?



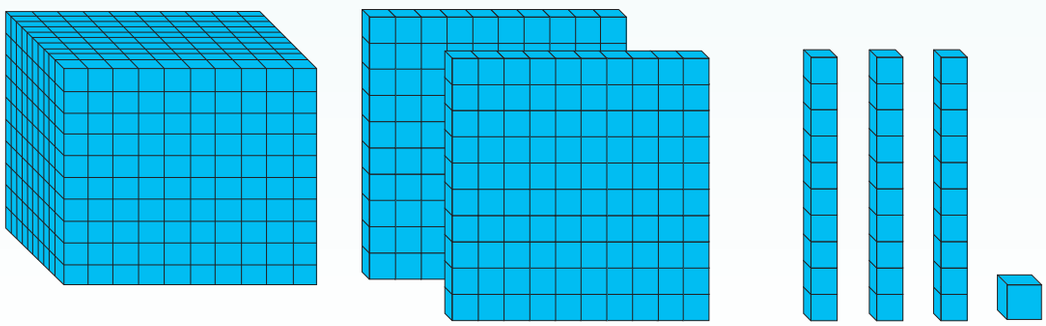
a.



b.



c.



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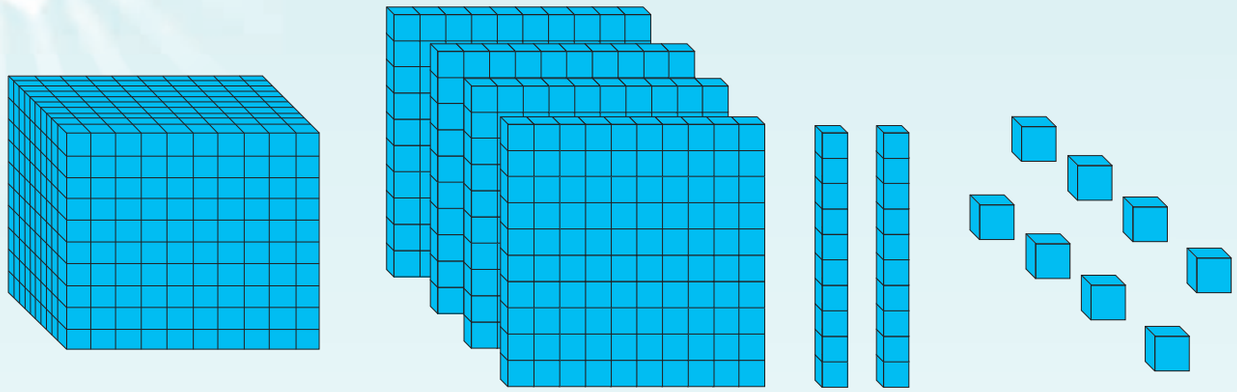
Datum:

continued ☛

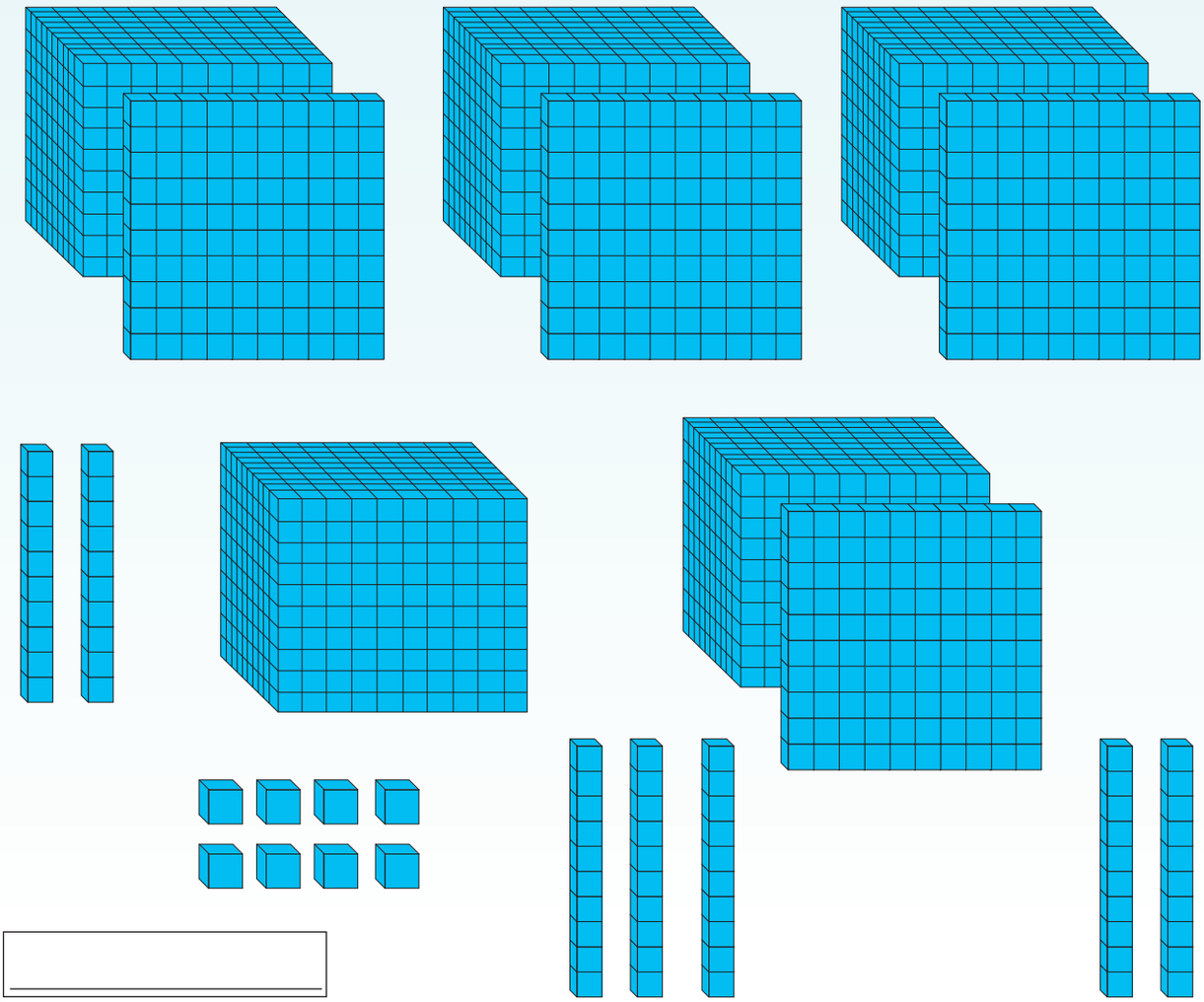
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

1b How many do you count? Numbers to 10 000 continued

d.

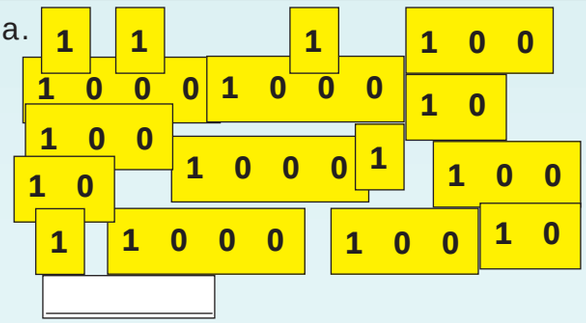


e.

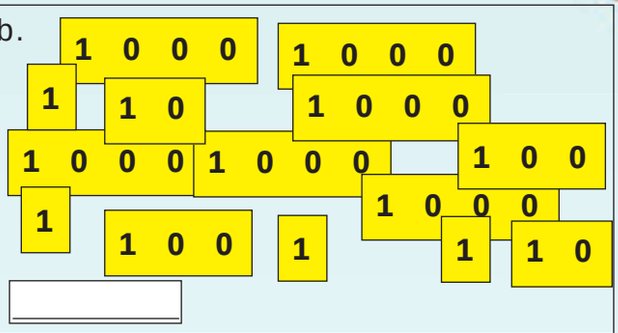


3. Add all the place value cards.

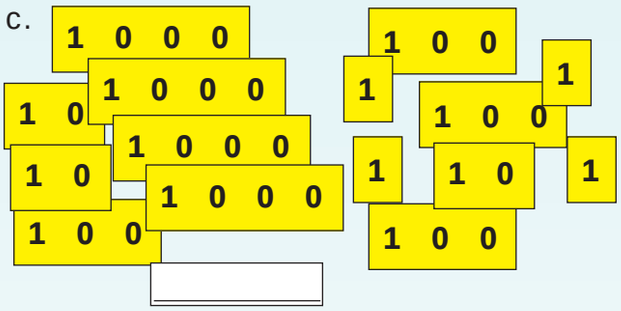
a.



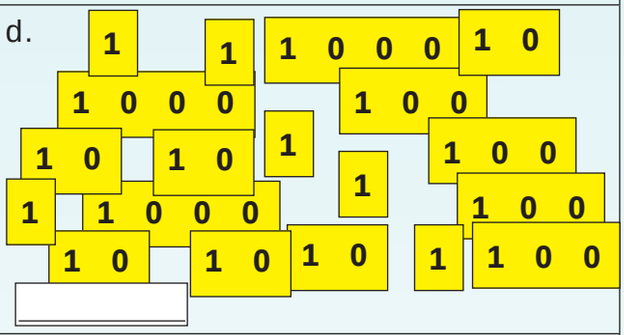
b.



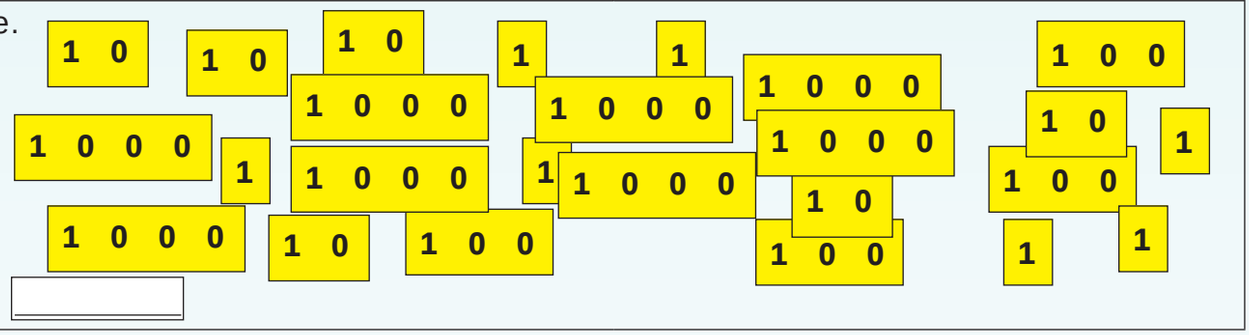
c.



d.



e.



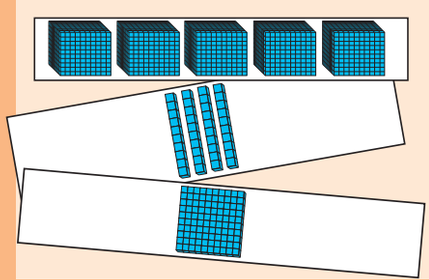
4. Calculate the following:

a. 1 000 + 1 000 + 100 + 100 + 100 + 100 + 100 + 10 + 10 + 10 + 1 + 1 = _____

b. 1 000 + 100 + 1 + 10 + 10 + 100 + 1 + 1 000 + 100 + 10 + 10 + 10 + 1 = _____

How quickly can you count?

What you need:
- Cut-out 1.



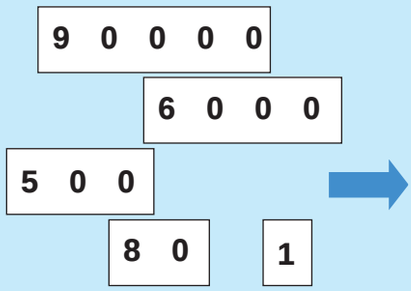
What to do:
- Play in pairs.
- Use the cards from Cut-out 1 from the back of the book.
- Place them face down on your desk.
- You choose five cards and your partner chooses five.
- See who can give the total the quickest.
- Check your partner's answer.
- Do the same with 6 cards each, then 7, 8, 9 and 10 cards.
- The person with the most correct answers is the winner

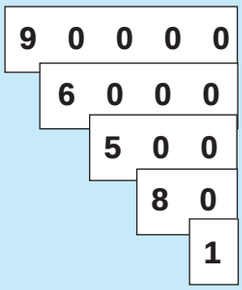
Sign:

Date:

2 Numbers 0 to 100 000

What number will these cards make?





96 581

In words it is

Ninety–six thousand five hundred and eighty–one.

Use Cut–out 2 to show five different numbers.

1. Complete the following:

a. 90 000 + 5 000 + 600 + 10 + 8 = _____

b. 70 000 + 3 000 + 400 + 90 + 1 = _____

c. 50 000 + 4 000 + 300 + 10 = _____

d. 90 000 + 4 000 + 80 + 7 = _____

e. 90 000 + 9 = _____

2. Complete the following table:

		Ten thousands	Thousands	Hundreds	Tens	Units
a,	92 578	9	2	5	7	8
b.	38 201					
c.	40 002					
d.	31 420					
e.	90 706					

3. Complete the following. Use the first activity to guide you.

a. 91 742 = 9 ten thousands + 1 thousand + 7 hundreds + 4 tens + 2 units

b. 82 293 = _____

c. 99 999 = _____

d. 70 004 = _____

e. 65 005 = _____

4. Complete the table below:

		Expanded notation	Words
a.	98 795		
b.	73 289		
c.	12 009		
d.	32 320		
e.	40 002		

5. What is the value of the underlined digit?

a. 3<u>8</u> 934 _____

b. <u>4</u>2 983 _____

c. 30 00<u>8</u> _____

d. 12 9<u>7</u>0 _____

e. 42 <u>8</u>00 _____

6. What will you do to change the number?

a.	34 589		30 589
b.	28 934		28 034
c.	94 783		94 700
d.	94 783		70 000

Find a large number

What to do:

- Bring a newspaper to class.
- Find five 5–digit numbers in the newspaper. Write them down.
- Tell the class what each number means.

What you need:
A newpaper

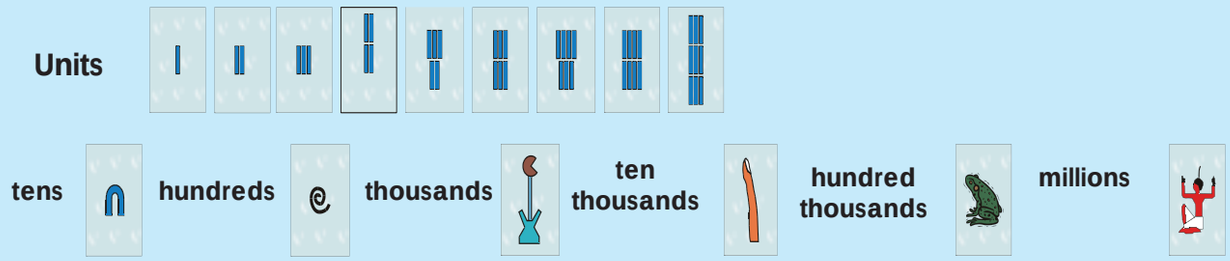
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

3 More numbers 0 to 100 000

Look at these Egyptian numbers. Make any 5–digit number using the Egyptian numbers.



1. Complete the table below:

Egyptian numbers	Number	Expanded notation

2. Arrange the numbers from the smallest to the biggest.

a. 34 567, 43 675, 34 765, 34 667, 43 765 _____

b. 29 876, 29 867, 29 678, 29 687, 28 678 _____

c. 12 221, 12 212, 12 122, 12 121, 12 101 _____

d. 90 009, 99 009, 90 909, 90 090, 9 000 _____

e. 42 444, 44 224, 44 422, 44 424, 42 424 _____

3. Fill in whether the first number is < or > than the second number.

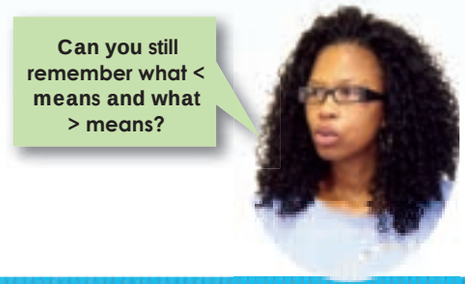
a. 34 567 _____ 34 657

b. 12 001 _____ 12 002

c. 43 444 _____ 44 333

d. 99 999 _____ 99 990

e. 76 767 _____ 76 776



4. What is the value of the 4 in each of these numbers

a. 98 432 _____ b. 74 322 _____

c. 63 284 _____ d. 61 994 _____ e. 49 352 _____

5. Complete the following:

1 4 5 7 9

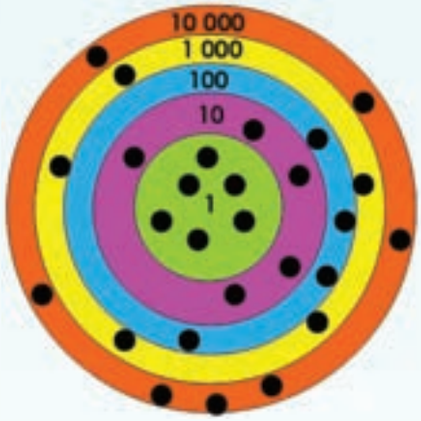
a. Use each digit once. Make the smallest 5–digit number: _____

b. Use each digit once. Make the largest 5–digit number: _____

c. You can use a digit twice. Make the smallest 5–digit number: _____

d. You can use a digit twice. Make the largest 5–digit number: _____

6. Complete the following:



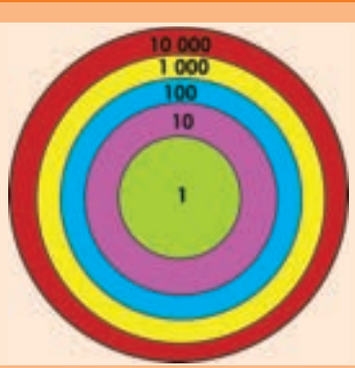
You have dropped some stones onto a game board. This was the result. If you add the numbers, what is the total?

_____

Who can get the largest number?

What you need:
- The game board on the right.
- Ten small stones.

What to do:
- Drop your stones onto the board.
- Write down the number they land on.
- Do this ten times.
- Add the numbers.
- The winner in a group is the person with the biggest number.



Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

4 Properties of numbers

What is the value of the ? See how quickly you can answer the following:

300 + 2 = + 300	=	x 1 = 1 x 1 000 000	=
400 x 600 = 600 x	=	250 + = 250 + 0	=
900 + = 80 + 900	=	300 x = 900 x 300	=
x 400 = 400 x 10 000	=	1 x 3 x = 3 x 1 x 10	=
0,4 + 0,5 = 0,5 +	=	300 + 40 + 5 = 40 + 5+	=

1. Use the properties of number to find the perimeter of each rectangle.

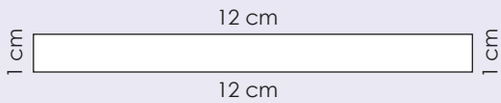
a.

The rectangle =(2 x 5 cm) + (2 x ☐ cm)

= ☐ + ☐

= ☐

b.



The rectangle =(2 x ☐ cm) + (2 x ☐ cm)

= ☐ + ☐

= ☐

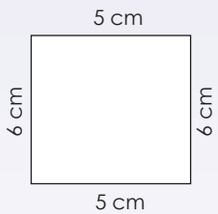
c.

The rectangle =(2 x 6 cm) + (2 x ☐ cm)

= ☐ + ☐

= ☐

d.



The rectangle =(2 x ☐ cm) + (2 x ☐ cm)

= ☐ + ☐

= ☐

2. Do the sums.

a. (1 x 10) + [(2x 10) + 4] + 3

= ☐

= ☐

= ☐

= ☐

b. [(2 x 10) + 8] + (3 x 10) + 5]

= ☐

= ☐

= ☐

= ☐

3. What is the value of ✘?

a. ✘ + 1 000 000 = 100 000 + 1 000 000 ✘ = ____

b. 800 × 125 = ✘ × 800 ✘ = ____

c. (287 + ✘) + 245 = 287 + (273 + 245) ✘ = ____

d. (1 000 × 0,9) × 10 = 1 000 × (✘ × 0,9) ✘ = ____

e. (50 + 40) × 0,2 = 50 × ✘ + 40 × ✘ ✘ = ____

f. 999 999 + 0 = ✘ ✘ = ____

g. 8 743 821 x 1 = ✘ ✘ = ____

h. 1 000 000 – ✘ = 0 ✘ = ____

i. 275,508 + ✘ = 275,508 ✘ = ____

j. 734 293,999 x ✘ = 734 293,999 ✘ = ____

4. If a = 200, b = 40, c = 1 200, complete and calculate the sums.

a. a+ b = b + a ____

b. a × b = b × a ____

c. (a + b) + c = a + (b + c) ____

d. (a × b) × c = a × (b × c) ____

e. (a + b) × c = a × c + b × c ____

f. a – a = ____

g. c x 1 = ____

h. b + 0 = ____

Sudoku fun

		7		4	3			9
9						3		
		5		8	9	1		
5	9				8			6
			2		4			
4			9				3	8
		9	6	3		8		
		2						3
1			4	9		5		

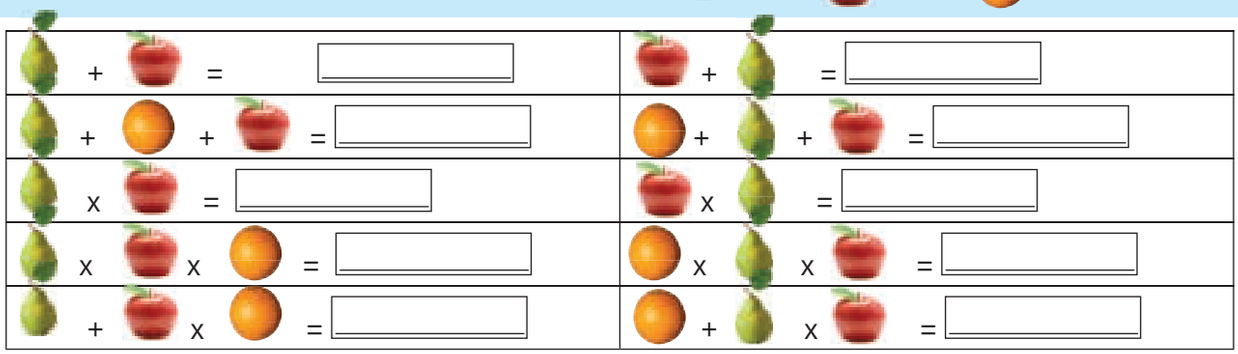
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

5 More properties of number

How quickly can you answer the following? = 10 =100 = 1 000



1. Say whether the following is true or false.

a. 50 000 + 4 000 = 4 000 + 50 000 _____

b. 300 x 900 = 900 x 300 _____

c. 7 000 – 6 000 = 6 000 – 7 000 _____

d. 200 ÷ 400 = 400 ÷ 200 _____

e. (20 x 80) x 10 = 20 x (80 x 10) _____

f. a + b = b + a _____

g. a – b = b – a _____

h. a ÷ b = b ÷ a _____

i. a x b = b x a _____

j. (a + b) x c = a + (b x c) _____

2. Choose the correct answer.

a. 1 000 000 + 50 000 = a + 1 000 000
   i. a = 1 000 000
   ii. a = 50 000
   iii. a = 5 000

b. 6 789 + 3 999 = b + 3 999
   i. b = 6 789
   ii. b = 3 999
   iii. b = 6 879

c. 400 x 500 = 500 x ✗
   i. ✗ = 500
   ii. ✗ = 20 000
   iii. ✗ = 400

d. 175 x 132 = 132 x *y*
   i. *y* = 23 100
   ii. *y* = 132
   iii. *y* = 175

e. (100 000 + 2) + 500 = a + (2 + 500)
   i. a = 100 000
   ii. a = 2
   iii. a = 500

f. (b x 100) x 200 = 50 x (100 x 200)
   i. b = 200
   ii. b = 100
   iii. b = 50

g. a – a = ____
   i. 0
   ii. 1
   iii. a

h. 0 x a =
   i. 0
   ii. 1
   iii. a

i. 6 x 5 + 3 = ____
   i. 33
   ii. 48
   iii. 14

j. 27 ÷ 3 + 3 =
   i. 3
   ii. 11
   iii. 12

k. 7 + 8 x 10 = ____
   i. 150
   ii. 87
   iii. 25

l. 5 + 15 ÷ 5 =
   i. 8
   ii. 4
   iii. 25

m. 7 + (6 × 2 + 3)
   i. 18
   ii. 37
   iii. 22

n. 8 + (6 ÷ 2 + 1)
   i. 12
   ii. 11
   iii. 17

Remember **BODMAS** when answering questions i to n.

An equation says that two things are the same, using maths symbols. An equal sign (=) is used.

3. Make four equations of your own.

Sudoku fun

				7		1		
			9					2
3	4				8			
6	7	1					2	
		5		1		9		
	2					6	8	1
			6				4	9
5					9			
		6		8				

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

6a Addition and subtraction up to 5-digit numbers

What is the difference between the numbers in each of these rows?

1 000	2 000	3 000	4 000	5 000	6 000	7 000	8 000	9 000	10 000
1 001	2 001	3 001	4 001	5 001	6 001	7 001	8 001	9 001	10 001
1 010	2 010	3 010	4 010	5 010	6 010	7 010	8 010	9 010	10 010
1 005	2 005	3 005	4 005	5 005	6 005	7 005	8 005	9 005	10 005
10 400	20 400	30 400	40 400	50 500	60 400	70 400	80 400	90 400	100 400

1. What number comes next?

a. 1 000, 2 000, 3 000, _____

b. 10 000, 20 000, 30 000, _____

c. 1 045, 2 045, 3 045, _____

d. 30 500, 40 500, 50 500, _____

e. 7 999, 8 999, 9 999, _____

f. 69 999, 79 999, 89 999, _____

2. Complete the table. Add to the given number.

Number	Add 10	Add 100	Add 1 000	Add 10 000
42 389				
76 381				
45 002				
45 982				

3. Fill in the missing number.

a. $7 + \square = 10$

b. $18 + \square = 20$

c. $81 + \square = 90$

d. $97 + \square = 100$

e. $125 + \square = 200$

f. $376 + \square = 400$

g. $875 + \square = 1\,000$

h. $1\,250 + \square = 2\,000$

i. $7\,880 + \square = 8\,000$

j. $12\,500 + \square = 13\,000$

4. Fill in the missing number.

a. $4 + 5 = \square + 4$

b. $(2 + 3) + 5 = 2 + (3 + \square)$

c. $7 + \square = 6 + 7$

d. $2 + \square = 3 + \square$

e. $4 + (1 + 2) = (4 + 1) + \square$

f. $(4 + \square) + 9 = 4 + (\square + 9)$

g. $\square + 10 = 10 + \square$

h. $12 + (\square) = (12 + \square + \square)$

i. $120 + \square = \square + 120$

j. $(100 + \square) + \square$

$= 100 + (\square + \square)$

5. Complete the table.

		Complete to the next 10	Complete to the next 100	Complete to the next 1 000
a.	457	$457 + \square = 460$	$457 + \square = 500$	$457 + \square = 1\,000$
b.	685	$685 + \square = 690$	$685 + \square = 700$	$685 + \square = 1\,000$
c.	2 857	$2\,857 + \square = 2\,860$	$2\,857 + \square = 2\,900$	$2\,857 + \square = 3\,000$
d.	4 575	$4\,575 + \square = 4\,580$	$4\,575 + \square = 4\,600$	$4\,575 + \square = 5\,000$
e.	8 999	$8\,999 + \square = 9\,000$	$8\,999 + \square = 9\,000$	$8\,999 + \square = 9\,000$

Sign:

Date:

6b Addition and subtraction up to 5-digit numbers continued

Examples:

Example 1:

42 672 + 31 849

= 40 000 + 2 000 + 600 + 70 + 2 + 30 000 + 1 000 + 800 + 40 + 9

= 70 000 + 3 000 + 1 400 + 110 + 11

= 70 000 + 3 000 + 1 000 + 400 + 100 + 10 + 10 + 1

= 70 000 + 4 000 + 500 + 20 + 1

= 74 521

Example 2:

	4	2	6	7	2	
+	3	1	8	4	9	
				1	1	(2 + 9)
			1	1	0	(70 + 40)
		1	4	0	0	(600 + 800)
		3	0	0	0	(2 000 + 1 000)
+	7	0	0	0	0	(4 000 + 3 000)
	7	4	5	2	1	

6. Use both methods above to calculate the following.

a. 34 876 + 43 875 =

Continue on an extra sheet of paper.

b. 43 892 + 12 743 =

Continue on an extra sheet of paper.

c. 72 289 + 13 478 =

Continue on an extra sheet of paper.

d. 65 432 + 24 783 =

Continue on an extra sheet of paper.

e. 52 999 + 9 999 =

Continue on an extra sheet of paper.

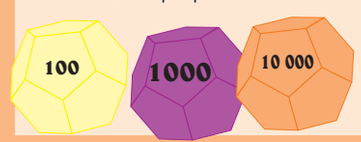
f. 48 798 + 33 981 =

7. **So far you have learned several methods of doing addition. Which method do you like best? Why do you like it best?**

Continue on an extra sheet of paper.

What is the size of your number:

What you need:
- Use the 100s, 1 000s and 10 000s dice you made before.
- Piece of paper.



What to do:
- Roll the 100s dice.
- Add the number it lands on to the first number on the blue card.
- Write your addition sum on a piece of paper.
- Do the same with the next four numbers on the blue card.
- Learners check each others' addition sums.
- The winner is the person with the most correct answers.
- Repeat the activity with the 1 000s and 10 000s dice.

78 472
62 893
45 232
89 231
82 321

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

7a Subtraction up to 5-digit numbers

What is the difference between the numbers?

1 000	2 000	3 000	4 000	5 000	6 000	7 000	8 000	9 000	10 000
1 005	2 005	3 005	4 005	5 005	6 005	7 005	8 005	9 005	10 005
1 025	2 025	3 025	4 025	5 025	6 025	7 025	8 025	9 025	10 025
10 009	20 009	30 009	40 009	50 009	60 009	70 009	80 009	90 009	100 009
10 700	20 700	30 700	40 700	50 700	60 700	70 700	80 700	90 700	100 700

1. What number comes next?

a. 3 000, 2 000, 1 000, _____

b. 50 000, 40 000, 30 000, _____

c. 3 045, 2 045, 1 045, _____

d. 80 500, 70 500, 60 500, _____

e. 9 999, 8 999, 7 999, _____

f. 99 999, 89 999, 79 999, _____

2. Complete the table. Subtract from the given number.

Number	Subtract 10	Subtract 100	Subtract 1 000	Subtract 10 000
38 982	38 972			
67 463				
28 394				
34 001				
38 291				

3. Fill in the missing number.

a. 5 – ____ = 0

b. 16 – ____ = 10

c. 85 – ____ = 80

d. 92 – ____ = 90

e. 134 – ____ =100

f. 345 – ____ = 300

g. 862 – ____ = 800

h. 1 175 – ____ = 1 000

i. 7 340 – ____ = 7 000

j. 12 300 – ____ = 12 000

4. Say if the following is true or false:

a. 4 + 5 = 5 – 4 ____

b. 7 – 2 = 2 – 7 ____

c. 4 + (3 + 2) = 4 + (3 – 1) ____

d. (4 – 2) + 1 = 4 – (2 + 1) ____

e. (5 – 3) – 2 = 5 – (3 – 2) ____

f. 2 + (3 + 1) = (2 + 3) – 1 ____

g. 14 + 0 = 14 – 0 ____

h. 15 + 1 = 15 – 1 ____

i. 7 – (2 + 1) = (7 – 2) + 1 ____

j. 100 – (30 + 10) = (100 – 30) + 10 ____

5. Complete the table. Use subtraction.

		Complete to the previous 10	Complete to the previous 100	Complete up to the previous 1 000.
a.	1 232	1 232 – ____ = 1 230	1 232 – ____ = 1 200	1 232 – ____ = 1 000
b.	2 214	2 214 – ____ = 2 210	2 214 – ____ = 2 200	2 214 – ____ = 2 000
c.	3 457	3 457 – ____ = 3 450	3 457 – ____ = 3 400	3 457 – ____ = 3 000
d.	4 575	4 575 – ____ = 4 570	3 457 – ____ = 3 400	4 575 – ____ = 4 000
e.	8 999	8 999 – ____ = _____	8 999 – ____ = _____	8 999 – ____ = _____

Sign:

Date:

continued ☛

7b Subtraction up to 5-digit numbers

continued

Examples:

Example 1:

76 375 – 53 194

= (70 000 – 50 000) + (6 000 – 3 000) + (300 – 100) + (70 – 90) + (5 – 4)

= (70 000 – 50 000) + (6 000 – 3 000) + (200 – 100) + (170 – 90) + (5 – 4)

= 20 000 + 3 000 + 100 + 80 + 1

= 23 181

This is a problem!

Example 2:

	7	6	3	7	5	
–	5	3	1	9	4	
					1	(5 – 4)
				8	0	(170 – 90)
			1	0	0	(200 – 100)
		3	0	0	0	(6 000 – 3 000)
–	2	0	0	0	0	(70 000 – 50 000)
	2	3	1	8	1	

6. Use both methods to solve the problem.

a. 87 475 – 45 129

Continue on an extra sheet of paper.

b. 67 327 – 24 218

Continue on an extra sheet of paper.

c. 54 786 – 15 558

Continue on an extra sheet of paper.

d. 78 578 – 65 494

Continue on an extra sheet of paper.

e. 45 945 – 32 684

Continue on an extra sheet of paper.

f. 75 321 – 64 290

Continue on an extra sheet of paper.

What is the size of your number?

What you need:
- Use the 10s, 100s, 1 000s and 10 000s dice you made before.
- Piece of paper.

What to do:
- Roll the 100s dice.
- Subtract the number it lands on from the first number on the blue card. Write your subtraction sum on a piece of paper.
- Do the same with the next four numbers on the blue card.
- Learners check each others' subtraction sums.
- The winner is the person with the most correct answers.
- Repeat the activity with the 1 000s and 10 000s dice.

78 472
62 893
45 232
89 231
82 321

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

8a More addition and subtraction up to 5-digit numbers

How fast can you answer these?

- Add 40 000 and 5 000.
- Subtract 15 000 from 100 000.
- 10 000 plus 7 500 is?
- The sum of 75 000 and 25 000 is?
- Take 12 000 from 45 000.
- Decrease 62 000 by 13 000.
- Increase 28 000 by 12 000.
- 63 000 and 15 000 is?

1. Add to or subtract from the given number.

	Add 7 000	Subtract 4 000	Add 50 000	Subtract 20 000
20 000	27 000			
25 000				
47 500				
39 250				
28 825				

2. Answer the following questions:

a. What is the inverse (opposite operation) of subtraction?

b. What is the inverse (opposite operation) of division?

3. Calculate the following:

a. 42 764 + 36 999 =

b. 57 847 + 39 586 =

c. 67 892 – 15 999 =

d. 83 273 – 68 498 =

4. Check your own answers for each of the above calculations, using the inverse operation.

Sign:

Date:

continued ☛

8b More addition and subtraction up to 5-digit numbers continued

Soccer stadium ticket sales.

Category 1 Category 2 Category 3 Category 4

Categories	Capacity
Category 1	30 000
Category 2	37 500
Category 3	11 250
Category 4	11 250

5. Use the information on the previous page to answer the following questions.

a. How many people can each category seat?

b. What is the difference between the smallest and the largest capacity?

c. What is the difference between the largest and second largest capacity?

d. What is the full capacity of the stadium?

e. 63 874 spectators attend the match. How many empty seats are there?

f. Categories 1, 3 and 4 were sold out. 24 878 Category 2 tickets were sold. How many more tickets should be sold to sell all the tickets?

g. Find out which soccer stadium this could be in South Africa.

Coloured numbers

10 000	100 000	5 000	2 500
1 000	90 000	20 000	1 500
30 000	65 000	12 000	25 000
1 250	15 000	40 000	70 000

What to do:
Play in pairs.

- The first player tells the second player too add red (or blue or yellow) numbers. The second player takes any two red numbers and adds them. If the player is correct, he or she will get one point.
- The second player tells the first player too subtract (yellow or red or blue) numbers. The first player makes a sum with any two yellow numbers.
- Carry on playing. The first person with a score of 10 is the winner.

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

9a Fractional notation

Proper Fraction

A proper fraction is a fraction in which the numerator (the top number) is smaller than the denominator (the bottom number). It is less than one. Examples: $\frac{1}{3}, \frac{2}{5}, \frac{5}{7}$.

Improper Fraction

An improper fraction is a fraction in which the numerator (the top number) is greater than or equal to the denominator (bottom number).

Examples: $\frac{4}{3}, \frac{5}{2}, \frac{7}{5}, \frac{2}{2}$.

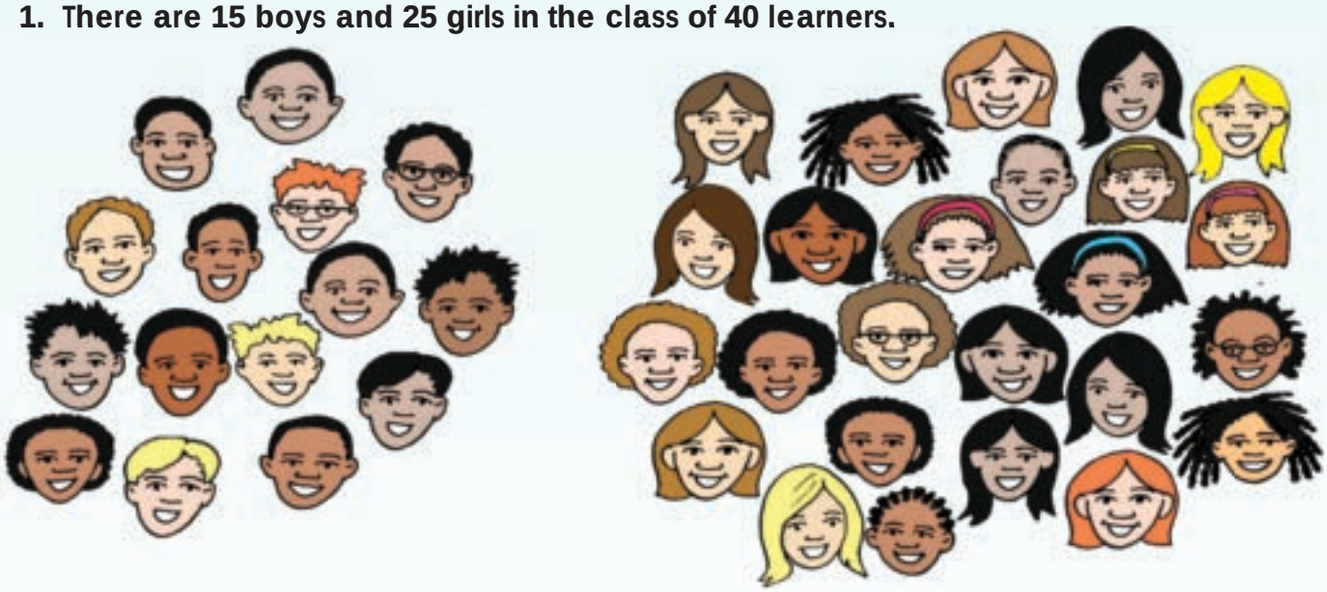
Mixed Fraction

A mixed fraction is a whole number and a proper fraction combined into one "mixed number". It is larger than one. It is also called a mixed number.

Common Fraction

A common fraction is a fraction in which the numerator and denominator are both integers, as opposed to fractions. It is also called a vulgar fraction.

1. There are 15 boys and 25 girls in the class of 40 learners.

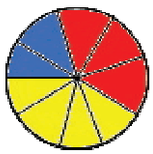
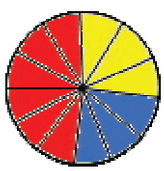
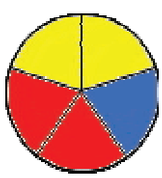
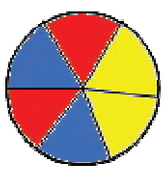


a. What fraction of the class is girls? _____

b. What fraction of the class is boys? _____

c. Write an improper fraction for the whole picture above. _____

2. Look at the diagram and write a common fraction for each colour.

	What fraction is red?	What fraction is blue?	What fraction is yellow?
			
			
			
			
			
			
			

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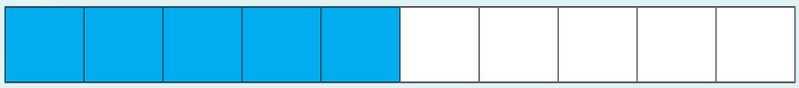
3. Look at each diagram and complete the questions.

a.

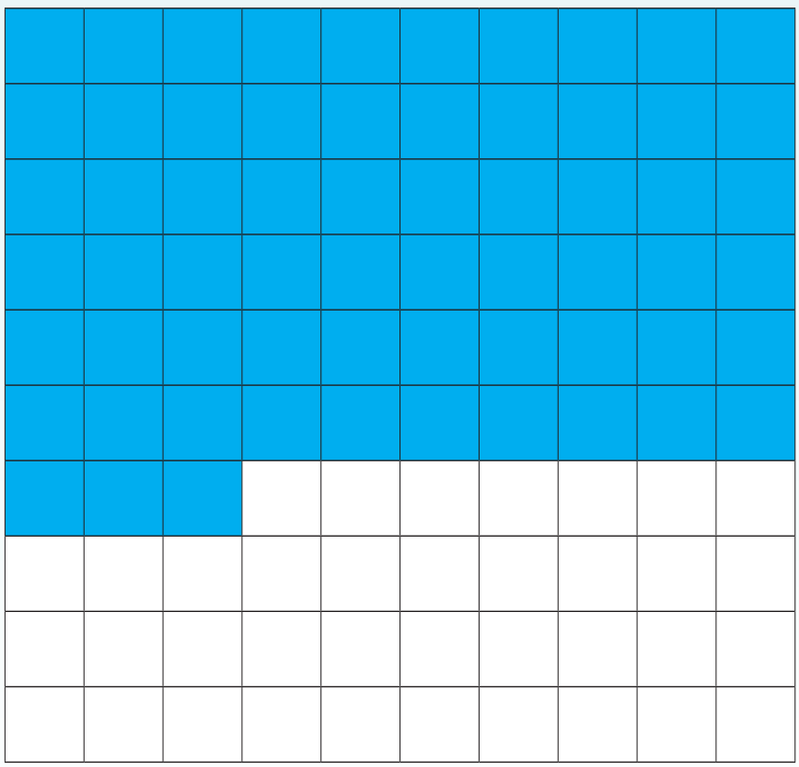


What fraction is blue? Write it as:

a fraction _____

a decimal fraction _____

b.

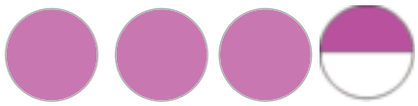
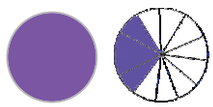
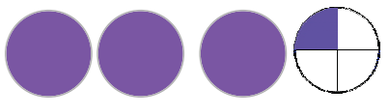


What fraction is blue? Write it as:

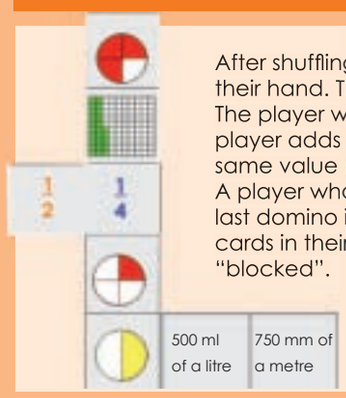
a fraction _____

a decimal fraction _____

4. What parts are shaded? Complete the table.

Shapes	Mixed number		Improper fraction
	Whole number	Proper fraction number	
	3	$\frac{1}{2}$	$\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=\frac{7}{2}$
			
			
			
			
			
			
			

Fraction Dominoes



After shuffling the 24 double cards from Cut-out 5, each player draws cards to make up their hand. The number of cards drawn depends on the number of players.
The player with the largest fraction starts to play by placing a card on the table The next player adds a card to an open end of the layout if he or she has a matching card of the same value (as in the game of Dominoes).
A player who cannot make a move must pass. The game ends when one player uses the last domino in his/her hand, or when no more plays can be made. If all players still have cards in their hand, but can no more moves can be made, then the game is said to be "blocked".

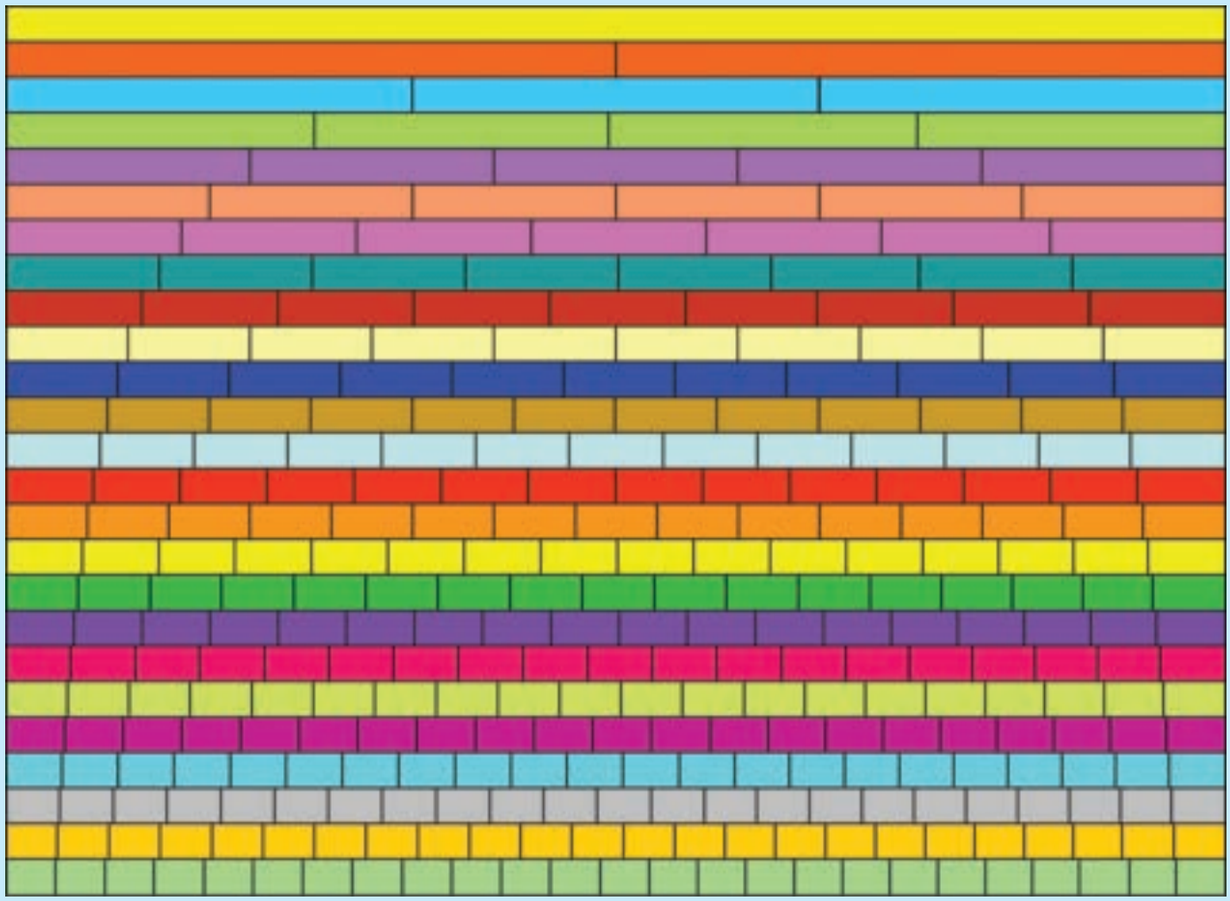
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

10a Equivalent fractions and more

Look at the fraction board. Name 20 different fractions that are equal to each other.



1. Complete the sums by using the example and fraction board to guide you.

Example:

$\frac{1}{2} = \frac{1}{4} + \frac{1}{4} = \frac{2}{4}$

a. $\frac{1}{2} = \frac{1}{8} + \_\_\_\_\_ = \_\_$

b. $\frac{1}{2} = \frac{1}{10} + \_\_\_\_\_ = \_\_$

c. $\frac{1}{2} = \frac{1}{2} + \_\_\_\_\_ = \_\_$

d. $\frac{1}{2} = \frac{1}{14} + \_\_\_\_\_ = \_\_$

e. $\frac{1}{2} = \frac{1}{6} + \_\_\_\_\_ = \_\_$

f. $\frac{1}{2} = \frac{2}{8} + \_\_\_\_\_ = \_\_$

2. Complete the fraction sums:

a. $\frac{1}{3} = \frac{1}{6} + \underline{\quad\quad} = \square$

b. $\frac{1}{3} = \frac{1}{9} + \underline{\quad\quad} = \square$

c. $\frac{1}{3} = \frac{1}{12} + \underline{\quad\quad} = \square$

d. $\frac{1}{3} = \frac{1}{15} + \underline{\quad\quad} = \square$

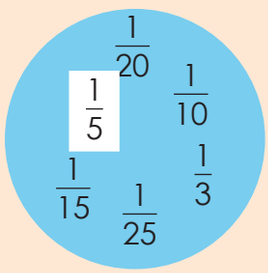
e. $\frac{1}{3} = \frac{1}{18} + \underline{\quad\quad} = \square$

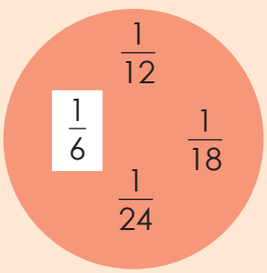
f. $\frac{1}{3} = \frac{1}{21} + \underline{\quad\quad} = \square$

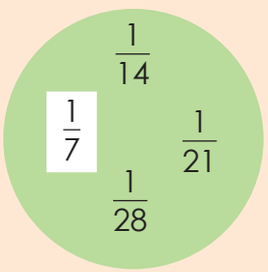
g. $\frac{1}{3} = \frac{1}{24} + \underline{\quad\quad} = \square$

Make your own sums

Use the fractions in the circles to write your own sums.







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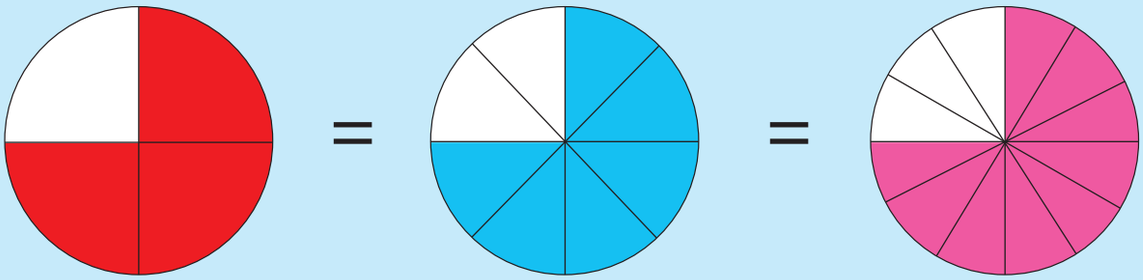
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

10b Equivalent fractions and more continued

Look at the fraction circles. What do you notice?

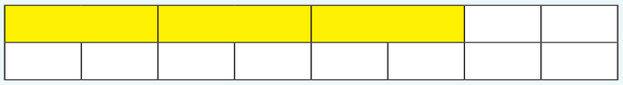


1. Complete the fraction sums using the diagrams above and on the right.

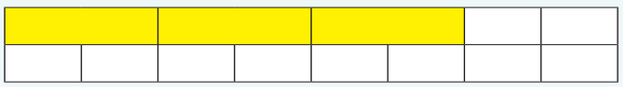
a. $\frac{3}{4} = \frac{1}{8} + \_\_\_\_\_ = \_\_$

b. $\frac{3}{4} = \frac{2}{8} + \_\_\_\_\_ = \_\_$

c. $\frac{3}{4} = \frac{1}{2} + \_\_\_\_\_ = \_\_$



d. $\frac{3}{4} = \frac{3}{12} + \_\_\_\_\_ = \_\_$



2. Complete the fraction sums using the diagrams below.

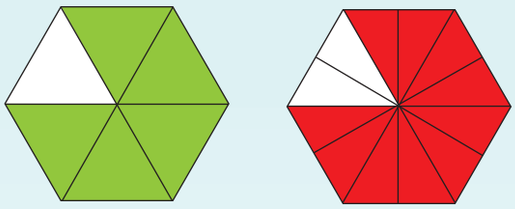
a. $\frac{2}{5} = \frac{1}{10} + \_\_\_\_\_ = \_\_$

b. $\frac{2}{5} = \frac{2}{10} + \_\_\_\_\_ = \_\_$

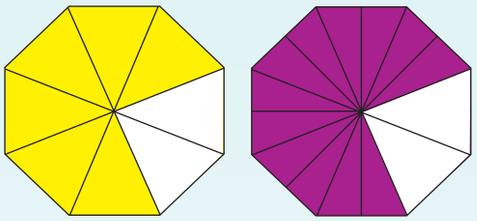
c. $\frac{2}{5} = \frac{1}{20} + \_\_\_\_\_ = \_\_$

d. $\frac{2}{5} = \frac{3}{20} + \_\_\_\_\_ = \_\_$

3. Fill in the missing fractions:

a. 

$\square = \frac{2}{12} + \frac{2}{12} + \frac{2}{12} + \frac{2}{12} + \frac{2}{12} + \frac{2}{12} = \square$

b. 

$\square = \frac{2}{16} + \frac{2}{16} + \frac{2}{16} + \frac{2}{16} + \frac{2}{16} + \frac{2}{16} + \frac{2}{16} + \frac{2}{16} = \square$

4. Complete the fractions to make them equal.

a. $\frac{2}{4} = \frac{\square}{8}$ b. $\frac{3}{4} = \frac{\square}{8}$ c. $\frac{2}{5} = \frac{\square}{10}$

d. $\frac{4}{5} = \frac{\square}{10}$ e. $\frac{5}{8} = \frac{\square}{16}$ f. $\frac{2}{8} = \frac{\square}{16}$

g. $\frac{6}{8} = \frac{\square}{4}$ h. $\frac{4}{8} = \frac{\square}{4}$ i. $\frac{2}{10} = \frac{\square}{5}$

j. $\frac{4}{10} = \frac{\square}{5}$ k. $\frac{2}{4} = \frac{\square}{2}$ l. $\frac{4}{4} = \frac{\square}{2}$

What is the magic fraction?

Add each column and then each row.

What do you notice?

Why do you think we call this a magic square?

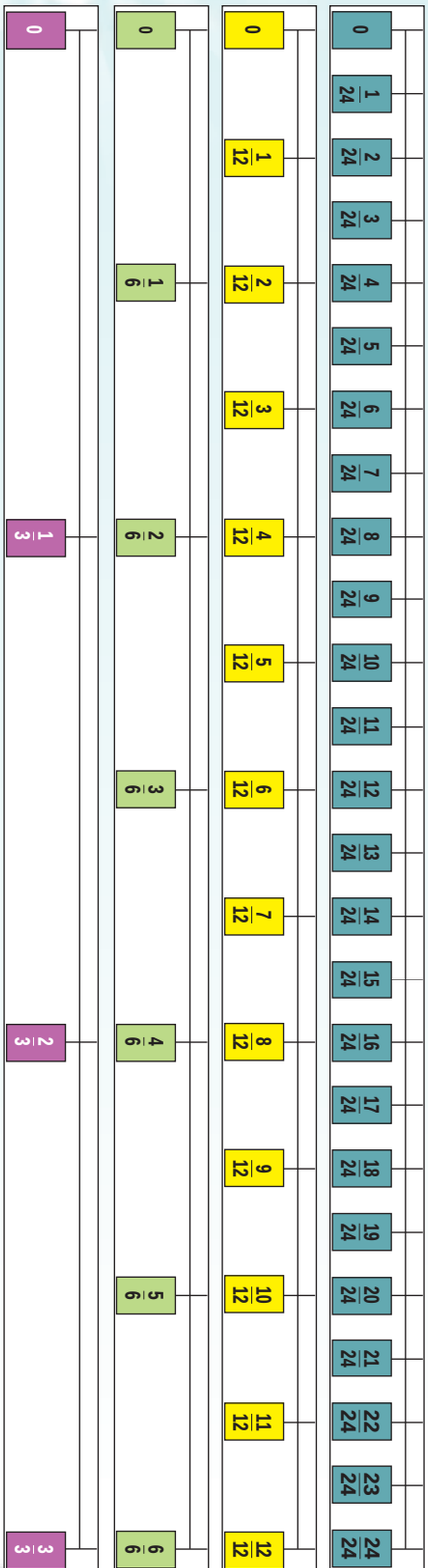
$\frac{4}{15}$	$\frac{3}{15}$	$\frac{8}{15}$
$\frac{9}{15}$	$\frac{5}{15}$	$\frac{1}{15}$
$\frac{2}{15}$	$\frac{7}{15}$	$\frac{6}{15}$

$\frac{8}{20}$	$\frac{1}{20}$	$\frac{6}{20}$
$\frac{3}{20}$	$\frac{5}{20}$	$\frac{7}{20}$
$\frac{4}{20}$	$\frac{9}{20}$	$\frac{2}{20}$

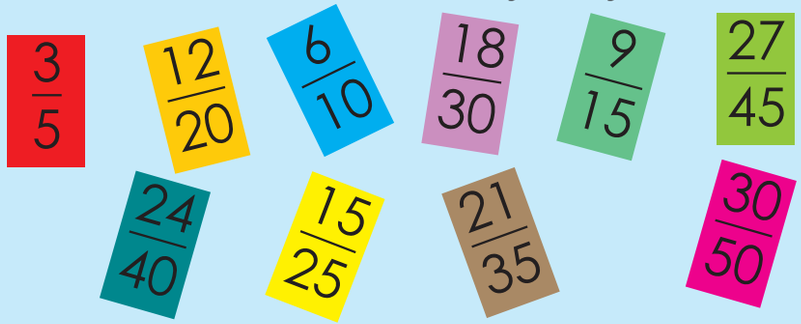
Sign:

Date:

10c Equivalent fractions and more continued



Look at these fractions. What can you say about them?



1. Answer the following questions using the fraction lines on the left.

a. $\frac{8}{24} = \_\_\_\_ = \_\_\_\_ = \frac{1}{3}$

b. Does that mean that $\frac{8}{24} = \frac{1}{3}$? _____

c. Which one is written in the simplest form? _____

d. $\frac{16}{24} = \_\_\_\_ = \_\_\_\_ = \_\_$

e. Does that mean that $\frac{16}{24} = \frac{2}{3}$? _____

f. Which one is written in the simplest form? _____

A fraction has two parts:

$\frac{2}{3}$ numerator

denominator

2. What happens to the numerator and denominator?

a. $\frac{1}{3} = \frac{2}{6} = \frac{4}{12} = \frac{8}{24}$ _____

b. $\frac{2}{3} = \frac{4}{6} = \frac{8}{12} = \frac{16}{24}$ _____

3. Fill in the missing numerator or denominator.

a. $\frac{1}{2} = \frac{\square}{8}$ b. $\frac{3}{4} = \frac{12}{\square}$ c. $\frac{2}{5} = \frac{\square}{15}$ d. $\frac{5}{7} = \frac{20}{\square}$

e. $\frac{5}{6} = \frac{25}{\square}$ f. $\frac{3}{4} = \frac{18}{\square}$ g. $\frac{7}{8} = \frac{35}{\square}$ h. $\frac{3}{10} = \frac{\square}{50}$

i. $\frac{1}{4} = \frac{\square}{40}$ j. $\frac{5}{2} = \frac{\square}{48}$ k. $\frac{3}{5} = \frac{24}{\square}$ l. $\frac{1}{3} = \frac{\square}{12}$

m. $\frac{4}{9} = \frac{\square}{36}$ n. $\frac{11}{2} = \frac{33}{\square}$ o. $\frac{6}{16} = \frac{\square}{32}$ p. $\frac{5}{9} = \frac{\square}{45}$

4. Fill in the missing numerator or denominator.

a. $\frac{5}{6} = \frac{10}{12} = \frac{15}{18} = \frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square}$

b. $\frac{9}{11} = \frac{18}{22} = \frac{27}{33} = \frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square}$

c. $\frac{4}{7} = \frac{8}{14} = \frac{12}{21} = \frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square}$

d. $\frac{3}{4} = \frac{6}{8} = \frac{9}{12} = \frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square}$

e. $\frac{2}{5} = \frac{4}{10} = \frac{6}{15} = \frac{\square}{\square} = \frac{\square}{\square} = \frac{\square}{\square}$

What is the magic fraction?

Write your magic fraction in the simplest form.

$\frac{16}{40}$	$\frac{3}{40}$	$\frac{2}{40}$	$\frac{13}{40}$
$\frac{5}{40}$	$\frac{10}{40}$	$\frac{11}{40}$	$\frac{8}{40}$
$\frac{9}{40}$	$\frac{6}{40}$	$\frac{7}{40}$	$\frac{12}{40}$
$\frac{4}{40}$	$\frac{15}{40}$	$\frac{14}{40}$	$\frac{1}{40}$

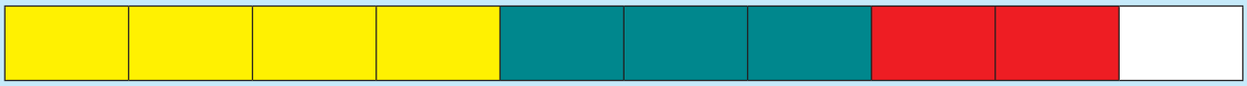
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

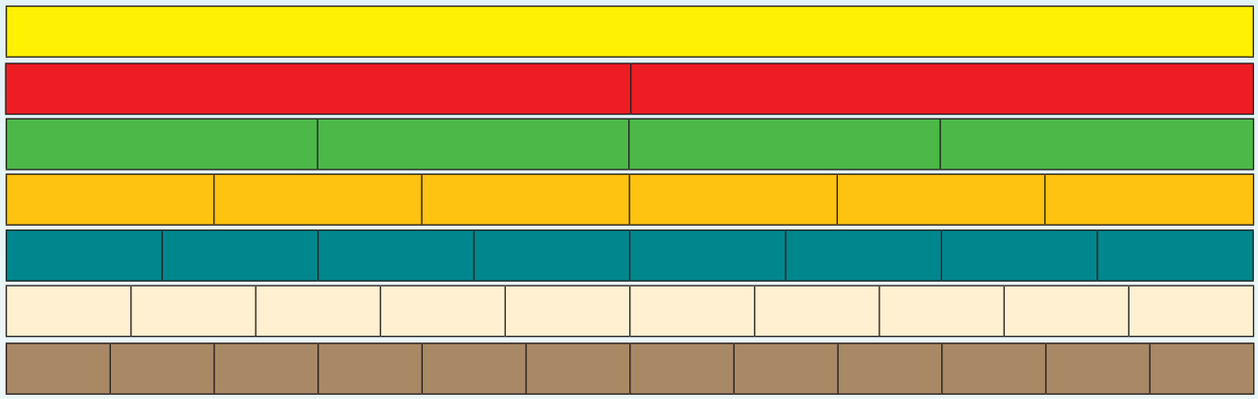
11 Addition and subtraction of fractions

Look at the diagram. Can you make an addition sum?



1 whole

1. Do these calculations. Use the diagram to help you.



a. $1 = \frac{1}{2} + \frac{1}{2}$

b. $1 = \frac{1}{4} +$ _____

c. $1 = \frac{1}{16} +$ _____

d. $1 = \frac{1}{8} +$ _____

e. $1 = \frac{1}{10} +$ _____

f. $1 = \frac{1}{12} +$ _____

g. $1 = \frac{3}{4} +$ _____

h. $1 = \frac{5}{8} +$ _____

i. $1 = \frac{7}{10} +$ _____

j. $1 = \frac{7}{12} +$ _____

2. Write a different sum for each and calculate the answer.

a. $\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \frac{\_}{4}$

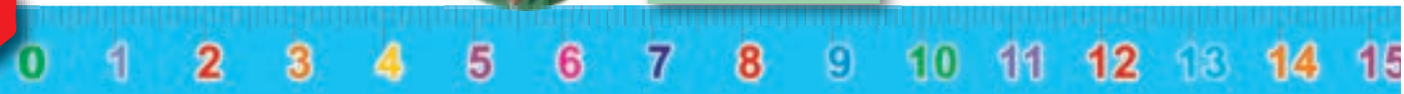
b. $\frac{2}{6} + \frac{1}{12} = \frac{\_}{12} + \frac{1}{12} = \_\_$

c. $\frac{3}{4} + \frac{2}{8} = \frac{\_}{8} + \frac{2}{8} = \_\_$

d. $\frac{1}{2} + \frac{3}{10} = \frac{\_}{10} + \frac{3}{10} = \_\_$

e. $\frac{5}{12} - \frac{1}{4} = \frac{5}{12} - \frac{3}{12} = \_\_$

f. $\frac{7}{8} - \frac{2}{4} = \frac{7}{8} - \frac{\_}{8} = \_\_$



What have you noticed so far?

Equivalent fractions are fractions that are equal.

If you don't have a fraction board you can form an equivalent fraction by multiplying or dividing the numerator and denominator of a fraction by the same number.

$\frac{1}{4} \times \frac{8}{8} = \frac{8}{32}$ $\quad\quad$ $\frac{8}{32} \div \frac{8}{8} = \frac{1}{4}$

This means $\frac{1}{4}$ is equivalent to $\frac{8}{32}$.

3. Complete the following using the method above.

a. $\frac{2}{3} = \frac{14}{21}$ $\quad$ b. $\frac{5}{6} = \frac{\square}{30}$ $\quad$ c. $\frac{20}{36} = \frac{5}{\square}$

d. $\frac{16}{20} = \frac{\square}{5}$ $\quad$ e. $\frac{7}{15} = \frac{28}{\square}$ $\quad$ f. $\frac{24}{56} = \frac{3}{\square}$

4. Add or subtract in the following sums.

Example:

$\frac{3}{8} \times \frac{2}{2} + \frac{5}{16}$

$= \frac{6}{16} + \frac{5}{16}$

$= \frac{11}{16}$

a. $\frac{5}{7} + \frac{2}{14}$

$= \square$

$= \square$

b. $\frac{7}{9} + \frac{1}{27}$

$= \square$

$= \square$

c. $\frac{3}{5} + \frac{2}{15}$

$= \square$

$= \square$

d. $\frac{12}{20} - \frac{1}{5}$

$= \square$

$= \square$

e. $\frac{9}{15} - \frac{2}{5}$

$= \square$

$= \square$

What is the magic fraction?

Add each column and then each row.

What do you notice?

Why do you think we call this a magic square?

$\frac{2}{5}$	$\frac{3}{10}$	$\frac{4}{5}$
$\frac{9}{10}$	$\frac{1}{2}$	$\frac{1}{10}$
$\frac{1}{5}$	$\frac{7}{10}$	$\frac{3}{5}$

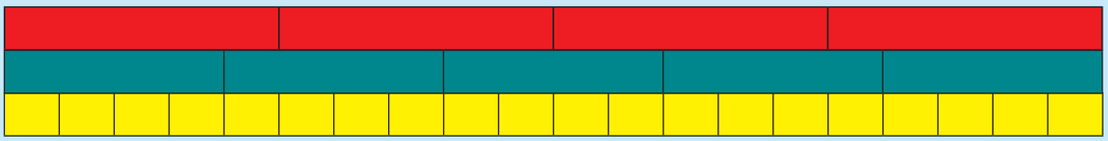
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

12 More addition and subtraction of fractions

Look at the diagram. What can you say about it?



1. Write an equivalent fraction for the following:

a. $\frac{1}{4} = \frac{\square}{20}$

b. $\frac{2}{4} = \frac{\square}{20}$

c. $\frac{3}{4} = \frac{15}{\square}$

d. $\frac{1}{5} = \frac{\square}{20}$

e. $\frac{3}{5} = \frac{12}{\square}$

f. $\frac{4}{5} = \frac{16}{\square}$

Example:

$\frac{1}{4} + \frac{1}{5}$

The multiples of 4 and 5 are:

4, 8, 12, 16, (20), 24, 28, 32, 36, (40), 44

5, 10, 15, (20), 25, 30, 35, (40), 45, 50

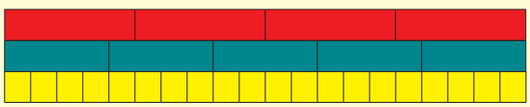
Common multiples of 4 and 5 are: 20, 40
The lowest common multiple is: 20

$\frac{1}{4} \times 5 \quad \frac{1}{5} \times 4$

$\frac{1}{4} \times 5 \quad \frac{1}{5} \times 4$

$= \frac{5}{20} + \frac{4}{20}$

$= \frac{9}{20}$



$\frac{1}{4} + \frac{1}{5}$

$\frac{5}{20} + \frac{4}{20} = \frac{9}{20}$

We can write **lowest common multiple** as **LCM**.

2. Calculate the following:

a. $\frac{2}{3} + \frac{3}{4}$

Multiples of 3: _____

Multiples of 4: _____

LCM: _____

= _____

= _____

b. $\frac{3}{5} + \frac{1}{6}$

Multiples of 5: _____

Multiples of 6: _____

LCM: _____

= _____

= _____

c. $\frac{1}{2} + \frac{2}{7}$

Multiples of ___: _____
Multiples of ___: _____
LCM: _____

= _____
= _____

d. $\frac{2}{3} + \frac{5}{8}$

Multiples of ___: _____
Multiples of ___: _____
LCM: _____

= _____
= _____

e. $\frac{3}{4} + \frac{1}{3}$

Multiples of ___: _____
Multiples of ___: _____
LCM: _____

= _____
= _____

f. $\frac{4}{5} + \frac{3}{9}$

Multiples of ___: _____
Multiples of ___: _____
LCM: _____

= _____
= _____

g. $\frac{3}{7} + \frac{1}{8}$

Multiples of ___: _____
Multiples of ___: _____
LCM: _____

= _____
= _____

h. $\frac{1}{2} + \frac{5}{11}$

Multiples of ___: _____
Multiples of ___: _____
LCM: _____

= _____
= _____

3. I had $\frac{1}{10}$ of the cake.

My friend had $\frac{1}{9}$ of the cake.

How much cake did we have?

Complete the magic fraction square

	$\frac{3}{5}$	
$\frac{1}{5}$	$\frac{1}{3}$	
		$\frac{6}{15}$

Sign:

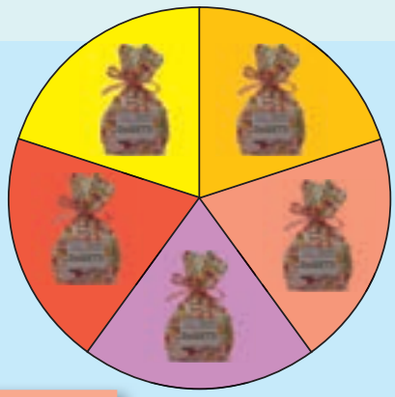
Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

13 Fractions of whole numbers (proportional sharing)

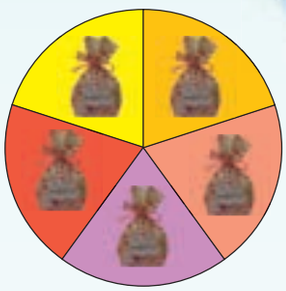
There are 100 sweets in each bag.

- Into how many equal parts is the circle divided?
- Let us count the parts in fractions: $\frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}, \frac{5}{5}$.
- How many bags of sweets are there?
- How many sweets are there in total? (5 x 100 = 500)
- What is $\frac{1}{5}$ of 500?



Did you get these answers?
The circle is divided into fifths.
There are five bags of sweets.
There are 500 sweets in total.
$\frac{1}{5}$ of the sweets is 100 because 500 ÷ 5 = 100.

1. Use the above diagram to answer these questions:



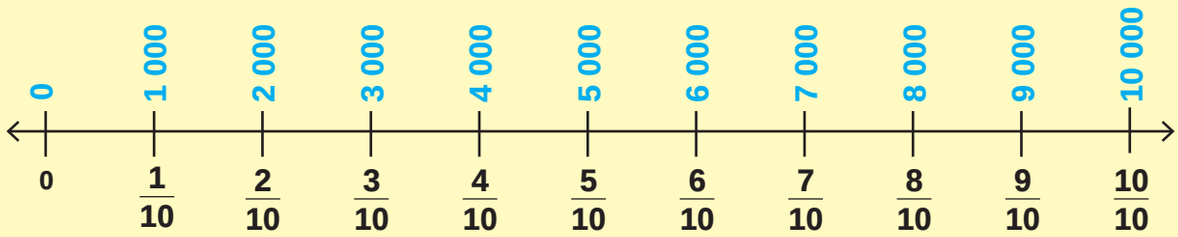
a. What is $\frac{2}{5}$ of 500? _____

b. What is $\frac{3}{5}$ of 500? _____

c. What is $\frac{4}{5}$ of 500? _____

d. What is $\frac{5}{5}$ of 500? _____

2. Use the number line below to answer the questions.



a. Into how many equal parts is the number line divided? _____

b. What whole number does each interval represent? _____

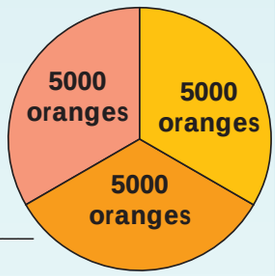
c. What is the total of the number line? _____

d. If I say that $\frac{1}{10}$ of 10 000 is 1 000, what is:

i) $\frac{2}{10}$ of 10 000 ? _____ ii) $\frac{5}{10}$ of 10 000 ? _____

iii) $\frac{3}{10}$ of 10 000 ? _____ iv) $\frac{9}{10}$ of 10 000 ? _____

3. Use the fraction circles to answer the following:



a. The number of oranges taken to market in three months.

i. How many oranges were transported to the market? _____

ii. What is $\frac{1}{3}$ of the oranges? _____

iii. What is $\frac{2}{3}$ of the oranges? _____

b. Total number of people visiting an exhibition for six days.

i. How many people in total visited the exhibition? _____

ii. What is $\frac{1}{7}$ of the people? _____

iii. What is $\frac{2}{7}$ of the people? _____

iv What is $\frac{5}{7}$ of the people? _____

v. What is $\frac{7}{7}$ of the people? _____

vi. What is $\frac{2}{7}$ of the people? _____

c. The total value of the goods they sold in one year.

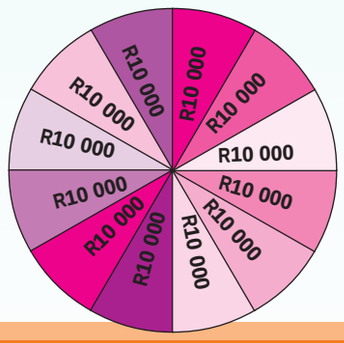
i. What is the total value of the goods sold per year? _____

ii. What is $\frac{3}{12}$ of the total amount? _____

iii. What is $\frac{4}{12}$ of the total amount? _____

iv. What is $\frac{8}{12}$ of the total amount? _____

v. What is $\frac{10}{12}$ of the total amount? _____



Problem solving

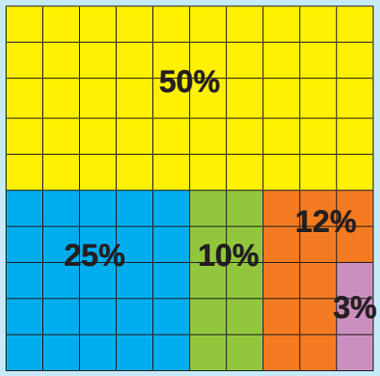
I pack groceries to the value of R800 in my shopping basket. At the till I am told that I will be getting $\frac{3}{4}$ off the total amount. What will I pay?

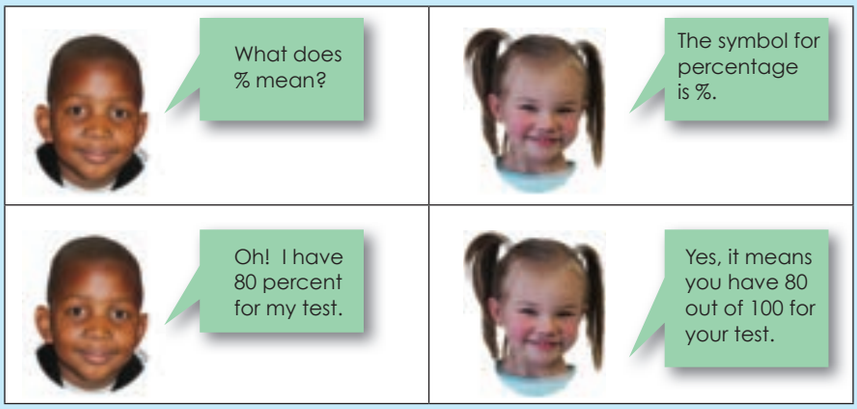
Sign:

Date:

14 Percentage and fractions

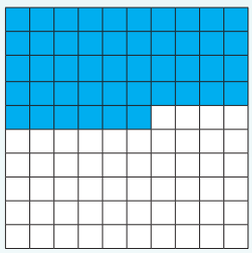
What part of the square is yellow? blue? green? red? purple? Give your answer in fractions.

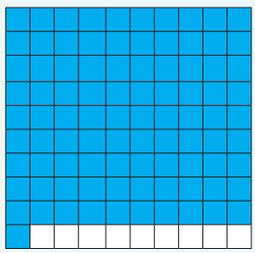


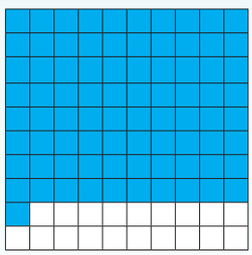


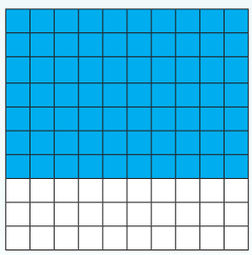
1. **What fraction of the above square is blue?** _____

2. **What percentage of the square is blue?**

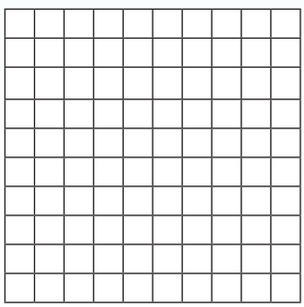
a. 
i. _____
ii. _____

b. 
i. _____
ii. _____

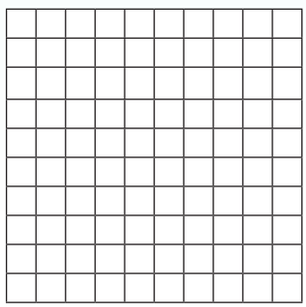
c. 
i. _____
ii. _____

d. 
i. _____
ii. _____

3. **Colour in $\frac{73}{100}$.**
Write your answer as a percentage.


_____

4. **Colour in 99 per cent.**
Write your answer as a fraction.

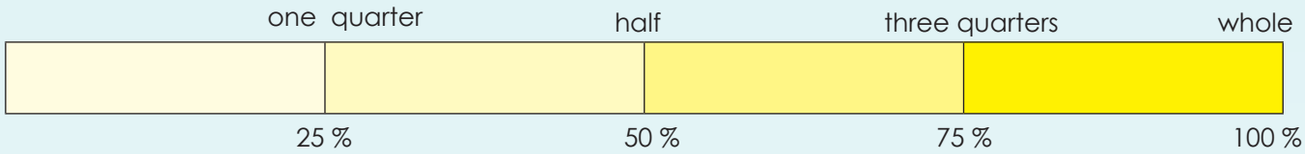

_____

What did we learn so far?

Parts of a whole can be described using percentages too.

A percentage is an amount out of 100 and is written like this: %.

5. Complete the following:



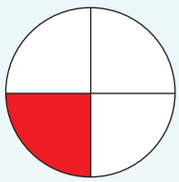
a. 100 % means <u>all</u> of a whole.

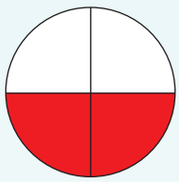
b. 50 % means _____ of a whole.

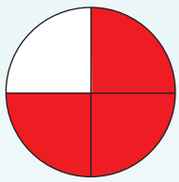
c. 25 % means _____ of a whole.

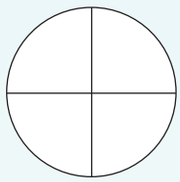
d. 75 % means _____ of a whole.

6. What percentage of the circle is red?

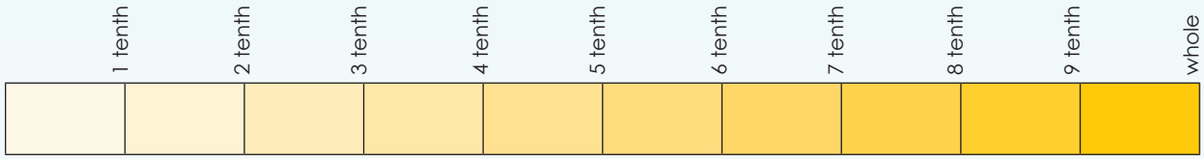
a. _____ 

b. _____ 

c. _____ 

d. _____ 

7. Look at the diagram and answer the questions below.



a. 1 tenth = _____ % b. 4 tenths = _____ % c. 9 tenths = _____ %

What does cent mean?

century

centipede

centimetre

cent

percent

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

15 Percentages and decimals

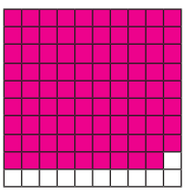
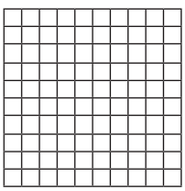
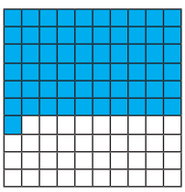
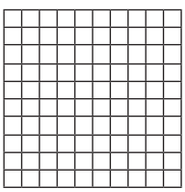
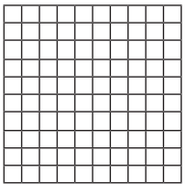
Match the fractions, decimal fractions and percentages that stand for the same amount:

75 % $\frac{1}{2}$ 28 % $\frac{28}{100}$ 30 % 50 % $\frac{3}{4}$

$\frac{25}{100}$ 0,01 $\frac{3}{10}$ 0,75 $\frac{1}{4}$ 0,28 $\frac{1}{10}$ 0,1

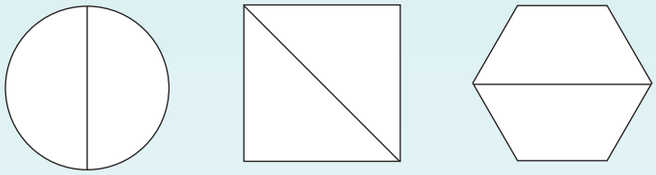
0,5 $\frac{1}{100}$ 25 % 0,3 1 % 0,25 10 %

1. Complete the table below.

	Fraction	Percentage	Decimal fraction
	$\frac{89}{100}$		0,89
		58%	
			
	$\frac{1}{4}$		
			0,75

2. Complete the following:

a. Colour in one half of each shape.



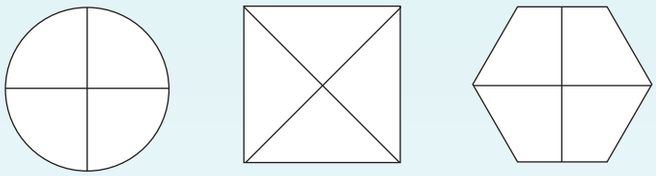
A **half** can be written...

As a fraction: _____

As a decimal: _____

As a percentage: _____

b. Colour in one quarter of each shape.



A **quarter** can be written...

As a fraction: _____

As a decimal: _____

As a percentage: _____

3. Answer the following:

a. What is 50 % of R1,00? _____

b. What is 0,5 of R1,00? _____

c. What is $\frac{1}{2}$ of R1,00? _____

d. What is 25 % of R1,00? _____

e. What is 0,25 of R1,00? _____

f. What is $\frac{1}{4}$ of R1,00? _____

4. Complete the following:

There are 120 children in grade 6.

a. 50 % of the children are boys. How many children are boys? _____

b. 25 % of the children like strawberry ice cream.
How many children like strawberry ice cream? _____

c. What percentage of children like other flavoured ice-creams? _____

How many children like other flavoured ice-creams? _____

Advertisement search

Go through a newspaper. See how many times can you find the symbol %.

Bring it to class to share with the other children.

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

16a Time

What is the time? Give your answer in hours, minutes and seconds.

1. Answer the following questions: How many:

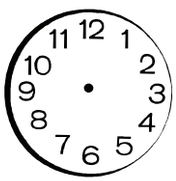
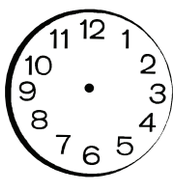
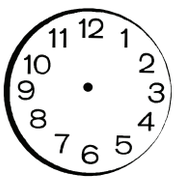
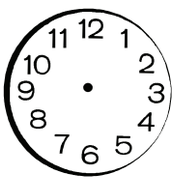
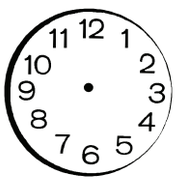
a. minutes are there in an hour? _____

b. seconds are there in a minute? _____

c. minutes are there in 6 hours? _____

d. seconds are there in 2 minutes? _____

2. Complete the table.

	a. One half of an hour is _____		b. One quarter of an hour is _____		c. One fifth of an hour is _____
	d. One half of a minute is _____		e. One quarter of a minute is _____		f. One fifth of a minute is _____

Very important to remember!!!

- 0,5 hours = 30 minutes, not 50 minutes. This is because decimals show fractions of tenths, hundredths, thousandths and so on. Minutes are measured in sixtieths of an hour.
- Similarly, $\frac{1}{4}$ hour = 15 minutes, and $\frac{1}{10}$ hour = 6 minutes.

3. This is how long I took to do my maths homework this week. Help me to complete this table.

Maths homework	Hours	Minutes	Seconds	hh:mm:ss	I started my homework at:	I finished it at:
Monday	2	32	5	02:32:05	15:00	
Tuesday				01:18:00	16:30	
Wednesday	1	24	7		15:30	
Thursday	0	55	25		15:45	
Friday				01:05:09	14:50	

Sign:

Date:

continued ☛

4. I visited my grandmother over the weekend. On Saturday, I arrived at her house at 10:35:02. I left on Sunday at 12:45:00. How long was my visit to my grandmother?

5. Answer the following questions:

a. How many days are there in a week? _____

b. How many days are there in each month?

Jan	Feb	March	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

c. How many days are there in a year? _____ in a leap year? _____

2015

January

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

March

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

July

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

August

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

September

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

October

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

November

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

December

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

d. How many months are there from 4 April to 4 December? _____

How many weeks? _____ How many days? _____

e. How many weeks are there from 3 February to 23 March? _____

How many days? _____

f. How many months, weeks and days are there from 18th of May to 26 October?

_____ _____ _____

g. How many months, weeks and days where there from 1 January this year until now?

_____

How many:

- days, weeks or months are there before your next birthday? _____ _____ _____
- days, weeks or months are there before your friend's birthday? _____ _____ _____
- days, weeks or months are there before your mother's birthday? _____ _____ _____

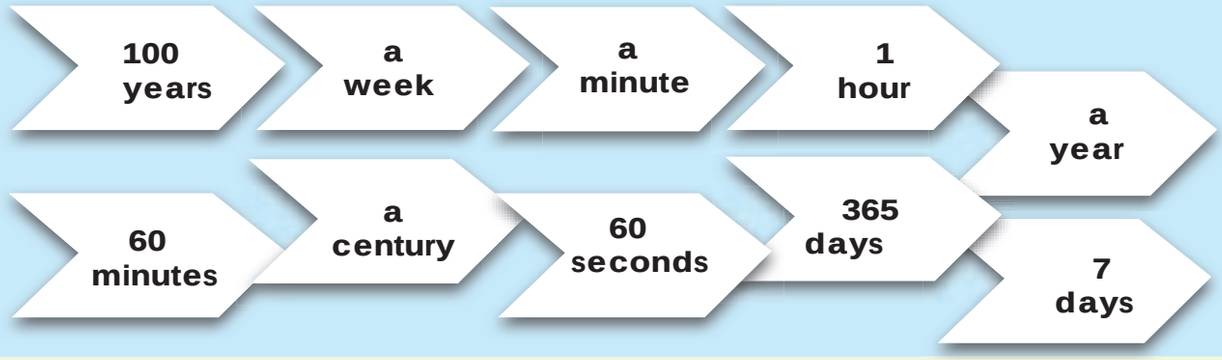
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

17a More time

Match the words about time that have the same meaning, and colour them the same colour.



1. Complete the following:

a. How many seconds are there in a minute? ____, hour? ____, day? ____

b. How many minutes are there in an hour? ____, day? ____, week? ____, month? ____

c. How many hours are there in a day? ____, week? ____, year? ____

d. How many days are there in a week? ____, a year? ____, a century? ____

e. How many years are there in a century? ____, 5 centuries? ____ 500 centuries? ____

2. Convert minutes to seconds:

a. 2 minutes ____

b. 55 minutes ____

c. $3\frac{1}{2}$ minutes ____

d. $10\frac{1}{4}$ minutes ____

e. $15\frac{1}{5}$ minutes ____

Why can we say this represents 30 seconds?

Why can we say this represents 15 seconds?

3. Convert hours to minutes.

a. 2 hours _____

b. 48 hours _____

c. $20\frac{1}{2}$ hours _____

d. $30\frac{1}{4}$ hours _____

e. $12\frac{1}{5}$ hours _____

Why can we say this represents 30 minutes?

Why can we say this represents 15 minutes?

4. Convert hours to seconds.

a. 1 hour _____

b. 12 hours _____

c. 30 hours _____

d. $4\frac{1}{2}$ hours _____

e. $20\frac{1}{4}$ minutes _____

__ x 60 x 60

5. Complete the table.

Weeks	1	1,5	2	2,5	3	3,5	4	4,5	5	6,5	7
Days		$10\frac{1}{2}$									
Hours		252									
Minutes											

6. Convert years to weeks and days:

	Weeks	Days
a. 2 years		
b. 5 years		
c. 10 years		
d. $1\frac{1}{2}$ year		
e. $15\frac{1}{2}$ years		

A calendar will help me to see how many weeks and days there are in a year.

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

17b More time continued

7. Convert centuries to years:

a. 2 centuries _____

b. 30 centuries _____

c. $5\frac{1}{2}$ centuries _____

d. $6\frac{1}{4}$ centuries _____

e. $8\frac{1}{5}$ centuries _____

A centipede has 100 legs.

Centi means 100

100

8. Time Zones:

a. What is a time zone?

_____

b. How many time zones are there in the world? _____

c. Name 6 other countries in the same time zone as South Africa.

_____ _____ _____

_____ _____ _____

d. Explain why we have different time zones in the world.

_____

9. Use a telephone directory to help you answer this question.
I want to telephone people in the following places. I want to telephone when it is 8 pm their time. What time here in South Africa should I call?

a. Sydney, Australia _____

b. Boston, United States of America _____

c. London, United Kingdom _____

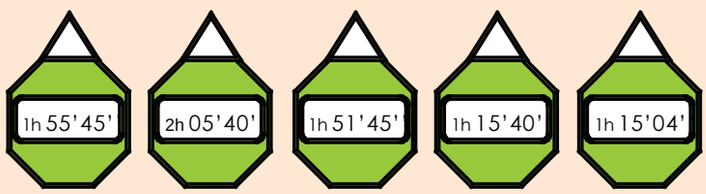
d. Lagos, Nigeria _____

e. Kolkata, India _____

10. Find out what "daylight saving" is.
Some people think that we should have daylight saving in South Africa. What do you think, and why?

Treasure hunt

We went on a "treasure hunt". Our teacher gave us a map and some clues. The competition was between 5 groups. The winner is the group that found a treasure first. There were five hidden treasures. Our teacher timed us with a stop watch. The groups' times were as follows.



- Which group came first? Which group came last?
- How many seconds did each group take?
- What is the difference in time between groups A and E, A and B, A and C, B and D, A and D, B and E, D and C, B and C.

Sign:

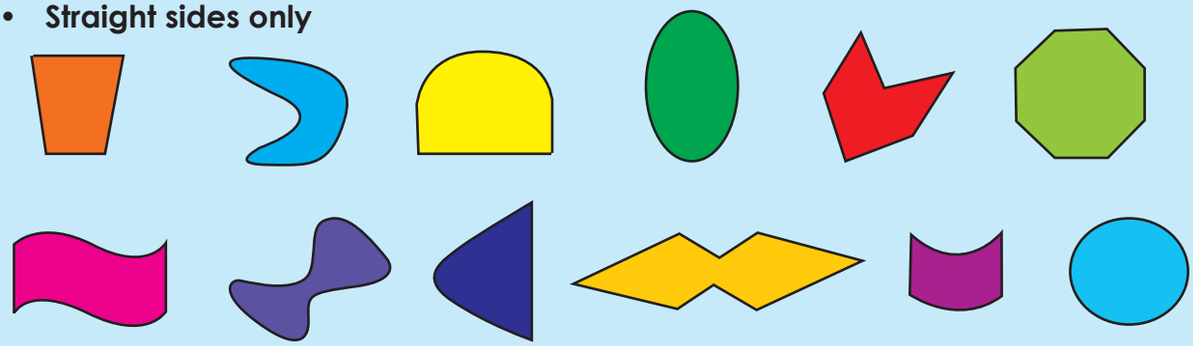
Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

18a 2-D shapes and sides

Identify the shapes with:

- **Curved sides only**
- **Curved and straight sides**
- **Straight sides only**



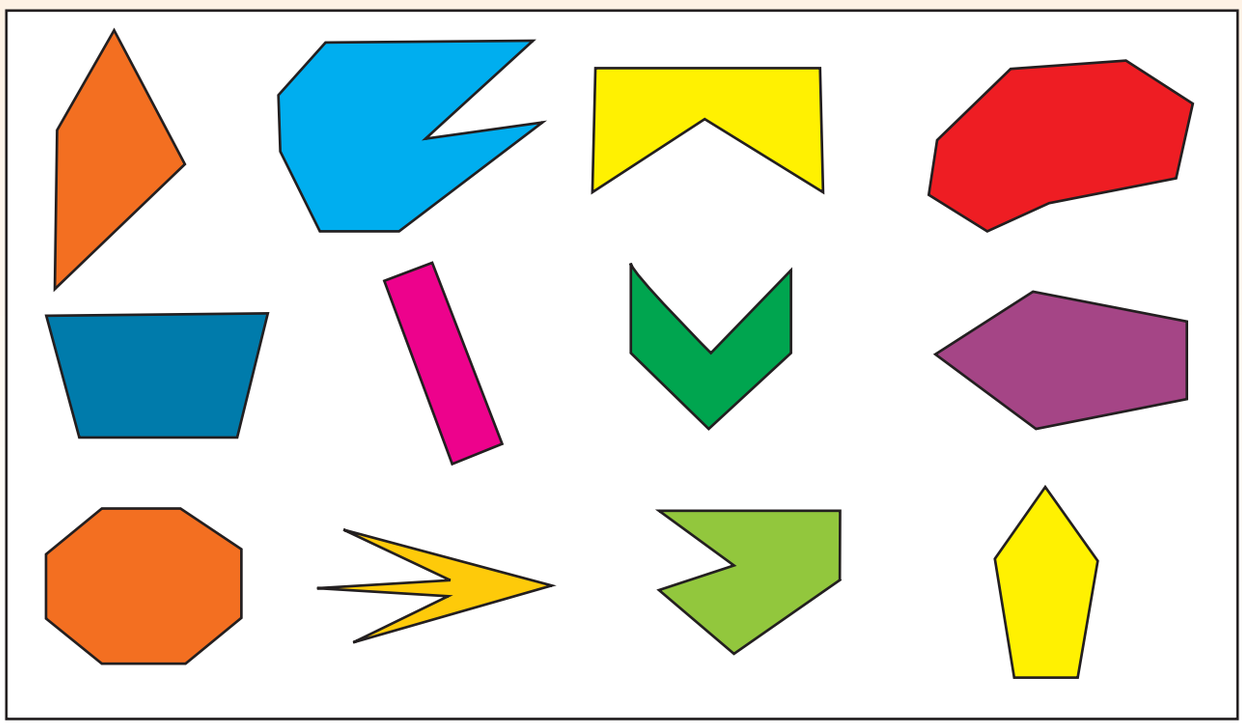
1. Identify the following by writing a, b, c or d on the shape.

a. Quadrilaterals

b. Pentagons

c. Hexagons

d. Octagons



2. Draw the following. Measure the sides and label them.

a. A quadrilateral with sides the same length.	b. Three quadrilaterals with sides that are different lengths.
c. A pentagon with sides the same length.	d. Hexagons with sides that are different lengths.

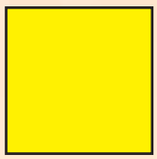
Sign:

Date:

18b 2-D shapes and sides continued

3. Answer the following:

a. Here are two specific quadrilaterals. Name them.

i.  _____

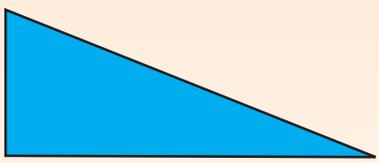
ii.  _____

b. Describe each quadrilateral.

i. _____

ii. _____

4. Is a triangle a polygon? Why?

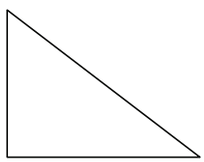
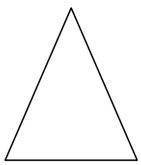
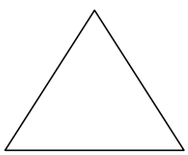
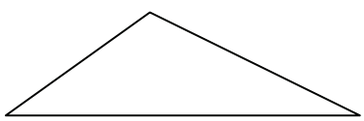


_____

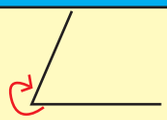
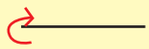
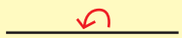
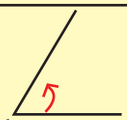
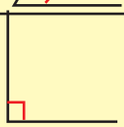
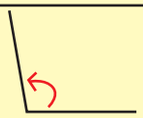
5. Mark the sides and angles of each triangle below, using the following as labels.

Angles
Right angles (R)
Smaller than right angles (A)
Bigger than right angles (O)

Sides
Straight sides (S)
Curved sides (C)
Sides of equal length (/)
Length of sides

i. 	ii. 
iii. 	iv. 

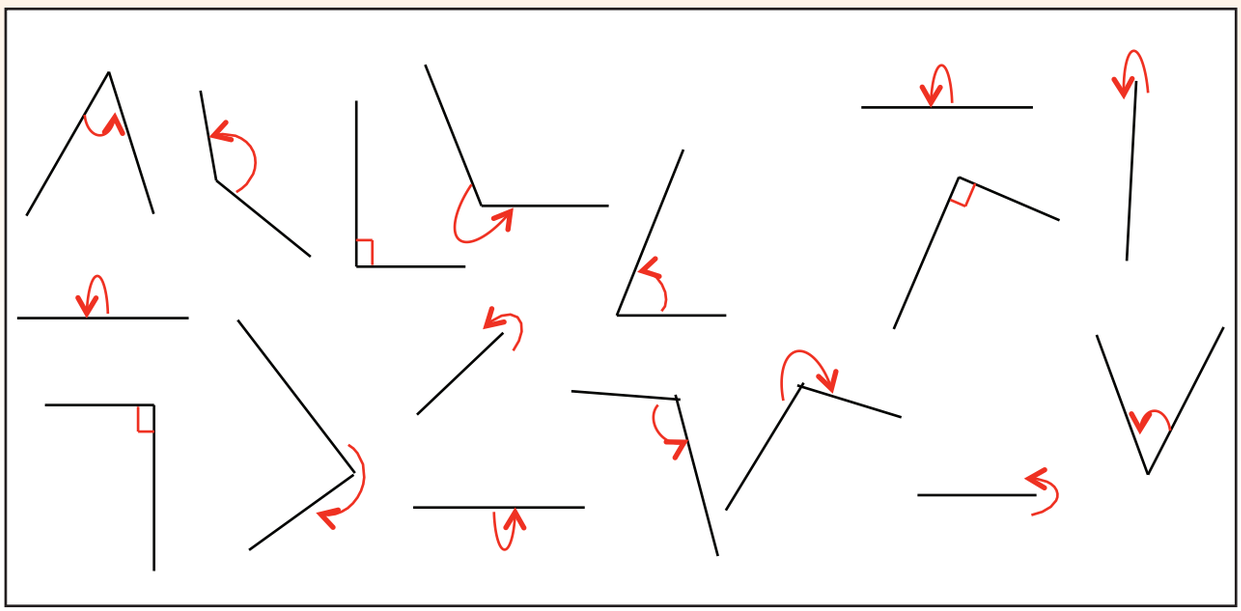
6. Describe and name each angle.

	Description	Name
		
		
		
		
		
		

7. Identify the angles by placing the alphabet letters next to them.

a. Right angle b. Acute angle c. Obtuse angle

d. Reflex angle e. Straight line f. Revolution



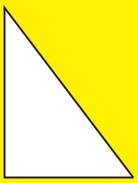
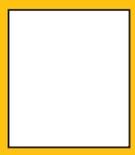
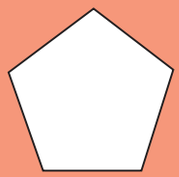
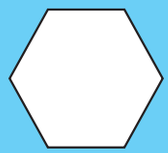
Sign:

Date:

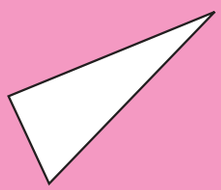
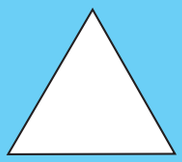
continued ☛

18c 2-D shapes and sides continued

8. Fill in the table below:

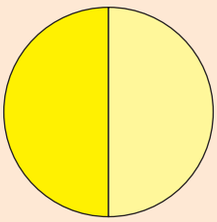
	a. 	b. 	c. 	d. 	e. 
Sides (straight or curved):	Straight				
Length (equal or different):	Different				
Number of sides:	3				
Right angle?:	Yes				

9. Compare and describe the following triangles drawn.

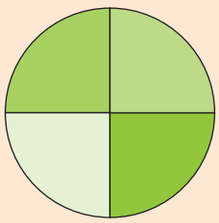
			

Shapes, fractions and angles

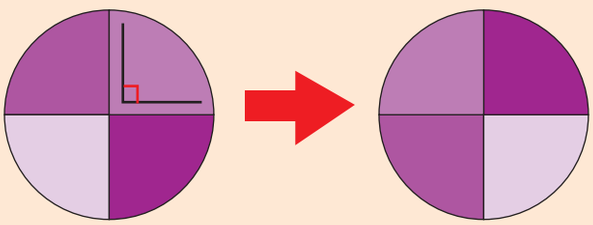
Two equal parts.
We say halves.



Four equal parts.
We say quarters.



This angle made a three quarter turn. Why do you say so?



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Date:

19a Circles

How to draw a circle. Follow the steps to get your pair of compasses ready to draw a circle.

To draw a circle accurately, use a pair of compasses.	Set the compass to the radius of the circle. (The radius is the distance between the centre and the circumference; it is half the diameter.)	Make sure that the hinge at the top of the compass is tightened so that it does not slip.	Tighten the holder for the pencil so it does not slip.
			

1. Use a compass to draw a circle that has a:

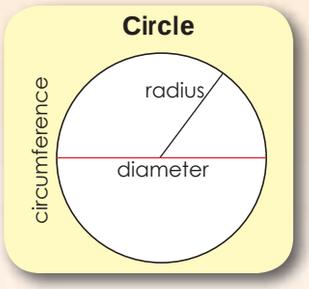
a. radius of 5 cm.

b. radius of 4,5 cm.

c. radius of 10 cm.

d. diameter of 12 cm.

e. diameter of 15 cm.



Sign:

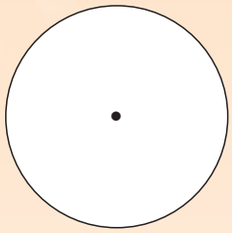
Date:

continued ☛

19b Circles continued

2. Draw a radius for each of the following circles. Measure the radius and give your answer in mm and cm.

a.

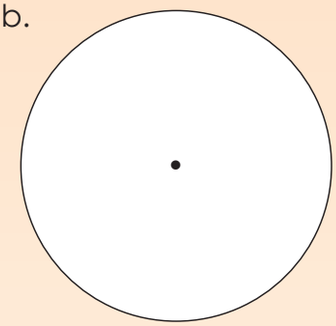


Radius

_____ mm

_____ cm

b.

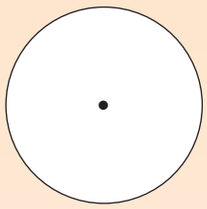


Radius

_____ mm

_____ cm

c.



Radius

_____ mm

_____ cm

d. Draw a diameter for each of the circles above. Measure the diameter and give your answer in mm and cm.

Diameter

_____ mm

_____ cm

Diameter

_____ mm

_____ cm

Diameter

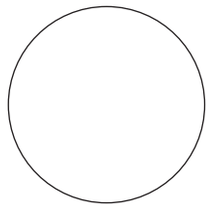
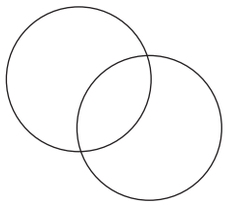
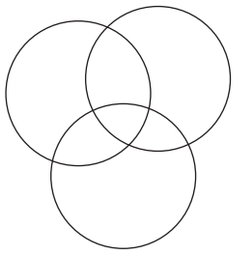
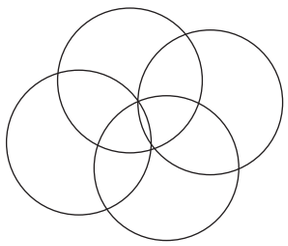
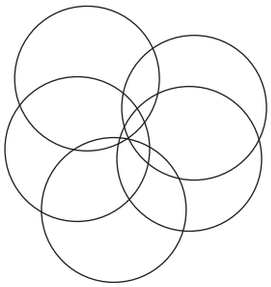
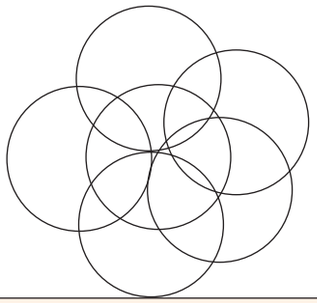
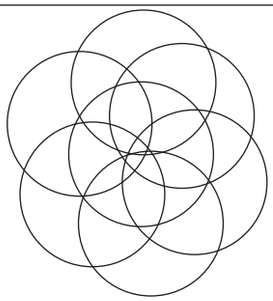
_____ mm

_____ cm

e. The radius is _____ (fraction) of the diameter.

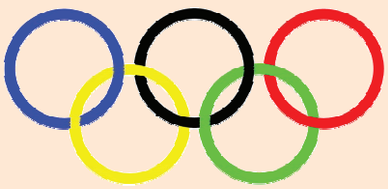
f. The diameter is _____ times that of the radius.

3. Follow the pictures and draw the pattern with your compass.

Step 1 	Step 2 
Step 3 	Step 4 
Step 5 	Step 6 
Step 7 	

Circles everywhere

What is this?



- Make your own circle design.
- You may only use circles.
- Use different colours.
- Name your design.

Sign:

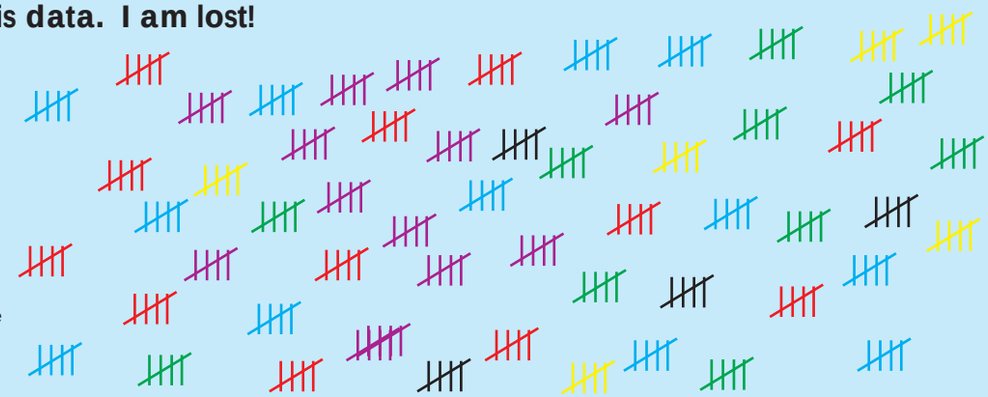
Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

20 Frequency tables

Help me to sort this data. I am lost!

I collected data about children's favourite colour. As I asked them I made these tally marks on a piece of paper.



1. Complete the frequency table below using the data above.

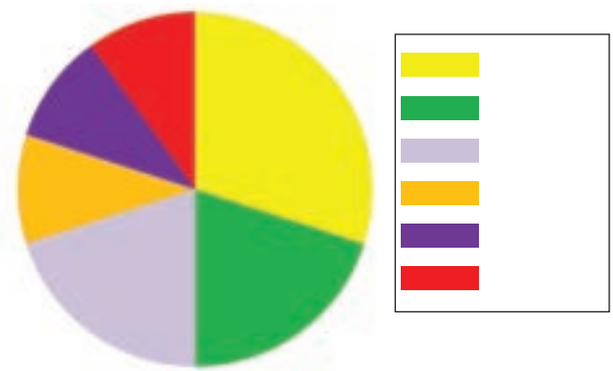
Colour	Tally	Frequency
Red		

2. You collected information about the favourite type of chocolate in your school. Each person wrote their answer on a small piece of paper. Use this information to complete the frequency table on the next page.

Tex	Aero	Kit Kat	Kit Kat	Bar one	Aero	Kit Kat	Aero	Lunch bar	Kit Kat
Kit Kat	Tex	Bar one	Aero	Aero	Tex	Lunch bar	Lunch bar	Tex	Kit Kat
Kit Kat	Rolo	Aero	Rolo	Rolo	Rolo	Tex	Tex	Aero	Kit Kat
Tex	Bar one	Rolo	Tex	Rolo	Kit Kat	Kit Kat	Aero	Kit Kat	Kit Kat
Rolo	Kit Kat	Tex	Kit Kat	Bar one	Aero	Lunch bar	Kit Kat	Aero	Kit Kat
Bar one	Rolo	Kit Kat	Kit Kat	Aero	Tex	Bar one	Lunch bar	Tex	Aero
Tex	Kit Kat	Aero	Rolo	Kit Kat	Kit Kat	Aero	Kit Kat	Lunch bar	Tex
Rolo	Kit Kat	Kit Kat	Bar one	Kit Kat	Lunch bar	Kit Kat	Aero	Bar one	Lunch bar
Bar one	Aero	Tex	Aero	Tex	Tex	Lunch bar	Kit Kat	Aero	Kit Kat
Kit Kat	Tex	Aero	Kit Kat	Lunch bar	Tex	Bar one	Tex	Tex	Aero

3. Use the information from the frequency table above to label the pie chart below.

Title: _____



Newspaper search ...

Find a table in any newspaper. Write down three or more things you learned from the table.

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

21 Mean, median and mode

When we have a list of numbers as part of some data, we often find it useful to work out the average number.

I kept a record of last week's weather. I wonder what the average temperature was for that school week.

Monday	Tuesday	Wednesday	Thursday	Friday
18^0	18^0	21^0	23^0	23^0

18 + 18 + 21 + 23 + 20 = 100
= 100 ÷ 5
= 20

So we need to divide 100 by 5 to get the average, because we have five days.

This kind of average is called the **mean**. The mean is the sum of all the numbers divided by the number of numbers.

There are two other kinds of average, the **median** and the **mode.**

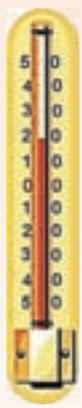
The **median** is the number that is in the middle after you have put the numbers in order. In the above example 20° C is the median.

The **mode** is the most commonly occurring number in a set of numbers. In the example 18° C is the mode.

1. Work through this set of temperature readings and fill in the missing information.

Here are the temperatures for nine days in April.

°C	22	21	22	21	20	19	22	23	20



a. Put the temperature in ascending order. We started it for you.

°C	19	20	20						

b. What number occurs the most often? _____

c. What is this kind of average called? _____

d. Look at the numbers placed in order above. What is the middle number? _____

e. What is this average called? _____

f. Calculate the mean of these numbers. _____

g. Now that you have the mean, say which temperatures are above and which below the mean. Above : _____

Below: _____

2. Mathematics assessment results

Week 1	Week 2	Week 3	Week 4	Week 5
40	50	40	60	40

a. What is the median score? _____ b. What is the mode? _____

3. Language assessment results

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
80	70	60	40	70	70	50

a. What is the mode? _____ b. What is the median score? _____

4. Natural Sciences assessment results

Week 1	Week 2	Week 3	Week 4	Week 5
52	61	60	52	59

a. What is the median score? _____ b. What is the mode? _____

5. Here are the heights of children measured in a class.

135 cm, 145 cm, 125 cm, 135 cm, 145 cm, 145 cm, 125 cm, 120 cm, 120 cm, 130 cm and 115 cm.

a. What is the median score? _____ b. What is the mode? _____

6. Here are the results from goals scored by the netball team during practice sessions.

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
80	70	60	40	70	70	50

a. What is the median score? _____

b. What is the mode? _____

Getting mean

Calculate the mean score for questions 2 to 6.

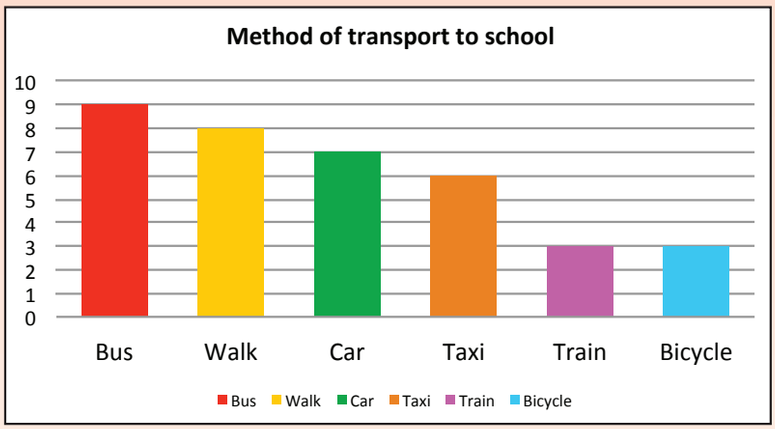
22 Read graphs and interpret bar graphs and pie charts

A double bar graph is similar to a regular bar graph, but gives two sets of related information.

Say five things about this double graph.

What information could you add to the double bar graph? Why?

1. Look at the bar graph and answer the questions.



a. What information could you add to this bar graph? _____

b. How many learners are there in the class? _____

c. Which method of transport is the most popular? _____

d. Which method is the least popular? _____

e. How many more learners use the bus than the taxi? _____

f. Why do you think more learners use the bus than the taxi?

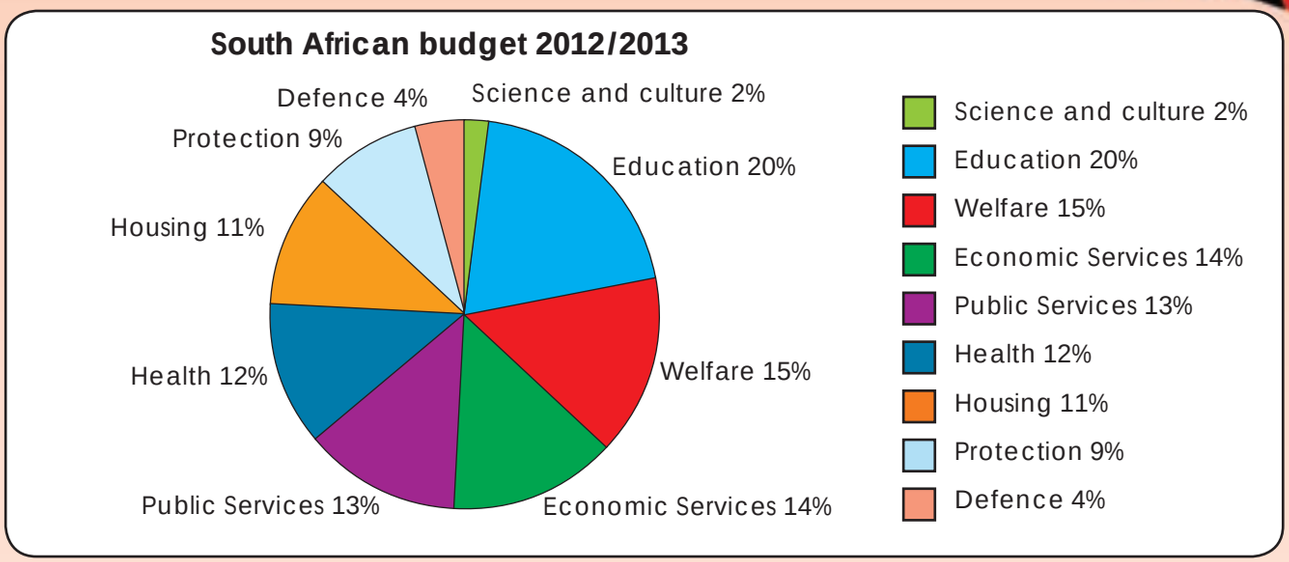
_____

g. Do you think most learners live far from or close to the school?

_____

h. What percentage of the learners uses public transport? _____

2. What would you do to improve the topic of this pie chart?



3. Answer the following questions on the pie chart.

a. What is a pie chart?'

_____

_____

b. Will the sectors always be in percentage? _____

c. Will it always add up to 100% ? _____

d. What was the biggest expense in the South African budget? _____

e. What was the smallest expense in the South African budget? _____

f. Write three sentences on the pie chart.

_____

_____

_____

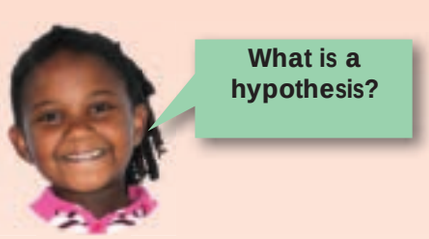
Waste not want not

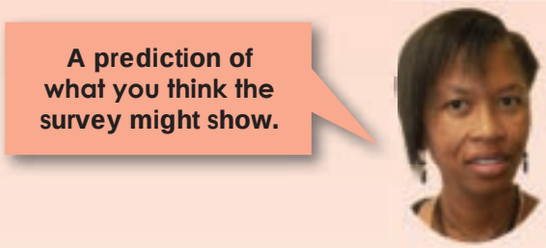
We collected some waste in our schools. This was the result for one day: 10 kg paper, 3 kg plastic, 2 kg glass, 3 kg metal and 2 kg organic waste. Show this by drawing a bar graph. Write down five sentences about your graph.

23 Questionnaires

A common method of collecting data for a survey is to use a questionnaire. Questionnaires come in many forms and are carried out using a variety of methods.

1. Before starting, we need to come up with a hypothesis.





Here are some examples of a questionnaire hypothesis:

- Everybody in Grade 6 owns a cellphone.
- Everybody in Grade 6 understands square division.
- Everybody in Grade 6 likes junk food.

a. Write down a hypothesis that you think you can use in your questionnaire.

_____

b. After you have decided on the hypothesis, you need to decide what type of questions you will ask.

Examples of common question styles

- Yes/No answers
- Tick boxes
- Word responses
- Questions that require a sentence to be written

Give an example of a Yes or No question that links with your hypothesis above.

_____

2. Complete the following for two different situations.

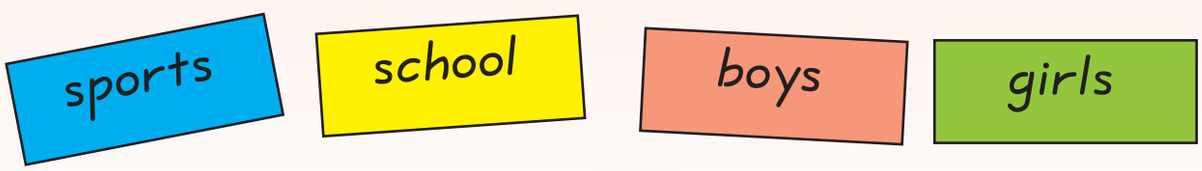
Example:
Hypothesis
Everybody in Grade 6 owns a cellphone.

Type of questionnaire
By post/By email/ Face to face

Type of questions and example
Yes/No questions. Do you own a cellphone? Yes/No

a.	b.
Hypothesis _____ _____ Type of questionnaire _____ Type of questions and example _____ _____ _____	Hypothesis _____ _____ Type of questionnaire _____ Type of questions and example _____ _____ _____

3. Write a hypothesis using the following words: school, boys and girls.



24a All about number patterns

Multiples	**Factors**
Some number sequences show multiples of different numbers: e.g. 5, 10, 15, 20, 25, 30, ... These numbers are multiples of 5. They can all be divided exactly by 5. Multiples include large numbers, not just numbers in easy time tables. For example, 240 is a multiple of 6 because it can be divided exactly by 6.	Factors are the opposites of multiples. They are those numbers that will divide exactly into other numbers. e.g. the factors of 15 are 1, 3, 5 and 15. These can be shown as pairs of factors: (1 and 15) and (3 and 5). Each pair can be multiplied to make 15.

1. Create a pattern that includes:

a. multiples	What is the rule?
b. factors	What is the rule?

2. Extend the following pattern.

a. Tip: prime numbers are special numbers that can only be divided by themselves and 1. 2, 3, 5, 7, 11, _____, _____, _____

b. Rule: multiply by 2 and add 1. 1, 3, 7, 15, _____, _____, _____

c. Rule: divide by 2 and add 2. 100, 52, 28, _____, _____, _____

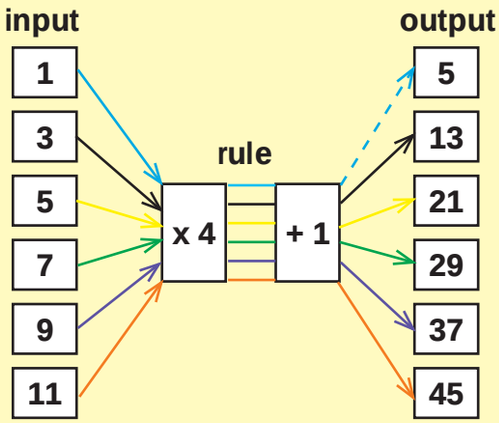
3. Create two of your own number patterns and ask your friend to extend it.

a. _____

b. _____

Patterns can be given in input-output flow diagrams or as number sentences.

Example 1: Flow diagram

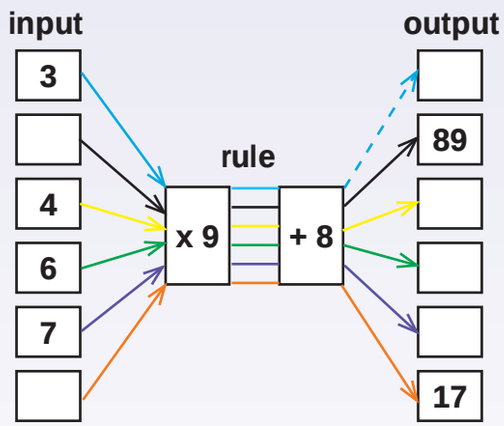


Example 2: Number sentences

1	X	4	+	1	=	5
3	X	4	+	1	=	13
5	X	4	+	1	=	21
7	X	4	+	1	=	29
9	X	4	+	1	=	37
11	X	4	+	1	=	45

4. Complete the flow diagrams, questions and then write all the number sentences for the flow diagram.

a. i. Flow diagram



ii. What are the input values?

_____

iii. What are the output values?

_____

iv. What is the rule? _____

v. Number sentences

vi. What will the output values be if the rule is + 2 x 7?

_____

continued ☛

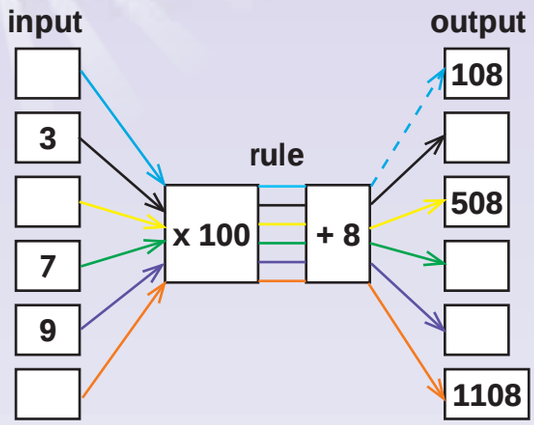
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

All about number patterns continued

b. i. Flow diagram



ii. What are the input values?

_____

iii. What are the output values?

_____

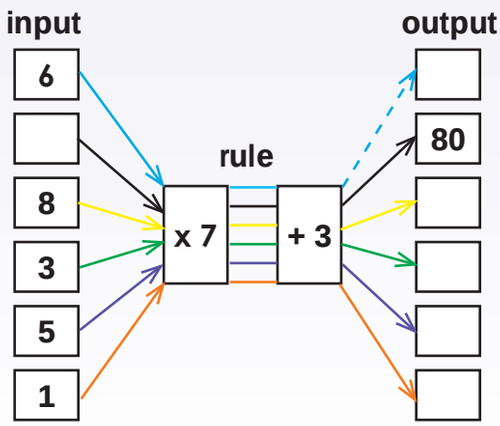
iv. What is the rule? _____

v. Number sentences

vi. What will the output values be if the rule is + 2 x 7?

_____

c. i. Flow diagram



ii. What are the input values?

_____

iii. What are the output values?

_____

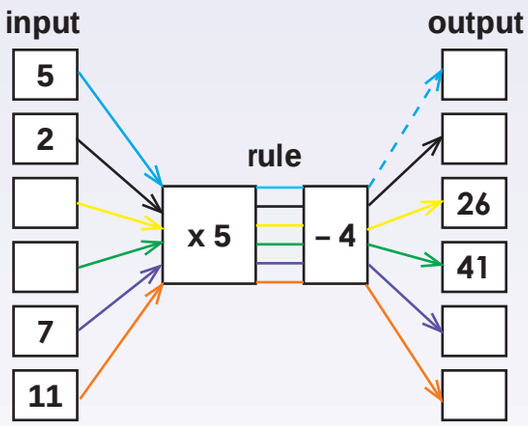
iv. What is the rule? _____

v. Number sentences

vi. What will the output values be if the rule is + 2 x 7?

_____

d. i. Flow diagram



ii. What are the input values?

_____

iii. What are the output values?

_____

iv. What is the rule? _____

v. Number sentences

vi. What will the output values be if the rule is – 4 x 5?

_____

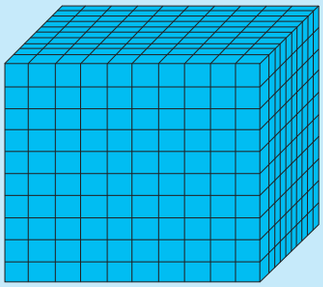
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

25a Numbers 0 – 200 000

How many of these blocks do you need to give you a total of 200 000 small cubes?



1. Complete the following:

a. 100 000 + 30 000 + 4 000 + 200 + 90 + 7 = _____

b. 100 000 + 80 000 + 2 000 + 100 + 70 + 5 = _____

c. 100 000 + 60 000 + 2 000 + 100 + 50 = _____

d. 100 000 + 70 000 + 2 000 + 50 + 6 = _____

e. 100 000 + 5 = _____

2. Write the right number in the correct column:

		Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units
a.	187 432						
b.	174 501						
c.	165 002						
d.	160 005						
e.	100 004						

3. Write the numbers in question 2 in words.

4. Complete the following using the first question to guide you.

a. 145 342 = 1 hundred thousand + 4 ten thousands + 5 thousands + 3 hundreds + 4 tens + 2 units

b. 178 901 =

c. 134 005 =

d. 176 000 =

e. 169 009 =

Sign:

Date:

continued ☛

25b Numbers 0–200 000 continued

5. Write the numbers in question 4 in words in your workbook.

6. Arrange the numbers from the smallest to the biggest.

a. 113 432, 113 234, 113 324 _____

b. 122 221, 122 122, 122 212 _____

c. 110 456, 100 456, 101 456 _____

d. 189 378, 183 978, 187 938 _____

e. 404 404, 404 440, 404 044 _____

7. Fill in < or >.

a. 128 394 ____ 128 349

b. 199 999 ____ 99 999

c. 199 990 ____ 199 099

d. 138 389 ____ 183 839

e. 111 101 ____ 111 110

f. 101 010 ____ 101 011

g. 474 747 ____ 747 474

h. 87 878 ____ 787 878

i. 505 505 ____ 505 005

j. 676 767 ____ 656 565

8. What is the value of the underlined digit:

a. 189 2<u>8</u>3 _____

b. 1<u>2</u>0 005 _____

c. <u>1</u>34 467 _____

d. 134 34<u>2</u> _____

e. 14<u>5</u> 999 _____

f. 199 9<u>9</u>9 _____

9. Complete the following using these digits:

a. Using each digit once, make the smallest 6–digit number: _____

b. Using each digit once, make the largest 6–digit number: _____

c. You can use a digit twice. Make the smallest 6–digit number: _____

d. You can use a digit twice. Make the largest 6–digit number: _____

All about numbers

What you need:
Newspaper.

Did you know:

Cardinal number: Tells you how many or how much of something. A class period is 30 minutes.

Ordinal number: Gives order or rank. He came 3rd in the race.

Nominal number: Names something. TV Channel 15 carries educational programmes.

Which numbers in the newspaper are cardinal numbers?

Which numbers are ordinal numbers?

Which numbers are nominal numbers?

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

26 Rounding off

Which statement will you use?

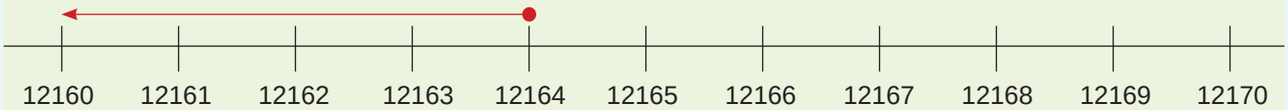
Remember that this is the symbol we use for rounding off:

≈

Rounding off to the nearest ten.

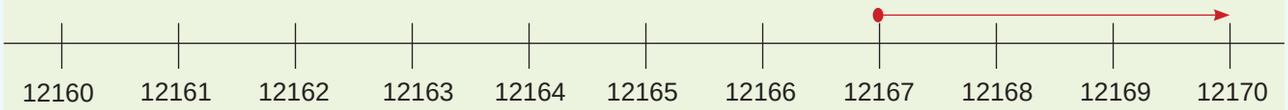
Round off the numbers that end in a digit from **1** to **4** to the previous (lower) ten.

Example: 12 164 rounded off to the nearest ten would be 12 160.



Round off numbers that end in a digit from **5** to **9** to the next (higher) ten.

Example: 12 167 rounded off to the nearest ten would be 12 170.



1. Round the following numbers off to the nearest ten using the number lines provided.

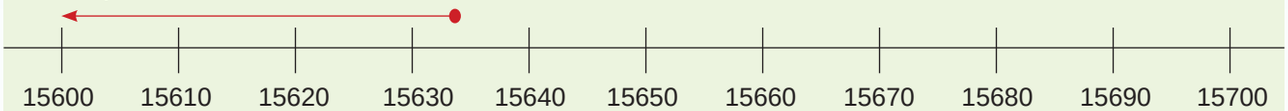
a. 23 489

b. 78 373

Rounding off to the nearest hundred.

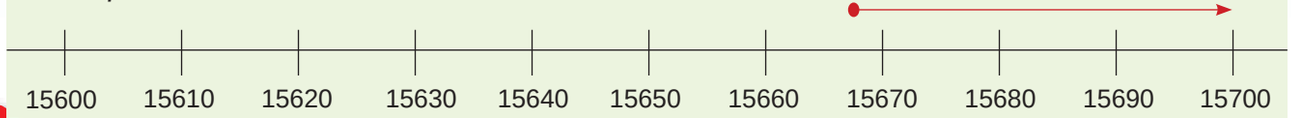
If the tens digit is a **0, 1, 2, 3** or **4**, round off the number to the previous (lower) hundred.

Example: 15 6**3**4 rounded off to the nearest hundred would be 15 600.



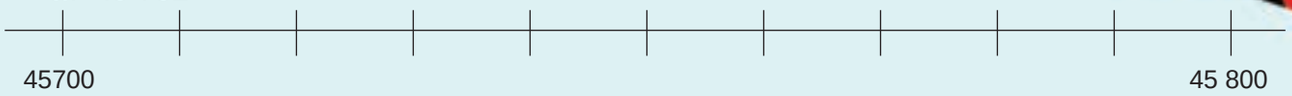
If the tens digit is a **5, 6, 7, 8** or **9**, round off the number to the next (higher) hundred.

Example: 15 6**6**7 rounded off to the nearest hundred is 15 700.

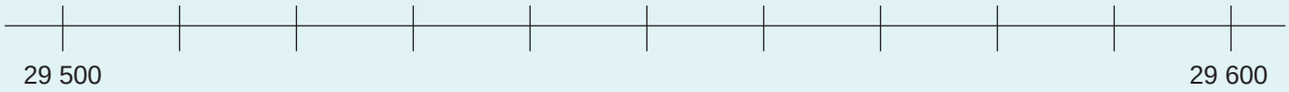


2. Round the following numbers off to the nearest hundred using the number lines provided.

a. 45 782



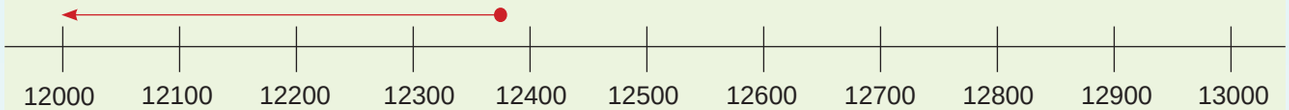
b. 29 514



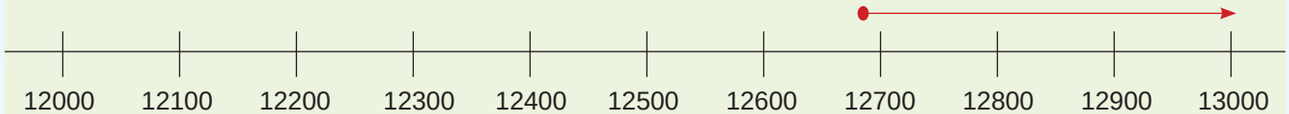
Rounding off to the nearest thousand.

If the hundreds digit is a **0, 1, 2, 3** or **4,** round off the number to the previous (lower) thousand.

Example: 12 **3**74 rounded off to the nearest thousand is 12 000.

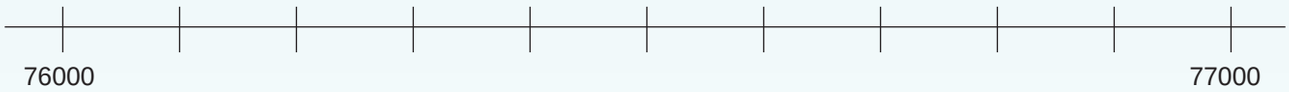


If the hundreds digit is a **5, 6, 7, 8** or **9**, round off the number to the next (higher) thousand. *Example:* 12 **6**74 rounded off to the nearest thousand is 3 000.

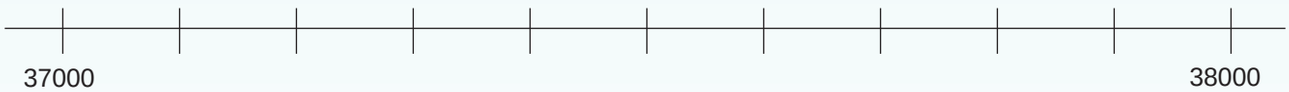


3. Round the following numbers off to the nearest thousand using the number lines provided.

a. 76 345



b. 37 984



Make it simpler

What you need:
– Look at the pictures on the right.

What to do:
– Write two sentences for each picture.
– Use a number in the first sentence. In the second sentence round off the number.

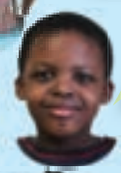
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

27 Rounding off to the nearest five

You want to round off to the nearest 5.



Yes, please show me how!

The main idea is to find the nearest multiple of 5.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

For example, take 27. It lies between 25 and 30; it is 2 away from 25 and 3 away from 30, so 25 is nearer.

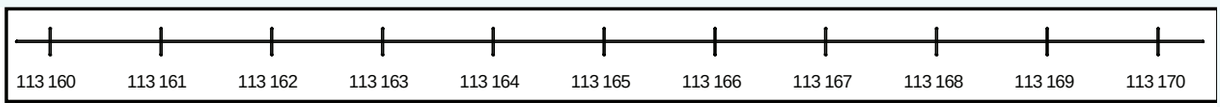
1. Round off the following to the nearest five, using the number board above.

a. 57 ≈ _____ b. 19 ≈ _____ c. 97 ≈ _____

d. 36 ≈ _____ e. 48 ≈ _____ f. 64 ≈ _____

g. 22 ≈ _____ h. 91 ≈ _____ i. 43 ≈ _____

2. Round off the following to the nearest five, using the number line below.

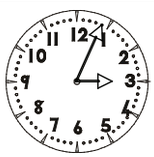
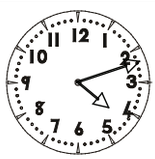
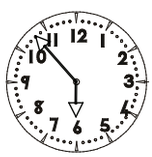
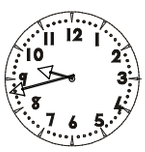


a. 113 162 ≈ _____ b. 113 169 ≈ _____ c. 113 161 ≈ _____

d. 113 163 ≈ _____ e. 113 168 ≈ _____ f. 113 167 ≈ _____

g. 113 164 ≈ _____

3. Round off the following to the nearest five minutes, using a clock. We have started the first one for you.

				
03:04 ≈ 03:05 **or** **15:04 ≈**	_____ or _____	_____ or _____	_____ or _____	_____ or _____

4. Look at the table below and round off the numbers to the nearest 50.

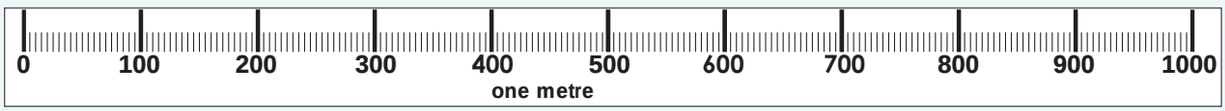
10	20	30	40	50	60	70	80	90	100
110	120	130	140	150	160	170	180	190	200
210	220	230	240	250	260	270	280	290	300
310	320	330	340	350	360	370	380	390	400
410	420	430	440	450	460	470	480	490	500
510	520	530	540	550	560	570	580	590	600
610	620	630	640	650	660	670	680	690	700
710	720	730	740	750	760	770	780	790	800
810	820	830	840	850	860	870	880	890	900
910	920	930	940	950	960	970	980	990	1 000

a. 30 ≈ _____ b. 260 ≈ _____ c. 640 ≈ _____

d. 890 ≈ _____ e. 930 ≈ _____ f. 210 ≈ _____

g. 520 ≈ _____ h. 770 ≈ _____ i. 990 ≈ _____

5. Round off the following to the nearest fifty millimetres, using the metre stick below.



a. 60 mm ≈ _____ b. 140 mm ≈ _____ c. 290 mm ≈ _____

d. 310 mm ≈ _____ e. 780 mm ≈ _____ f. 920 mm≈ _____

6. Round the following of to the nearest fifty cents.

a. R 2,52 ≈ _____ b. R 8,32 ≈ _____ c. R 8,69 ≈ _____

d. R10,12 ≈ _____ e. R50,95 ≈ _____ f. R100,72 ≈ _____

How can you round off?

Colour in the correct answer.

Round off 278 to the nearest 5.

270	250	200
260	280	210
300	290	275

Round off 891 to the nearest 5.

900	980	870
800	891	850
850	860	890

Round off 546 to the nearest 5.

560	545	570
555	550	550
540	585	400

Round off 726 to the nearest 5.

760	700	730
750	720	780
740	800	725

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

28 Multiplication and prime factors

Which numbers are coloured?

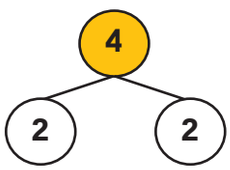
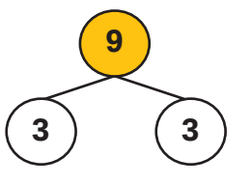
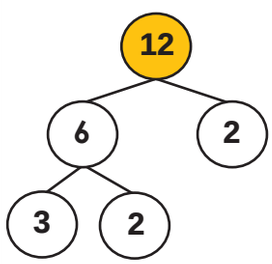
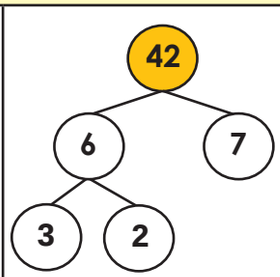
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1. What do we call numbers that are not prime numbers?

_____

2. Give the prime factors, using prime factor trees.

Example:
Break the following numbers into the smallest prime factors. We will use prime factor trees to demonstrate this.

			
2 x 2 = 4	3 x 3 = 9	3 x 2 x 2 = 12	3 x 2 x 7 = 42

a.	b.	c.
18	4	30

3. Multiply the following by using a method shown in the examples.

Example 1:

Using factors to multiply

Calculate 547 x 42

547 x 42 = 547 x 6 x 7 → breaking down 42 into its factors
= 547 x 2 x 3 x 7 → breaking down 6 into its factors
= (547 x 2) x 3 x 7
= (1 094 x 3) x 7
= 3 282 x 7
= (7 x 3 000) + (7 x 200) + (7 x 80) + (7 x 2)
= 21 000 + 1 400 + 560 + 14
= 22 974

Example 2:

Using column method

```
  547
x  42
 1094
21880
22974
```

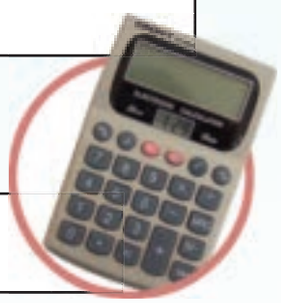
a. 512 x 52

b. 684 x 37

4. Check your answers by using a calculator.

a. 512 x 52

b. 684 x 37



Primes and factors

- Give all the prime factors between 100 and 200. How did you work it out?
- Find out where in everyday life will you use factors.

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

29 Multiplication and the distributive property

Revise the distributive property of multiplication.

3 x (**4 + 2**)
= (3 x 4) + (3 x 2)
= 12 + 6
= 18

(**3 + 5**) x (**4 + 2**)
= (3 x 4) + (3 x 2) + (5 x 4) + (5 x 2)
= 12 + 6 + 20 + 10
= 48

OR

x	**4**	**+**	**2**
3	12		6
+			
5	20		10

12 + 6 + 20 + 10
= 48

1. Calculate the following using both methods.

a. (2 + 3) x (5 + 1)

b. (4 + 2) x (6 + 5)

c. (6 + 9) x (7 + 6)

d. (5 + 8) x (9 + 3)

e. (3 + 4) x (8 + 4)

f. (7 + 1) x (2 + 7)

2. Calculate the following using both methods.

Example 1:

Calculate 547 x 45

= (500 + 40 + 7) x (40 + 5)
= 20 000 + 2 500 + 1 600 + 200 + 280 + 35
= 20 000 + 2 000 + 1 000 + 500 + 600 + 200 + 200 + 80 + 30 + 5
= 20 000 + 3 000 + 1 500 + 110 + 5
= 24 615

Example 2:

x	40	5
500	20 000	2 500
40	1 600	200
7	280	35

20 000 + 2 500 + 1 600 + 200 + 280 + 35
= 20 000 + 2 000 + 1 000 + 500 + 600 + 200 + 200 + 80 + 30 + 5
= 20 000 + 3 000 + 1 500 + 110 + 5
= 24 615

a. 253 x 41 =

b. 136 x 47 =

c. 766 x 38 =

d. 492 x 25 =

Boxes of balls

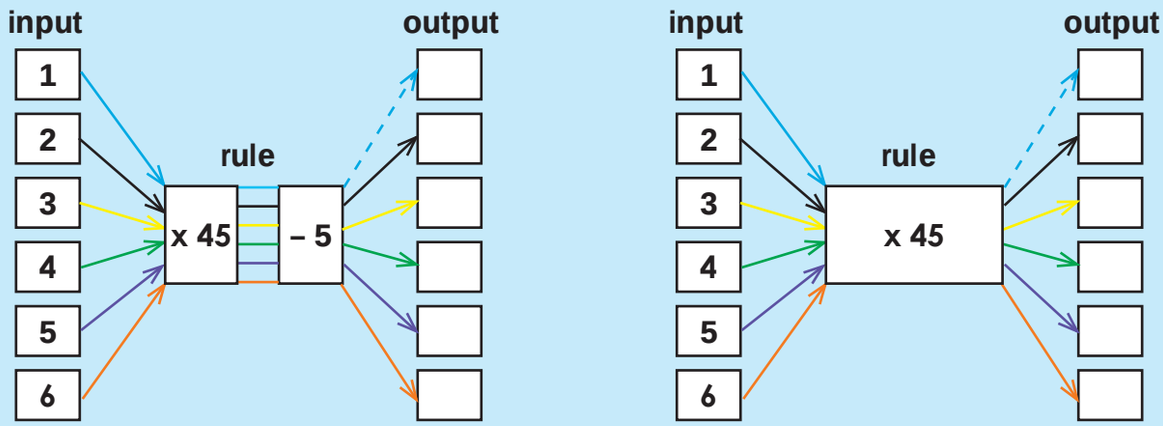
This year a company gave 52 boxes of footballs to children. Each box had 545 balls. How many balls did the company give away?

Sign:

Date:

30 More on multiplication and the distributive property

Calculate the following. Which flow diagram was easier? Why?



1. Complete the following:

a. 4 x 32 = 4 x (40 – ☐)

b. 5 x 47 = 5 x (50 – ☐)

c. 3 x 83 = 3 x (90 – ☐)

d. 7 x 27 = 7 x (30 – ☐)

e. 6 x 79 = 6 x (80 – ☐)

f. 8 x 65 = 8 x (70 – ☐)

2. Calculate 1a – c

a. 4 x 32 = 4 x (40 – 8) = (4 x 40) – (4 x 8) = 160 – 32 = 128	b. 5 x 47 = 5 x (50 – ☐)	c. 3 x 83 = 3 x (90 – ☐)

3. Complete the following:

a. 14 x 32 = 14 x (40 – ___) b. 15 x 47 = 5 x (50 – ___) c. 13 x 83 = 3 x (90 – ___)

4. Calculate 3a-c.

a. 14 x 32 = 14 x (40 – 8) = (10 + 4) x (40 – 8) = 400 – 80 + 160 – 32 = 320 + 128 = 300 + 100 + 20 + 20 + 8 = 400 + 40 + 8 = 448	b. 15 x 47 = 15 x (50 – ☐)	c. 13 x 83 = 13 x (90 – ☐)

5. Calculate the following.

Example 1:

547 x 45
= (500 + 40 + 7) x (40 + 5)
= 20 000 + 2 500 + 1 600 + 200 + 280 + 35
= 20 000 + 2 000 + 1 000 + 500 + 600 + 200 + 200 + 80 + 30 + 5
= 20 000 + 3 000 + 1 500 + 110 + 5
= 20 000 + 3 000 + 1 000 + 500 + 100 + 10 + 5
= 20 000 + 4 000 + 600 + 10 + 5
= 24 615

Example 2:

547 x 45
547 x (50 – 5)
= (500 + 40 + 7) x (50 – 5)
= (25 000 – 2 500) + (2 000 – 200) + (350 – 35)
= 22 500 + 1 800 + 315
= 20 000 + 2 000 + 1 000 + 500 + 800 + 300 + 10 + 5
= 20 000 + 3 000 + 1 600 + 15
= 24 615

a. 285 x 41 =

b. 285 x (50 – 9) =

c. 396 x 22 =

d. 396 x (30 – 8) =

Heartbeats ...

A normal, healthy adult heart beats about 78 times per minute.

- How many times will a heart beat in half an hour?
- How many times will a heart beat in one hour?

Sign:

Date:

31 Multiplication using expanded notation and the vertical column methods

How will you solve this problem?

A timber grower wants to plant 156 rows each with 216 trees. How many trees does he have to plant?

- What is the question?
- What are the numbers?
- What basic operations (+. –, x, ÷) will you use?
- What will the number sentence be?
- Use the number sentence to work out the answer.

1. Write the following numbers in expanded notation.

Examples:

- 325 = 300 + 20 + 5
- 108 = 100 + 8
- 7 642 = 7 000 + 600 + 40 + 2
- 4 362 = 4 000 + 300 + 60 + 2

a. 6 186

b. 3 425

c. 5 659

d. 2 345

e. 8 142

f. 9 678

g. 7 231

h. 4 527

i. 1 172

2. Multiply these sums making use of the distributive property.

Example:

8 x 4 362
= 8 x (4 000 + 300 + 60 + 2)
= 32 000 + 2 400 + 480 + 16
= 34 896

a. 2 x 1 297

b. 8 x 3 482

c. 7 x 1 493

3. Calculate using the vertical column method.

Example 1:

4 362
x 108
34 896 — 8 x 4 362
= 8 x (4 000 + 300 + 60 + 2)
= 32 000 + 2 400 + 480 + 16
= 34 896
00 x (4 000 + 300 + 60 + 2)
+ 436 200 — 100 x 4 362
= 43 6200
471 096 — 108 x 4 362

Example 2:

5 281
x 146
31 686 → 6 x 5 281
= 6 x (5 000 + 200 + 80 + 1)
= 30 000 + 1 200 + 480 + 6
= 31 686
211 240 → 40 x 5 281
= 40 x (5 000 + 200 + 80 + 1)
= 200 000 + 8 000 + 3 200 + 40
= 211 240
+ 528 100 → 100 x 5 281
= 528 100
771 026 → 5 281 x 146

a. 1 324 x 105 =

b. 5 681 x 306 =

c. 3 265 x 207 =

d. 8 432 x 402 =

Oranges in crates

A farmer can pack 2 139 oranges into a crate. How many oranges can be packed into 428 crates?

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

32 Multiplication and rounding off

If we want to multiply numbers quickly, without getting the exact answer, we can round off and then multiply.

Give the approximate answer by rounding both numbers to

Nearest 10	Nearest 100	Nearest 1 000
45 x 32 =	450 x 320 =	4 500 x 3 200 =

1. Round off the numbers to the nearest 10, 100 and 1 000.

	Nearest 10	Nearest 100	Nearest 1 000
a. 789			
b. 342			
c. 2 062			
d. 3 471			
e. 8 309			

2. Multiply the numbers by rounding off the first number to the nearest 1 000 and the second number to the nearest 100.

Example 1:

Round off to the nearest 1 000.

4 362 x 108
≈ 4 000 x 100
≈ 400 000

Round off to the nearest 100.

a. 9 051 x 163

b. 2 485 x 327

3. Multiply the numbers by rounding off the first number to the nearest 100.

Example:

Round off to the nearest 1 000.

4 362 x 108
≈ 4 000 x 108
≈ (4 000 x 100) + (4 000 x 8)
≈ 400 000 + 32 000
≈ 432 000

Not rounded

a. 9 201 x 561

b. 2 648 x 875

4. Multiply the numbers by rounding off the second number to the nearest 100.

Not rounded

Example:
4 362 x 108
≈ 4 362 x 100
≈ 436 200

Round off to the nearest 100.

a. 2 363 x 448

b. 2 847 x 759

5. Multiply the numbers by rounding off the first number and the second number to the nearest 100.

Round off to the nearest 100.

Example:
4 362 x 108
≈ 4 400 x 100
≈ 440 000

Round off to the nearest 100.

a. 7 323 x 884

b. 3 023 x 286

6. Check your answers by multiplying the numbers with a calculator.

Estimate and check

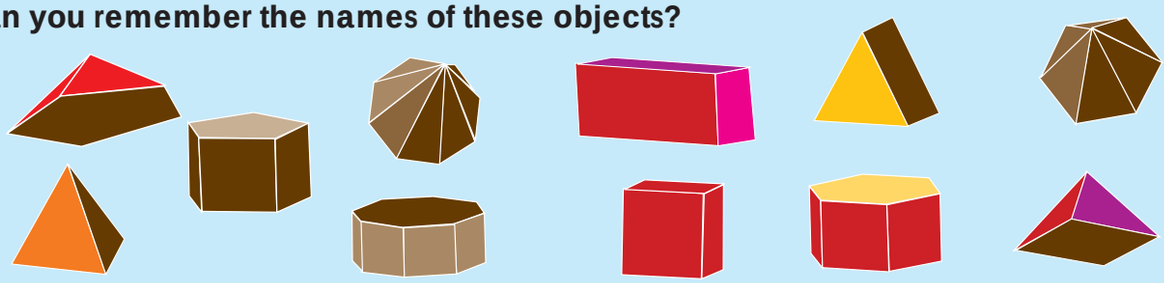
Estimate what the answers will be and then calculate it. How close was your estimation? 2 345 x 67

Sign:

Date:

33 3–D objects

Can you remember the names of these objects?



1. Use the following descriptions to explain the similarities and differences between the pictures below. You can use a description more than once.

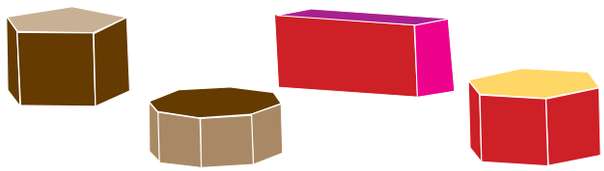
Two identical ends.

Six identical square faces.

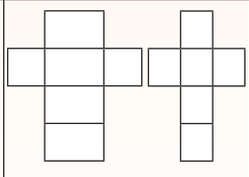
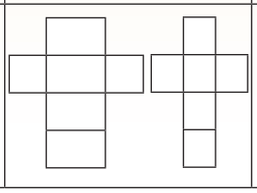
Shapes at the end give the prism its name.

All the faces are flat.

A special prism.

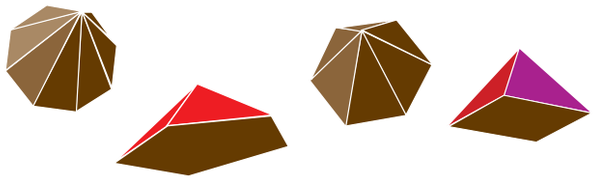


2. Look at the pictures below. Name each 3–D object. Match each net with a 3–D object. What 2–D shape(s) do you see?

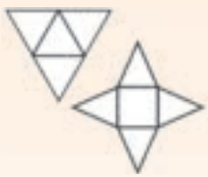
3–D object	Name of the 3–D object	Net	Name the 2–D shape(s)
			
			

3. Use the following phrases to describe the similarities and differences between the objects:

The base is a polygon.	All the faces are the same.	The other faces are triangles.
Meet at an apex.	All the faces are flat.	A special pyramid



4. Look at the pictures below. Name each 3–D object. Match each net with the 3–D object. What 2–D shapes do you see?

3–D object	Name of the 3–D object	Net	Name the 2–D shapes
			
			

How fast are you? Can you identify the 3–D object?

Sign:

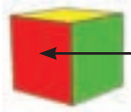
Date:

34 Describing 3-D objects

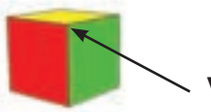
Revise: identify the 3-D objects in the pictures and say if they have flat or curved surfaces.

Also revise:

Faces
The individual surfaces of a 3-D object.

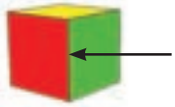


Vertex
The point where two or more straight lines meet.

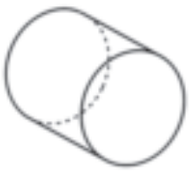
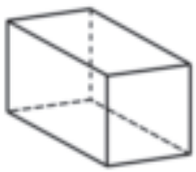
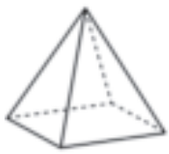
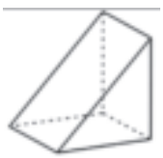


The plural for vertex is 'vertices'.

Edge
The line where two surfaces meet.

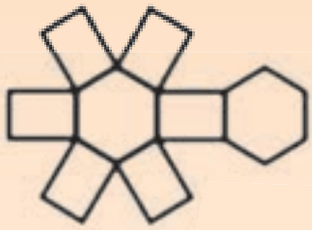


1. Name and describe the surfaces (flat or curved) of the following objects. We included a few challenges for you.

a.  _____	b.  _____	c.  _____
d.  _____	e.  _____	f.  _____
g.  _____	h.  _____	i.  _____

2. Label the 3-D objects and then the net with the following words: face, edge and vertex.

a. 

b. 

3. Choose the correct net to go with each prism/pyramid.

a. Triangular prism

b. Rectangular prism

c. Cube

d. Pentagonal prism

e. Hexagonal prism

f. Octagonal prism

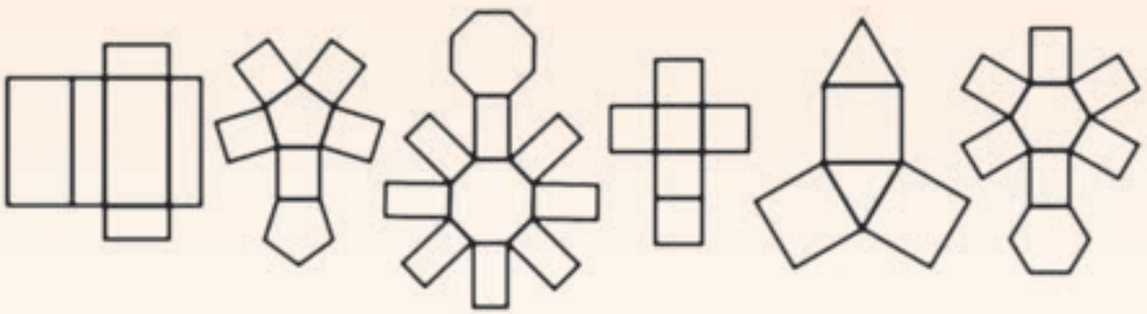
g. Tetrahedron/ Triangular pyramid

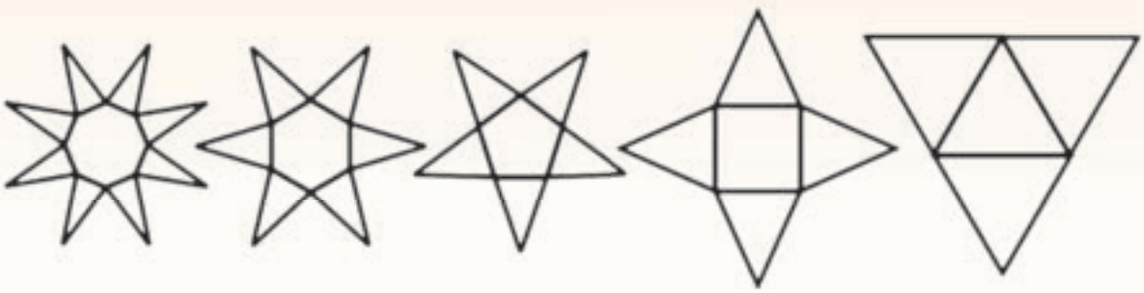
h. Square pyramid

i. Pentagonal pyramid

j. Hexagonal pyramid

k. Octagonal pyramid





From net to object

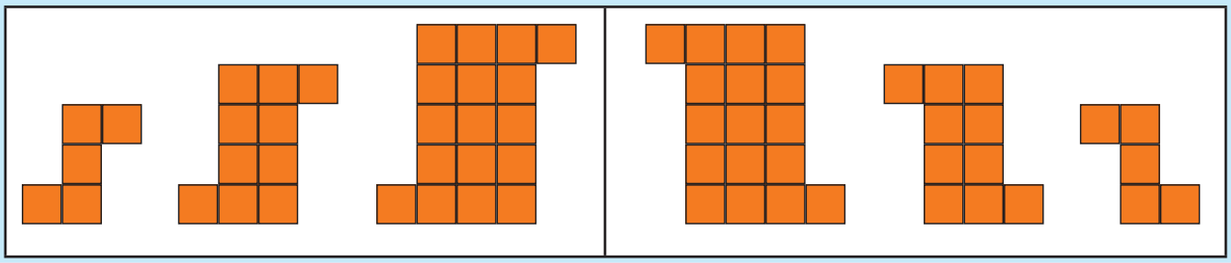
Choose any net. Enlarge it and make the 3-D object.

Sign:

Date:

35 Geometric patterns

Are the patterns getting smaller or larger

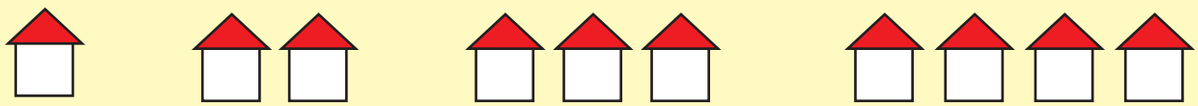


1. Describe the pattern using the statements below.

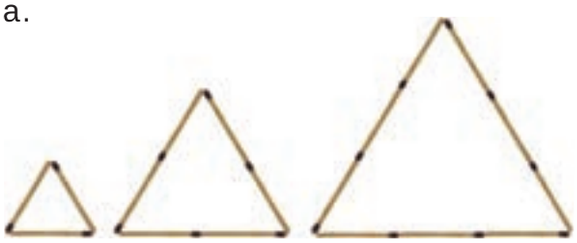
- The shape keeps its form, but gets larger or smaller in each stage.
- A shape or part of a shape is added at each stage.

Example:

Patterns in which a shape or part of a shape is added at each stage.

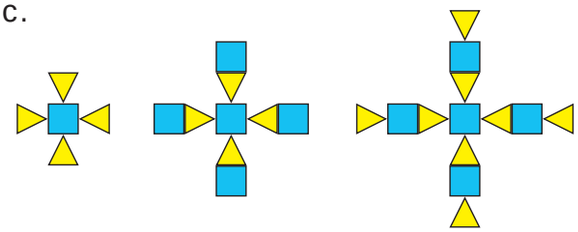


a.

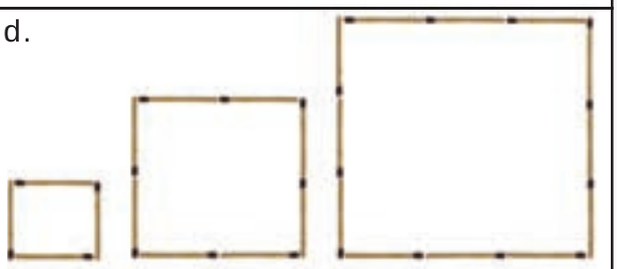


b.

c.



d.

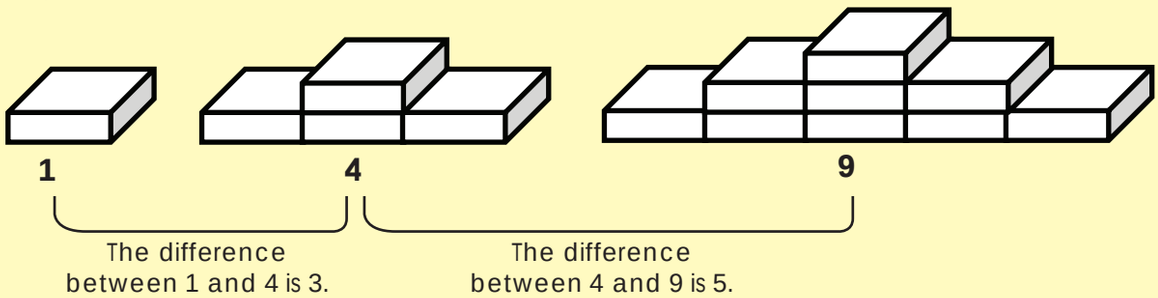


2. Describe the pattern using the statements below.

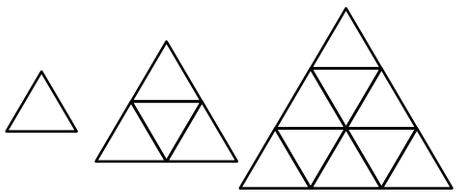
- Patterns with the same difference between the terms.
- Patterns do not have the same difference between terms.

Example:

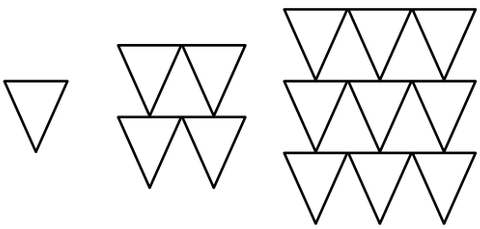
The pattern does not have the same difference between the terms.



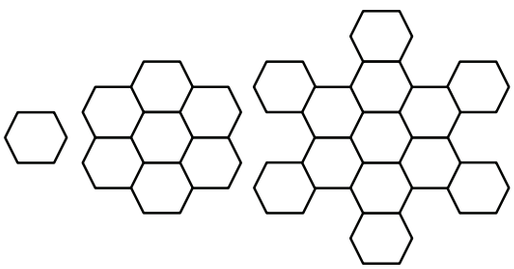
a.



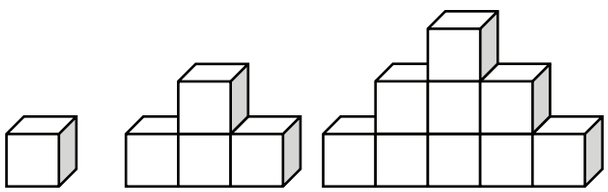
b.



c.



d.



Create a pattern

Create a geometric pattern where the pattern does not have the same difference between terms.

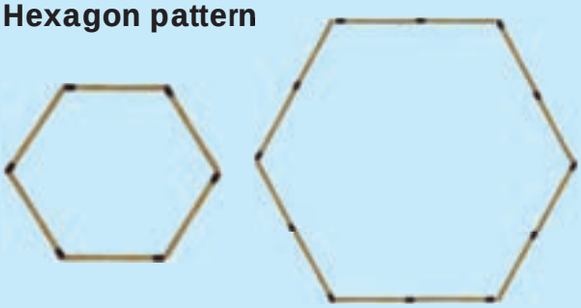
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

36 Describing geometric patterns

Hexagon pattern



Describing the pattern:
"It is a pattern of hexagons."
"Each hexagon is bigger than the one before."

Describing how the pattern was made:
"I added one more match to each side of each hexagon."
"Each hexagon has one more match in each side than the hexagon on the left."

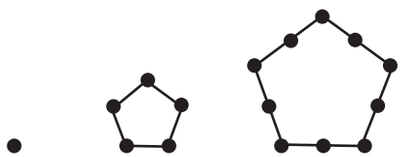
Use this table to predict how many matches are in the 10th pattern.

Pattern	1	2	3	4	5	10
Number of matches	6	12	18	24	30	?

1. Describe the following patterns and extend them.

i. Name the polygon.
ii. How do you get from the one stage to the next?
iii. Make use of a table to predict the 10th pattern.

a.



i. _____

ii. _____

iii.

	1	2	3	4	5	10

b.

i. _____

ii. _____

iii.

	1	2	3	4	5	10

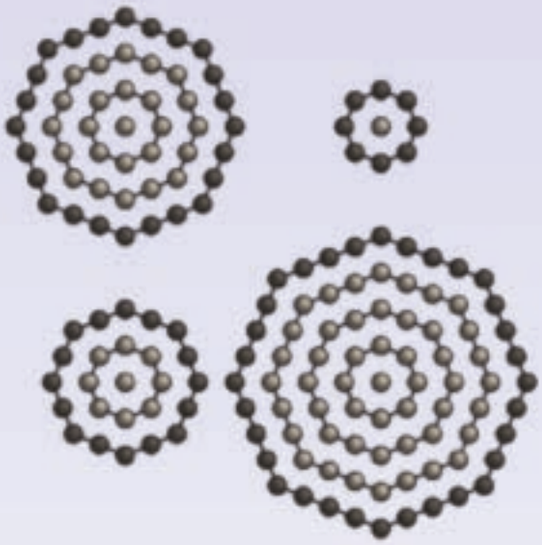
c. Compare the pattern in 1a and b.

_____

_____

2. Look at this geometric pattern and answer the questions.

a. Label the patterns by saying which pattern is 1st, 2nd, 3rd and 4th.



b. Describe the following patterns and extend them.

i. Name the polygon.

_____

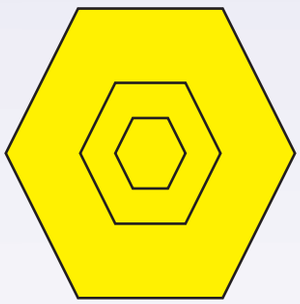
ii. How do you get from the one stage to the next?

_____

iii. Make use of a table to predict the 10th pattern.

	1	2	3	4	5	10

3. Describe this pattern.



_____

_____

_____

_____

Create a pattern

Create your own geometric pattern using a polygon.

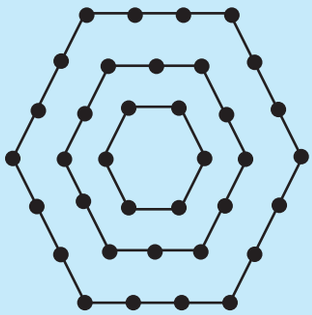
- Name the polygon.
- Explain how you get from the one stage to the next.
- Make use of a table to predict the 10th pattern.

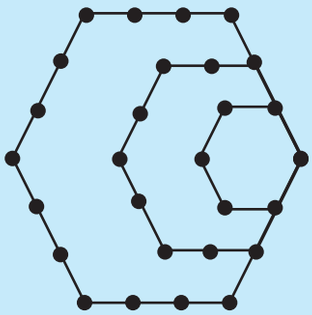
Sign:

Date:

37 Geometric patterns and tables

Describe and then compare the patterns by completing the tables below.



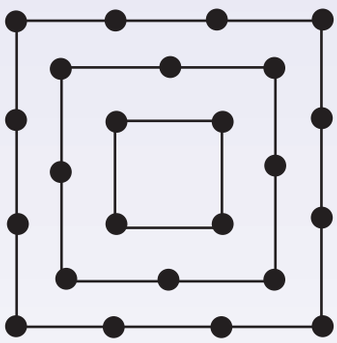


Hexagon pattern	1	2	3	4	5	10
Number of matches						

Hexagon pattern	1	2	3	4	5	10
Number of matches						

Compare the two above examples with the introduction activity on the previous worksheet.

1. Answer the following questions.



a. Make use of the table to predict the 20th pattern.

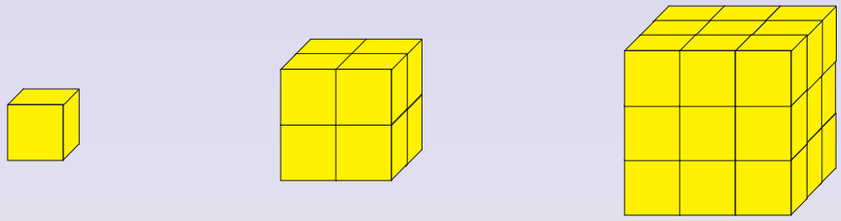
Square pattern	1	2	3	4	5	20
Number of matches						

b. Compare your answers in the table with the pattern on the multiplication board below.

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

2. Answer the following questions.

a. Make use of the table to predict the 10th pattern.



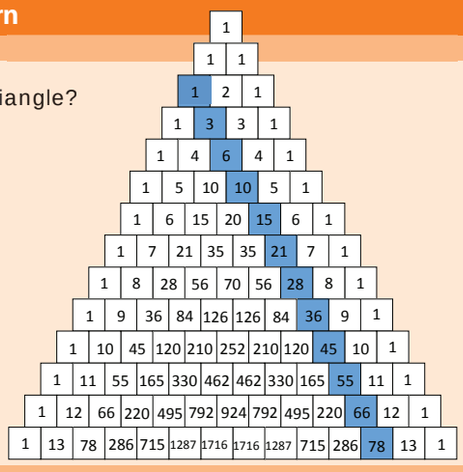
	1	2	3	4	5	10

b. Compare your answers in the table with the pattern below.

1 x 1 x 1	=	1	=	1
2 x 2 x 2	=	8	=	3 + 5
3 x 3 x 3	=	27	=	7 + 9 + 11
4 x 4 x 4	=	64	=	13 + 15 + 17 + 19
5 x 5 x 5	=	125	=	21 + 23 + 25 + 27 + 29
6 x 6 x 6	=	216	=	31 + 33 + 35 + 37 + 39 + 41
7 x 7 x 7	=	343	=	43 + 45 + 47 + 49 + 51 + 53 + 55
8 x 8 x 8	=	512	=	57 + 59 + 61 + 63 + 65 + 67 + 69 + 71
9 x 9 x 9	=	729	=	73 + 75 + 77 + 79 + 81 + 83 + 85 + 87 + 89
10 x 10 x 10	=	1 000	=	

Create a pattern

What geometric number pattern is highlighted in the Pascal's triangle?



Sign:

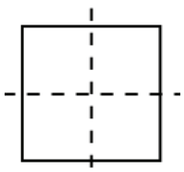
Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

38 Reflection symmetry

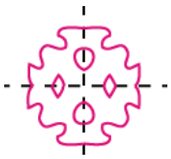
A type of symmetry where one half is the reflection of the other half.

You could fold the image and have both halves match exactly.



Fold the paper

Draw a pattern

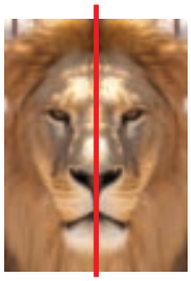


Cut and unfold

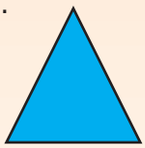
Here the lion's face looks perfectly symmetrical – but that is because we took a photo of half the face and copied it to the other side.

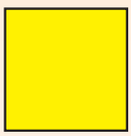
- Why did we do this?
- Aren't all faces symmetrical?
- Do you think your face is perfectly symmetrical? Why or why not?

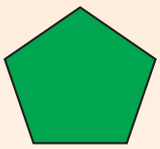
The red line down the centre is called the Line of Symmetry



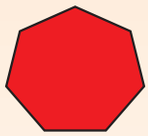
1. How many lines of symmetry do the following shapes have?

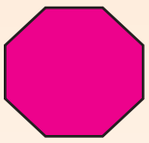
a. 

b. 

c. 

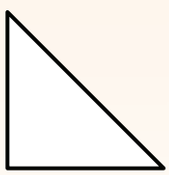
d. 

e. 

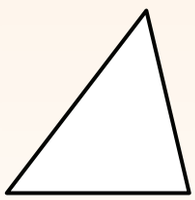
f. 

2. Answer the questions.

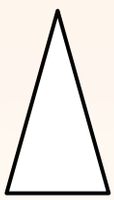
a. Are these triangles symmetrical? If so, how many lines of symmetry do they have?



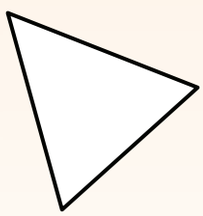
i. _____



ii. _____

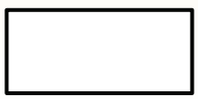


iii. _____

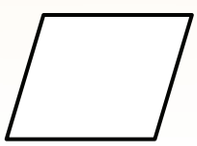


iv. _____

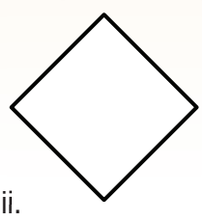
b. Are these quadrilaterals symmetrical? If so, how many lines of symmetry do they have?



i. _____



ii. _____

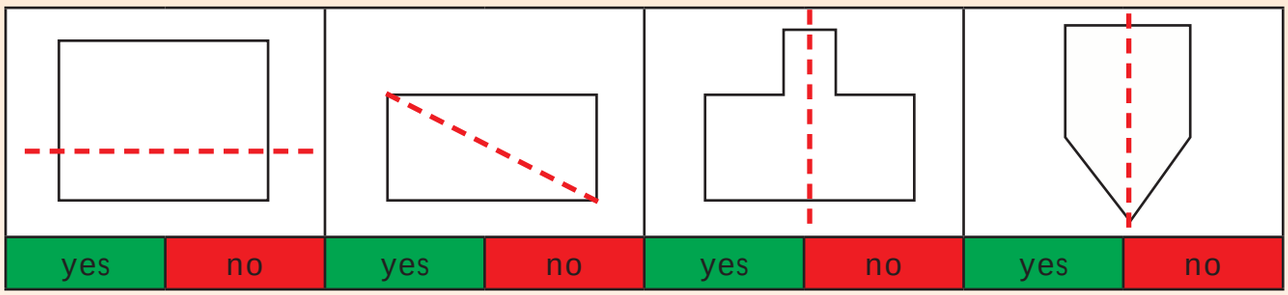


iii. _____

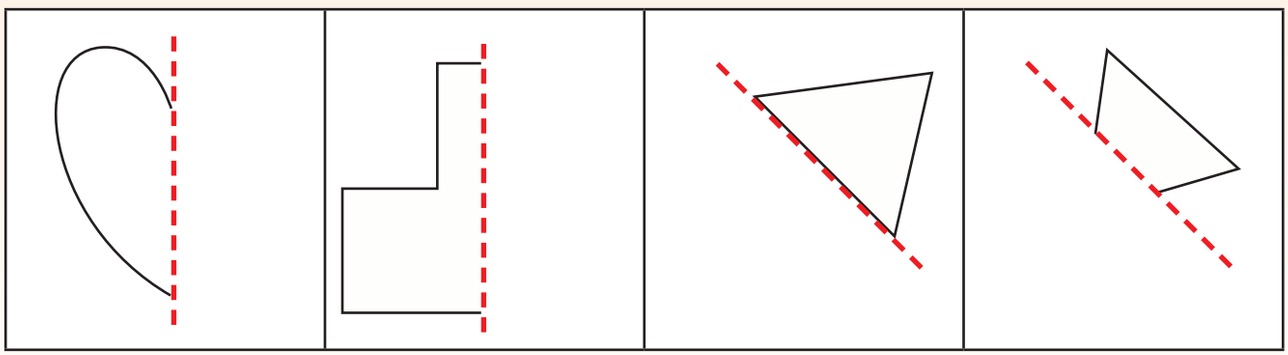
iv. _____

3. Draw three shapes that do not have lines of symmetry and two that do.

4. Say whether the dotted line on each shape is a line of symmetry.



5. Draw the second half of the symmetrical shape.



Symmetrical shapes

What are the three most common symmetrical objects you use on a daily basis?

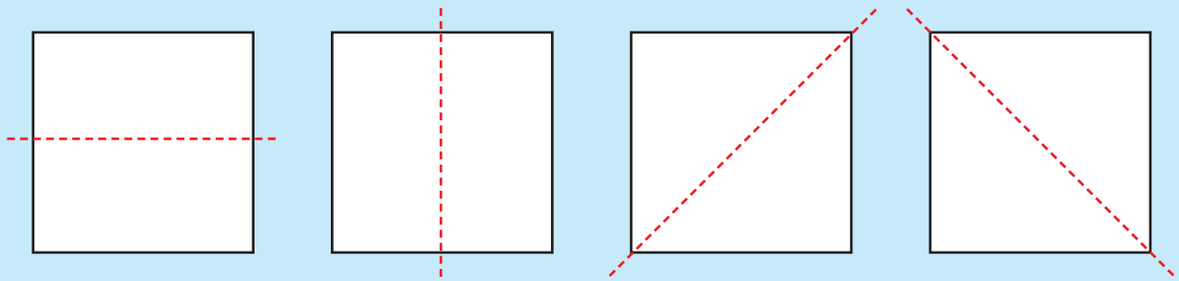
Sign:

Date:

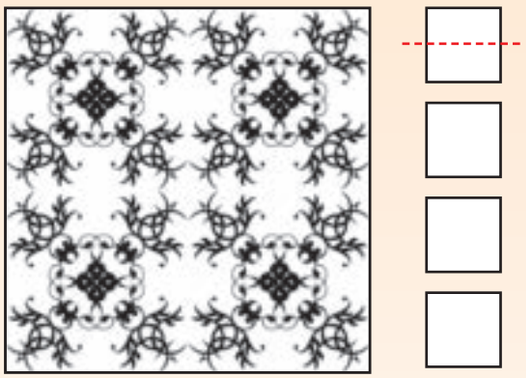
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

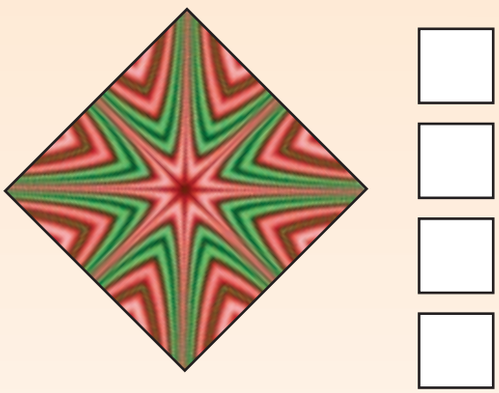
39 More reflection symmetry

The four common directions of symmetry.

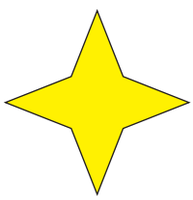
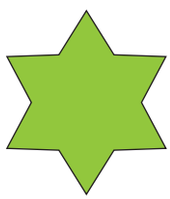
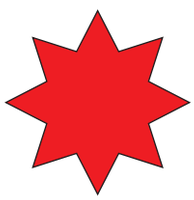
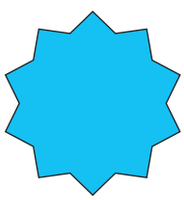
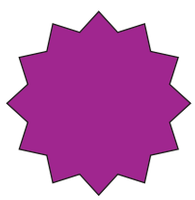
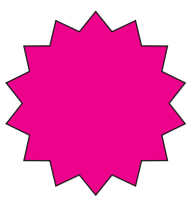
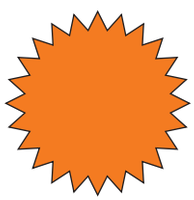


1. Identify four directions of reflective symmetry as possible. Show it on the blocks.





2. How many lines of symmetry does each shape have?

a. 	b. 	c. 	d. 
e. 	f. 	g. 	h. 

3. Draw the following and show all the lines of symmetry.

a. Can you draw a quadrilateral with only

1 line of symmetry?	2 lines of symmetry?	3 lines of symmetry?

b. Can you draw a pentagon with unequal sides, with

1 line of symmetry?	2 lines of symmetry?	3 lines of symmetry?

c. Can you draw a hexagon with unequal sides, with

1 line of symmetry?	2 lines of symmetry?	3 lines of symmetry?

4. How many lines of symmetry do these patterns have?

a. 

b. 

c. 

Dodecagon

How many lines of symmetry will a dodecagon with equal sides have?

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

40a Sharing and grouping problems

Can you still remember what you did to groups of numbers to make them equal?

30 000	40 000	50 000

Can you move the numbers to make 3 equal groups?

What operation can you use to determine the total?

Make a drawing of your work.

1. Complete the following:

a. Change the numbers to make them equal.
b. Write down an addition sum for each.
c. Write a multiplication sum for each.

i. 7 000, 8 000, 9 000

a.

b.

c.

ii. 40 000, 50 000, 60 000

a.

b.

c.

iii. 20 000, 40 000, 60 000

a.

b.

c.

iv. 40 000, 60 000, 80 000

a.

b.

c.

v. 10 000, 30 000, 50 000

a.

b.

c.

vi. 50 000, 70 000, 90 000

a.

b.

c.

2. Calculate the following:

a. Three groups of 20 000. _____

b. Five groups of 25 000. _____

c. Ten groups of 19 000. _____

d. Fifty groups of 1 000. _____

e. Thirty groups of 4 000. _____

f. One hundred groups of 2 000. _____

3. Use number lines to show the following:

a. Share 120 000 between 3. _____

b. Share 12 000 between 4. _____

c. Share 150 000 between 5. _____

d. Share 150 000 between 50. _____

e. Share 180 000 between 30. _____

f. Share 180 000 between 300. _____

Divisibility rules. These divisibility rules will help you with sharing.

A number is divisible by 2 if the last digit is 0, 2, 4, 6 or 8.

A number is divisible by 3 if the sum of the digits is divisible by 3.

A number is divisible by 4 if the number formed by the last two digits is divisible by 4.

A number is divisible by 5 if the last digit is either 0 or 5.

A number is divisible by 6 if it is divisible by 2 and it is divisible by 3.

A number is divisible by 8 if the number formed by the last three digits is divisible by 8.

A number is divisible by 9 if the sum of the digits is divisible by 9.

A number is divisible by 10 if the last digit is 0.

Sign:

Date:

continued ☛

40b Sharing and grouping problems continued

4. Complete the table below.

Number	Can you divide the number by:	Show the sum:	Addition sum	Multiplication sum
186 000	3	186 000 shared by 3 = 62 000	62 000 + 62 000 + 62 000 = 186 000	62 000 x 3 = 186 000
194 255	5			
167 324	4			
151 500	6			
123 147	9			

5. Complete the table below. The first one has been done for you.

_____ is divisible by:	Circle the correct number(s).
a. 150	(2) (3) 4 (5) 6 8 9 (10)
b. 225	2 3 4 5 6 8 9 10
c. 7 168	2 3 4 5 6 8 9 10
d. 9 042	2 3 4 5 6 8 9 10
e. 35 120	2 3 4 5 6 8 9 10

6. Answer true or false using the divisibility rules.

a. 189 870 is divisible by 2. _____

b. 134 955 is divisible by 5. _____

c. 134 122 is divisible by 3. _____

d. 187 324 is divisible by 4. _____

e. 148 986 is divisible by 6. _____

f. 173 293 is divisible by 9. _____

7. Write down five 6–digit numbers smaller than 200 000 and divisible by:

a. 2 _____ _____ _____ _____ _____

b. 3 _____ _____ _____ _____ _____

c. 4 _____ _____ _____ _____ _____

d. 5 _____ _____ _____ _____ _____

e. 6 _____ _____ _____ _____ _____

f. 8 _____ _____ _____ _____ _____

g. 9 _____ _____ _____ _____ _____

h. 10 _____ _____ _____ _____ _____

How fast can you divide?

Colour in the numbers you can divide by:

3

242	188	221	243
367	431	369	998
292	219	521	344
521	302	520	218

4

224	399	907	641
321	532	423	518
531	577	640	261
918	225	999	916

5

892	252	673	396
225	330	990	875
473	788	221	389
344	344	549	426

Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

41 Rate

Look at the following statements and give an example of each.

kilometres per hour

item per litre

rand per week

rand per hour

rand per year

rand per kilometre

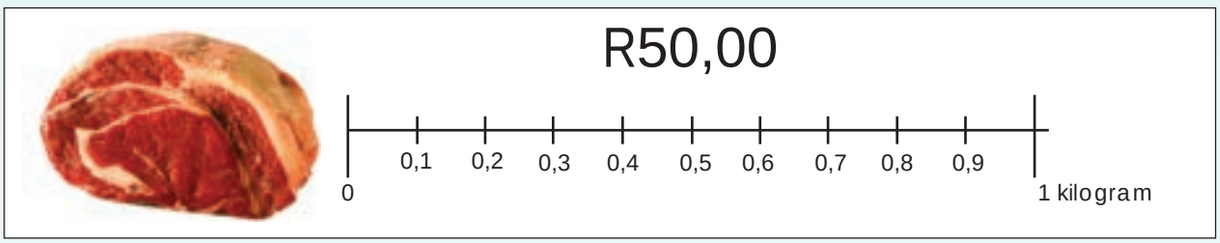
kilometre per litre

item per kilogram

rand per item

rand per dozen

1. Look at the picture and complete the table.



	Weight	Cost
a	1 kg	R50,00
b	900 g	
c	800 g	
d	700 g	
e	600 g	
f	500 g	
g	400 g	
h	300 g	
i	200 g	
j	100 g	

Remember:
1 kg = 1 000 g

100 g = 0,1 kg

2. Chicken: R25/kg

a. How much will it cost me to buy 2 kg? _____

b. How much will it cost me to buy 750 g? _____

c. How much will it cost me to buy 6,5 kg? _____

3. Look at the pictures above and answer the questions. You might need to make a drawing to help you to solve the questions.

a. What items are on special? _____

b. Complete the following:

i. Rice is _____/kg and _____/2 kg.

ii. Fish fingers are _____/300 g and _____/kg.

iii. R _____ for an 85 g packet of soup.

iv. R _____/for 1 kg of washing powder.

4. Solve the following problems:

If Dinah is paid R30 to work for $2\frac{1}{2}$ hours at the market, how many hours must she work if she wants to make R100?

A great challenge

A company used to sell cooldrink in 340 ml cans. One year, the company decided they will not increase the price as they usually did every year. Instead they left the price at R4,50 but made the cans smaller. The cans now only held 300 ml of cooldrink each.

– Explain at least two benefits such an action would have for the company.
– Can you think of any disadvantage of doing this?

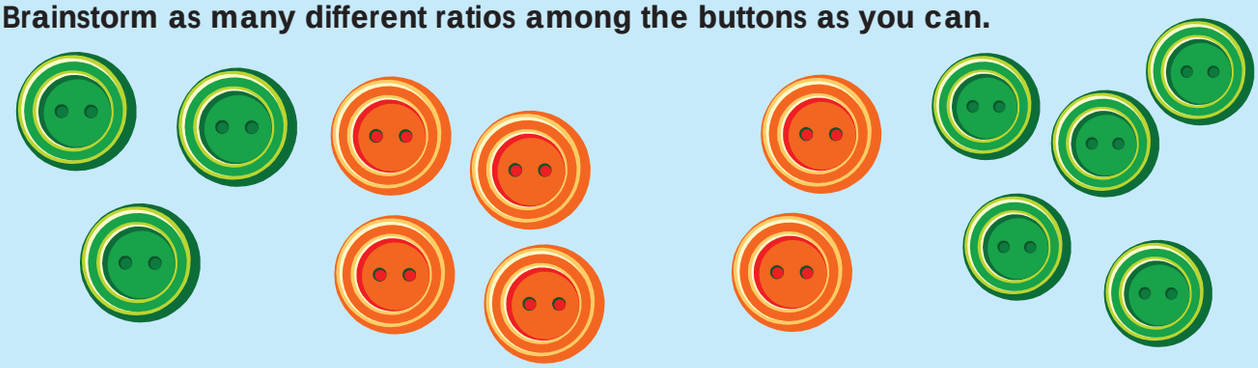
Sign:

Date:

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

42 Ratio

Brainstorm as many different ratios among the buttons as you can.



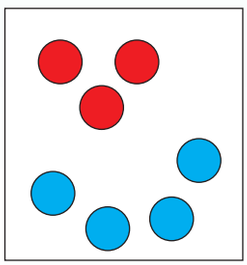
1. Add something to the second picture so that the ratio is the same for both pictures.

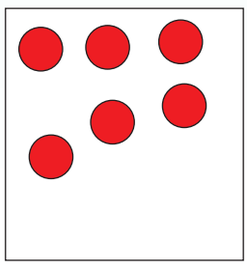
2. Draw a picture to show each ratio.

a. Blue caps to red caps 5:8	b. Boys to girls 12:10
c. Juice bottles to water bottles 3:2	d. Dogs to cats 6:5

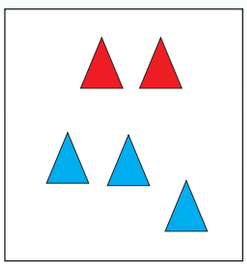
3. Copy and finish each picture to make equal ratios of red to blue objects.

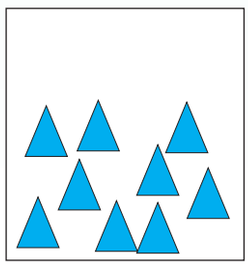
a.



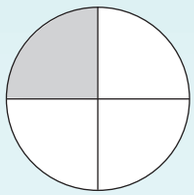


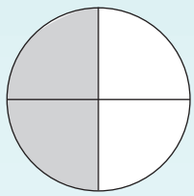
b.





4. For each of the diagrams below write down the ratio of the number of shaded segments to the number of unshaded segments. Give the simplest possible form of the ratio.

a. 

b. 

5. Which of these is better value for money? Why? Show your calculations.

Juice A: Dilute with water 1:6. 1 litre = R13,99

Juice B: Dilute with water 1:4. 2 litres = R18,99

6. I make a sauce which needs 2 spoons of oil for every 3 spoons of lemon juice. 1 spoon = 15 ml. If I want half a litre of sauce, how much oil do I need and how much lemon juice do I need? Show your calculations.

Ratios and mixing

- Find 4 products at home which use ratios. Bring the packaging if you can, otherwise write down what the product is and copy the instructions on it which explain how it must be mixed. For each one, work out how much you will use of each item for 3 different quantities (e.g. If a juice bottle says "mix with water 1:3", then work out how much juice and how much water you will use for 1 litre, 2 litres, 3 litres of the juice).
- Choose your own quantities.

Sign:

Date:

43 Factors

Discuss this.

Prime numbers have only two different factors. The one factor is 1. The other factor is the prime number. 2 is a prime number.

1 x 2 = 2
There are only 2 factors:
1 and 2.

Composite numbers have more than two different factors. The number 21 is a composite.

1 x 21 = 21 3 x 7 = 21
There are 4 factors:
1, 21, 3 and 7.

1. Complete the following:

Number	Factors	How many factors?	Prime or composite?
12	1, 2, 3, 4, 6, 12	6	Composite
13			
15			
11			
10			
41			
23			
63			
73			
81			
77			
49			
33			
108			
121			

2. Express each of the following odd numbers as the sum of 3 prime numbers.

a. 29 **3 + 7 + 19**

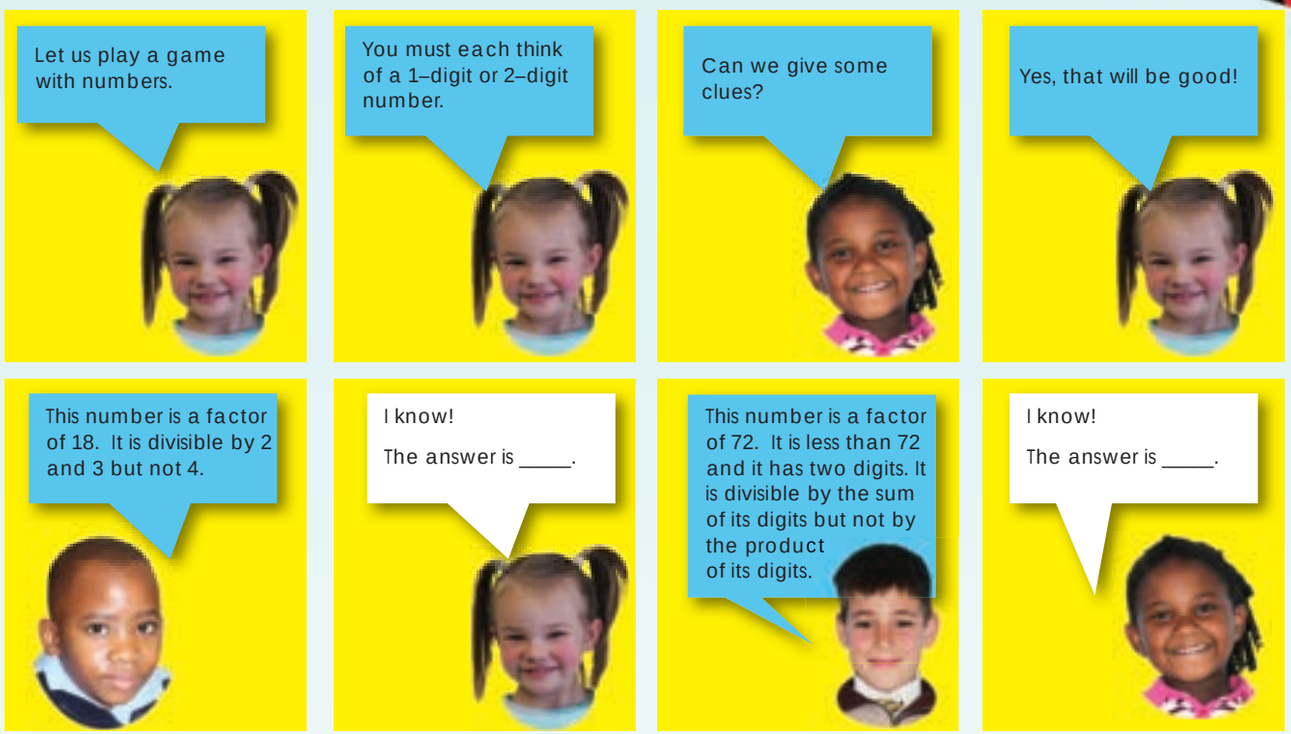
b. 83 _____

c. 55 _____

d. 53 _____

e. 99 _____

3. Guess the number



4. Complete the table

Number	Factors	Number of factors
7		
14		
9		
18		
15		
30		
45		
90		

Factor quiz

Which **number** between **1** and **100** has the most **factors**?

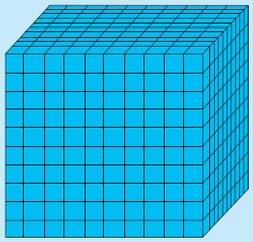
Sign:

Date:

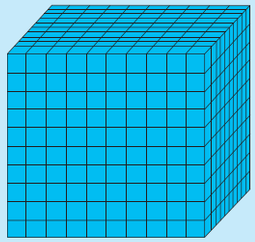
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

44a Grouping and sharing

Share the small cubes in this block between **50** children.



Share the small cubes in this block between **30** children.



1. Complete the following:

a. You have 229 objects. Divide them into groups of 4.

How many groups do you have? _____

How many objects are left over that do not fit into a group? _____

b. Draw a picture of your groups.

c. Write a division sum showing how you got your groups.

2. Complete the table below. If you need more space for your pictures, use a separate sheet of paper to draw them.

	How many groups do you have?	How many objects are left over that do not fit into a group?	A picture	Division sum
Divide 1 000 objects into 5 groups.				
Divide 10 000 objects into 8 groups.				
Divide 100 000 objects into 7 groups.				
Divide 500 000 objects into 6 groups.				

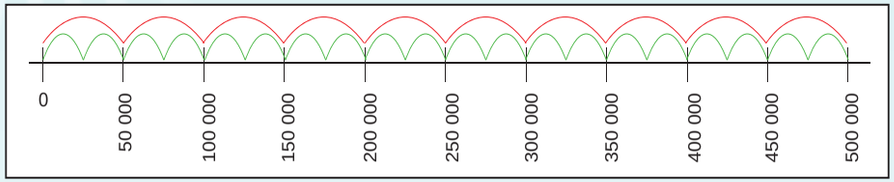
Sign:

Date:

continued

44b Grouping and sharing continued

3. Look at the number line and answer the questions below.



a. How many red groups do you have from 0 – 500 000? _____

b. What is the size of each group? _____

c. Write a multiplication sum for the red groups. _____

d. Write a division sum for the red groups. _____

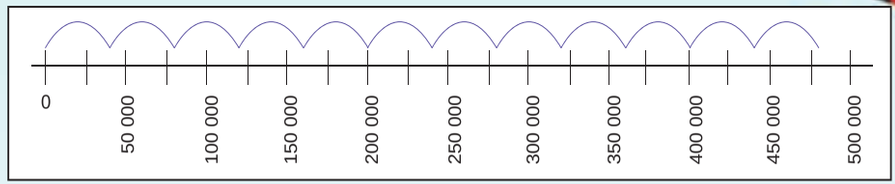
e. How many green groups do you have from 0 – 500 000? _____

f. What is the size of each group? _____

g. Write a multiplication sum for the green groups. _____

h. Write a division sum for the green groups. _____

4. Look at the number line and answer the questions below.



a. How many groups do you have? _____

b. How many objects are left over that do not fit into a group?

_____

c. Write this as a division sum. _____

Number system

How many groups can you make that will give a total of 800 000?
Remember all the groups must be the same size.

Sign:

Date:

45 Division

Quick recall:

10 ÷ 2		4 ÷ 1		50 ÷ 5		2 ÷ 1		18 ÷ 2		35 ÷ 5	
45 ÷ 5		3 ÷ 1		16 ÷ 4		5 ÷ 1		12 ÷ 4		28 ÷ 4	
20 ÷ 2		9 ÷ 3		4 ÷ 2		45 ÷ 3		25 ÷ 5		30 ÷ 3	
28 ÷ 2		12 ÷ 3		20 ÷ 4		15 ÷ 5		21 ÷ 3		10 ÷ 5	
36 ÷ 4		40 ÷ 4		22 ÷ 2		18 ÷ 3		8 ÷ 2		39 ÷ 3	

1. How well do you remember? Fill in the missing number. A number is divisible by:

a. _____ if the last digit is either 0 or 5.

b. _____ if the sum of the digits is divisible by 9.

c. _____ if the number formed by the last two digits is divisible by 4.

d. _____ if the last digit is 0, 2, 4, 6 or 8.

e. _____ if the last digit is 0.

f. _____ if it is divisible by 2 and it is divisible by 3.

g. _____ if the number formed by the last three digits is divisible by 8.

h. _____ if the sum of the digits is divisible by 3.

2. Estimate and then calculate the following:

a. Share 880 between 80. _____

b. Divide 900 by 100. _____

c. How many groups of 8 can be made from 480? _____

d. How many lengths of 100 m can you cut from 1 km? _____

e. Is 840 divisible by 40? How do you know? _____

f. Write down two numbers with a quotient of 60. _____

g. Share 2 700 between 90. _____

h. Divide 3 200 by 80. _____

i. How many groups of 700 can be made from 3 500? _____

j. Write down two numbers with a quotient of 25. _____

3. Make drawings on a separate page to show your calculations.

a. I have R249,50. Tickets cost R10,00 each.
How many can I buy? _____

b. There are 940 people. There are 9 seats in a row.
How many rows are there? _____

c. I have 880 sweets. One packet holds 8 sweets.
How many packets can I fill? _____

d. How many metres are there in 4 kilometres? _____

e. What is one quarter of 1 000? _____

f. How many 8s are there in 1 000? _____

g. What is half of 1 000? _____

h. What is a fifth of 1 000? _____

i. Make up your own division word sum. _____

4. Share each of the following between 5, 6, 50, 60, 500 and 600. Write down any remainders.

	5	6	50	60	500	600
a. 3 000						
b. 1 500						
c. 1 800						
d. 6 000						
e. 9 000						
f. 8 000						
g. 6 500						
h. 1 200						

Circled numbers

Circle the numbers that you can divide by all of these numbers: **2, 4, 5, 20, 40, 50, 200, 400** and **500**. What do you notice?

2 100 **8 000** **10 000**

2 000 **9 000** **8 500** **15 000** **16 000**

Sign:

Date:

46 More division

Term 2

Rules of divisibility:

2 – If the last digit is an even number.
3 – If the sum of the digits is divisible by 3, the whole number is also divisible by 3.
4 – If the number made by the last two digits is divisible by 4, the whole number is also divisible by 4.
5 – If the last digit is a 5 or a 0, the number is divisible by 5.
6 – If the number is divisible by both 3 and 2, it is also divisible by 6.
7 – Take the last digit, double it, and subtract it from the rest of the number; if the answer is divisible by 7 (including 0), then the whole number is also divisible by 7.
8 – If the sum of the last three digits is divisible by 8, the whole number is also divisible by 8.
9 – If the sum of all the digits is divisible by 9, the number is also divisible by 9.
10 – If the number ends in 0, it is divisible by 10.
11 – Subtract the sum of the even digits from the sum of the odd digits; if the difference, including 0, is divisible by 11, the number is also divisible by 11.
12 – If the number is divisible by both 3 and 4, it is also divisible by 12.

1. Say if the number is divisible by ____. Tick the correct column.

	2	3	4	5	6	7	8	9	10	11	12
a. 5 040											
b. 1 320											
c. 3 024											

2. Calculate the following and use a calculator to check your answers:

Example:

```
      23 rem 8
24 | 560
   - 48   (24 x 2)
     80
   - 72   (24 x 3)
      8
```

a. $26 \overline{)268}$

b. 8 092 ÷ 149 =

2. Calculate the following and use a calculator to check your answers:

Example:

```
      29 remainder 20
132 | 3 848
    - 264
      1 208
    - 1 188
         20
```

a. 3 829 ÷ 126 =

b. 7 323 ÷ 128 =

c. 5 637 ÷ 183 =

d. 9 522 ÷ 151 =

e. 6 373 ÷ 135 =

f. 4 217 ÷ 174 =

Paying for the dinner

We raised R8 674 in our community to give the old age home a special dinner. There are 128 people living in the old age home. How much can we spend per person?

Sign:

Date:

47 Division: multiple operations on whole numbers with or without brackets

B	Brackets first
O	Order (e.g powers and roots)
D	Division (left to right)
M	Multiplication (left to right)
A	Addition (left to right)
S	Subtraction (left to right)

We will not focus on the order in Grade 6 because it involves roots and exponents.

1. Calculate the brackets first.

Examples:

✔ 6 x **(2 + 3)** = 6 x **5** = 30

✖ 6 x (2 + 3) = 12 + 3 = 15 (wrong)

What will happen if you calculate the sum using:

- a basic calculator?
- a scientific calculator?

a. 6 x (2 + 3) =

b. 10 x (1 + 4) =

c. 9 x (7 + 4) =

d. 7 x (4 + 5) =

e. 8 x (3 + 2) =

f. 3 x (9 + 2) =

2. Multiply or divide before you add.

Examples:

✔ 2 + **5 x 3** = 2 x **15** = 17

✖ 2 + 5 x 3 = 7 x 3 = 21 (wrong)

a. 3 + 2 x 4 = **b. 7 x 5 + 2 =** **c. 6 + 2 x 3 =**

d. 4 x 3 + 5 =

e. 5 + 6 x 3 =

f. 4 + 3 x 5 =

3. Work from left to right.

Examples:

✔ 30 ÷ **5 x 3** = 6 x 3 = 18

✖ 30 ÷ 5 x 3 = 30 ÷ **15** = 2 (wrong)

a. 32 ÷ 8 x 2 =

b. 49 ÷ 7 x 3 =

c. 99 ÷ 11 x 4 =

d. 36 ÷ 4 x 3 =

e. 24 ÷ 4 x 2 =

f. 48 ÷ 12 x 3 =

4. Explain how you will work it out, and then calculate it.

Examples:

✔ 4 x 2 ⟶ 4 x 2 + 2 = 8 + 2 = 10 (right)

✖ 2 + 4 ⟶ 2 + 4 x 2 = 12 (wrong)

a. 3 + 2 x 4 =

b. (3 + 4) x 2 =

c. 6 x 2 + 3 =

d. 2 x (5 + 4) =

e. 5 + 3 x 2 =

f. (6 + 7) x 2 =

Sharing sweets

I have 3 sweets and my brother has 4 times more. We share all the sweets amongst 5 children. How many sweets will each child get?

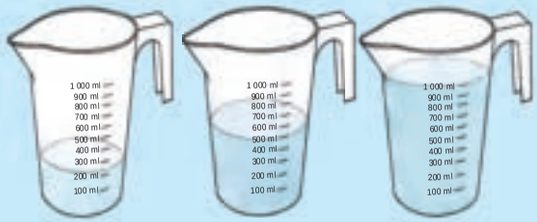
Sign:

Date:

48 Fractions through measurement

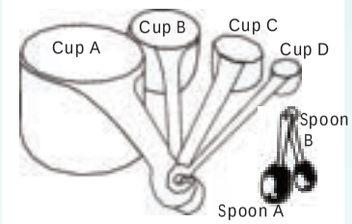
Term 2

Look at the picture and use words such as ml, $\frac{1}{4}$ and $\frac{1}{2}$.



Look at the picture and discuss it in a group. Say what fraction of jug A, Jug B and Jug C is coloured.

1. Mark the capacity on the measuring cups and spoons using the labels provided.



100 ml	25 ml
10 ml	250 ml
50 ml	5 ml

1 litre	Cup or Spoon	Capacity	How many will fill the jug?	What fraction of the jug will be filled by one cup or spoonful?
	Cup A	250 ml	4 cups will fill the jug.	$\frac{1}{4}$ of the jug will be filled.
	Cup B			
	Cup C			
	Cup D			
	Spoon A			
	Spoon A			

2. Answer the following questions giving your answers in metres.

What is:

a. one half of 1m? 0,500 m
b. one quarter of 1 m? _____
c. one fifth of 1 m? _____
d. One tenth of 1 m? _____
e. one twentieth of 1 m? _____
f. one fiftieth of 1 m? _____
g. three quarters of 1 m? _____
h. two fifths of 1 m? _____

3. Answer the following questions giving your answers in kilometres

What is:

a. one half of 1km? 0,500 km
b. one quarter of 1 km? _____
c. one fifth of 1 km? _____
d. One tenth of 1 km? _____
e. one twentieth of 1 km? _____
f. one fiftieth of 1 km? _____
g. three quarters of 1 km? _____
h. two fifths of 1 km? _____

4. Complete the table below using the scale on the right.

Line	Length of line	Fraction of 1 km
Blue		
Orange		
Red		
Pink		
Green		

Play Fraction Dominoes

You played this previously. See cut–out 5.

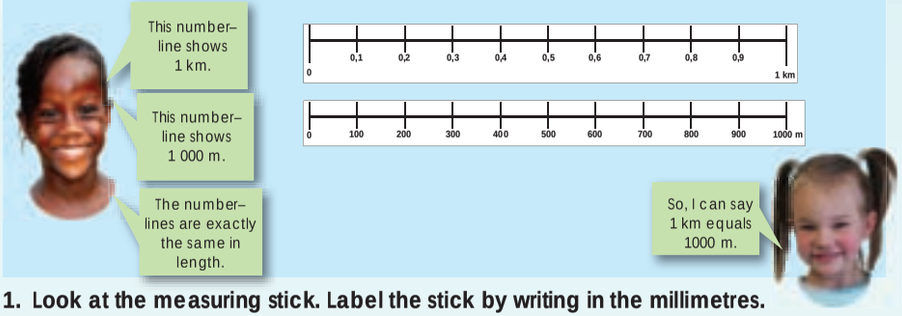
1. Play Fraction Dominoes with a friend.
2. Describe the dominoes in this section.

Sign:

Date:

49 More fractions through measurement

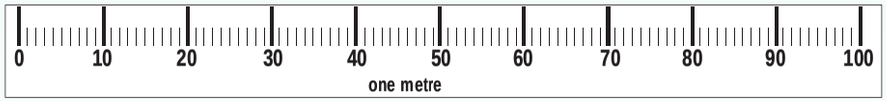
Read the descriptions.



1. Look at the measuring stick. Label the stick by writing in the millimetres. Then complete the table below.

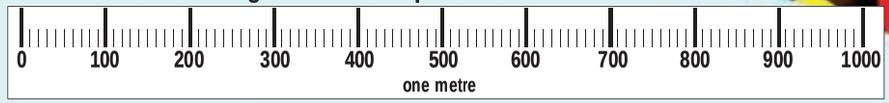
Millimetres	Fraction of the measuring stick	Decimal fraction	Centimetres
5 mm	$\frac{5}{10}$	0,5	0,5 cm
3 mm			
4 mm			
9 mm			
7 mm			

2. Look at the measuring stick and complete the tables below.



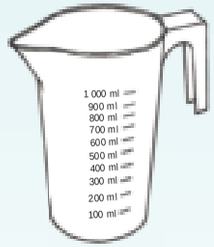
Centimetres	Fraction of the measuring stick	Decimal fraction	Metres
15 cm	$\frac{15}{100}$	0,15	0,15 m
32 cm			
55 cm			
75 cm			
89 cm			

3. Look at the measuring stick and complete the tables below.



Millimetres	Fraction of the measuring stick	Decimal fraction	Metres
255 mm	$\frac{255}{1000}$	0,255	0,255 m
275 mm			
369 mm			
892 mm			
313 mm			

4. Fill $\frac{1}{10}$ of the jug.



Answer true or false:

a. $\frac{1}{10}$ of the jug is equal to 1 litre. _____

b. $\frac{1}{10}$ of the jug is equal to 1 ml. _____

c. $\frac{1}{10}$ of the jug is equal to 100 ml. _____

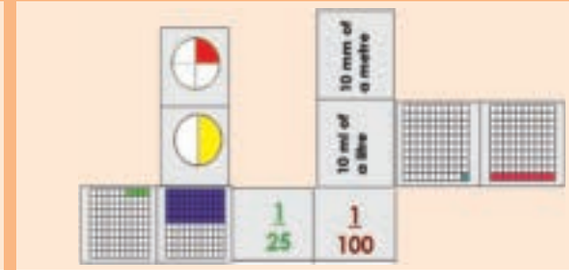
d. $\frac{10}{100}$ of the jug is equal to 100 ml. _____

e. $\frac{100}{1\,000}$ of the jug is equal to 100 ml. _____

5. I need to walk 1 km to school. I walked $\frac{1}{5}$ of the km and then met my friend. What part of the kilometre did we walk together?

Fraction Dominoes

How to play:
See the Worksheet 48, page 129.

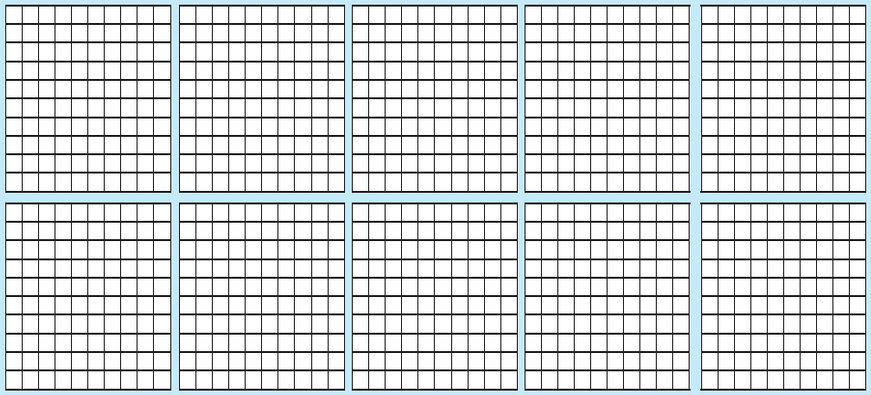


Sign:

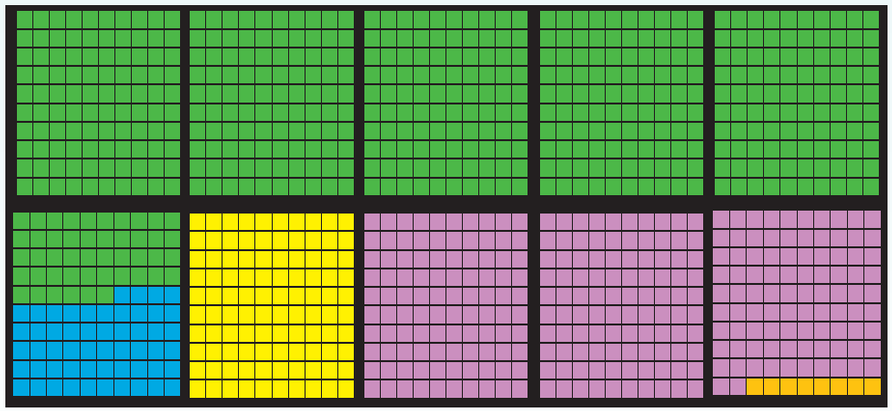
Date:

50a Fractions

If all of the small squares together represent one kilogram, why can we say that each of the small squares represents one gram?



1. Look at the diagram and complete the table on the next page.



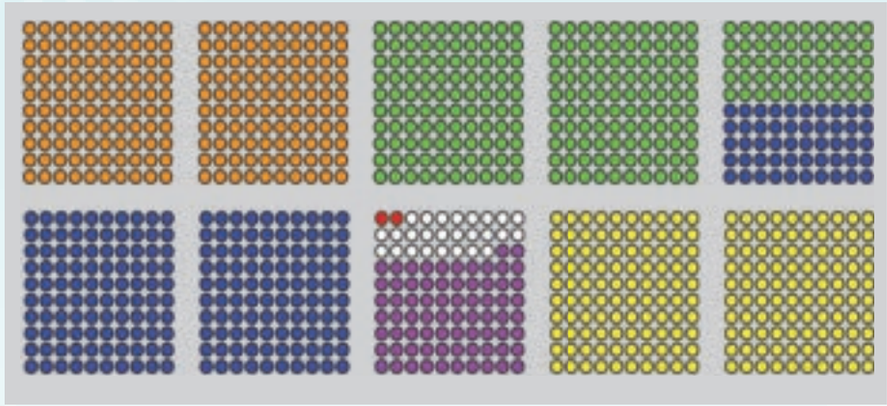
Colour	Fraction	Decimal fraction	Kilogram
Green			0,546 kg
Blue			
Yellow		0,1	
Pink			
Orange	$\frac{8}{1000}$		

2. Make your own word sum about the diagram on the previous page.

continued

50b Fractions continued

3. Look at the bead diagram and complete the table below.



Beads	Fraction	Decimal fraction	Total beads
Orange	$\frac{200}{1000}$	0,2	200
Green			
Blue			
Red			
White			
Purple			
Yellow			

4. Use the table to decide what colour fraction of beads is:

a. less than $\frac{1}{5}$? red, white and purple

b. more than $\frac{1}{5}$? _____

c. less than $\frac{1}{10}$? _____

d. less than 0,05? _____

e. than 0,005? _____

5. Complete the following:

a. 0,4; 0,5; 0,6; 0,7; _____; _____; _____

b. 0,07; 0,08; 0,09; _____; _____; _____; _____

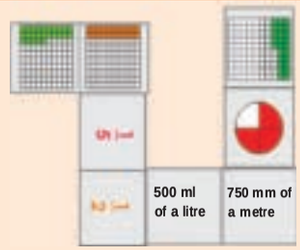
c. 0,006; 0,007; 0,008; _____; _____; _____

d. 1; 0,99; 0,98; _____; _____; _____

e. 0;126; 0,125; 0,124; _____; _____; _____

Fraction Dominoes

How to play:
Play fraction dominoes with a partner. See worksheet 48, page 129.



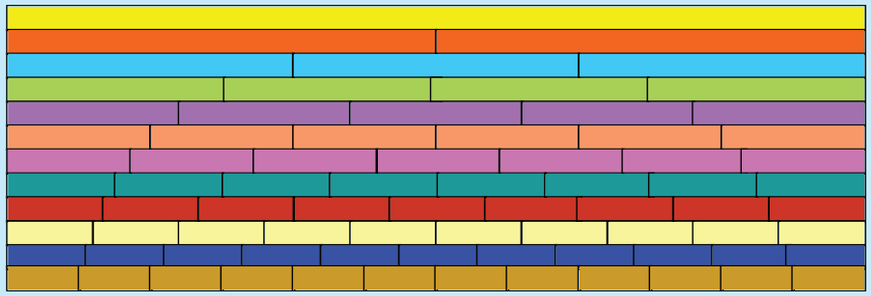
Sign:

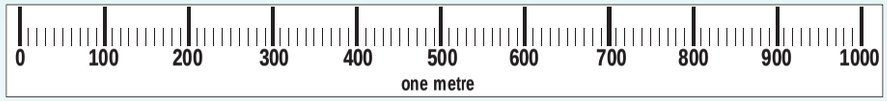
Date:

51a More fractions

Term 2

If the top row (gold) is equal to 1, what are the other rows equal to?





1. Use the fraction board and ruler above to calculate the following:

	mm	m	___ mm = ____ m
One half ($\frac{1}{2}$) of a metre			
Two quarters ($\frac{2}{4}$) of a metre			
One fifth ($\frac{1}{5}$) of a metre			
One tenth ($\frac{1}{10}$) of a metre			
Three quarters ($\frac{3}{4}$) of a metre			

2. Complete the following using the diagram and ruler above.

a. $\frac{1}{2}$m = $\frac{\square}{4}$m = $\frac{\square}{8}$m = ____ mm = ____ m

b. $\frac{1}{5}$m = $\frac{\square}{10}$m = ____ mm = ____ m

c. Write down five fractions that are smaller than $\frac{1}{3}$ ____ ____ ____ ____ ____

d. Write down five fractions that are bigger than $\frac{1}{4}$ ____ ____ ____ ____ ____

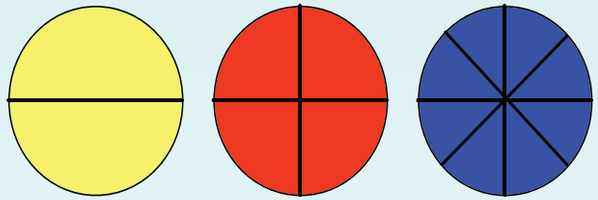
e. What fraction of the ruler is 10 mm? ____

f. What fraction of the ruler is 10 cm? ____

g. What fraction of the ruler is 4 mm? ____

h. What fraction of the ruler is 5 mm? ____

3. Write the fraction that each part represents underneath the fraction circle.



$\frac{1}{2}$ ____ ____

4. Look at the picture and answer the questions below.

a. How much does the object weigh? ____

b. What fraction of 1 kg does the object weigh? ____

5. Answer <, > or =

i. 200 g ____ $\frac{1}{4}$ of a kg.

ii. 250 ____ $\frac{1}{5}$ of a kg.

iii. 500 g ____ $\frac{1}{4}$ of a kg.

iv. 500 g ____ $\frac{1}{2}$ of a kg.

v. 125 g ____ $\frac{1}{8}$ of a kg.

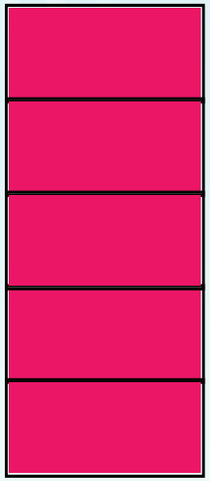
vi. 750 g ____ $\frac{3}{4}$ of a kg.

continued

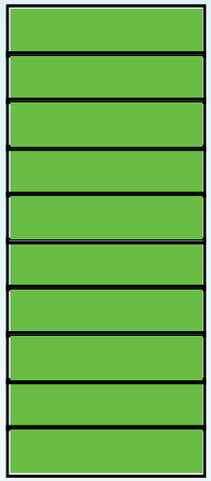
Sign:

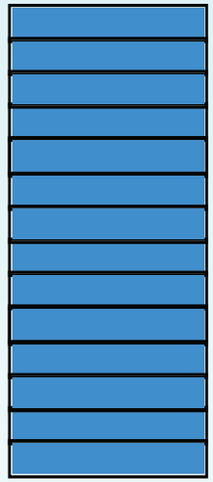
Date:

6. Write the fraction that each part represents underneath the fraction rectangle, and answer the questions.

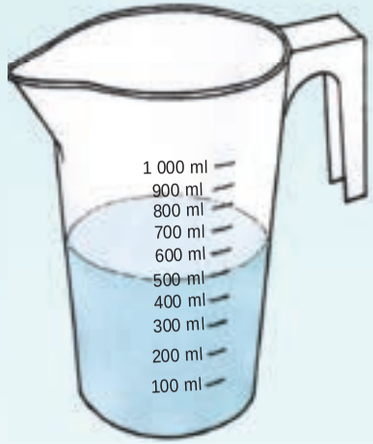


$\frac{1}{5}$





7. Look at the picture of the jug and answer the questions below.



a. How much liquid is in the container? _____

b. What fraction of 1 litre is this? _____

c. Answer <, >, or =

i. 200 ml _____ $\frac{1}{4}$ of a litre.

ii. 200 ml _____ $\frac{1}{5}$ of a litre.

iii. 100 ml _____ $\frac{1}{5}$ of a litre.

iv. 100 ml _____ $\frac{1}{10}$ of a litre.

v. 50 ml _____ $\frac{1}{20}$ of a litre.

vi. 50 ml _____ $\frac{1}{50}$ of a litre

Fraction Dominoes

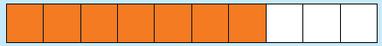
How to play:
Play fraction dominoes. See worksheet 48, page 129.

Sign:

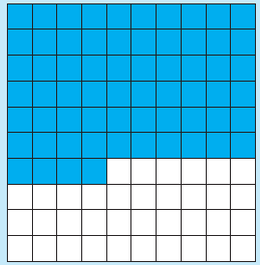
Date:

52 Decimal notation

Describe each diagram using fractions and decimal fractions.

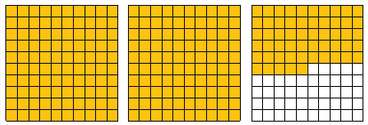
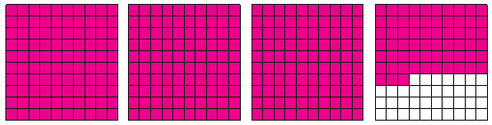
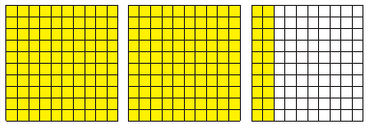
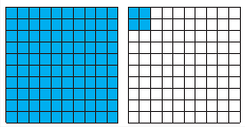
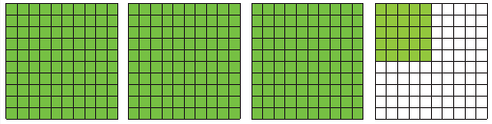


$\frac{7}{10}$ 0,7



$\frac{64}{100}$ 0,64

1. What parts are shaded?

Shapes	Mixed number		Decimal fraction
	Whole number	Proper fraction	
	2	$\frac{55}{100}$	2,55
			
		$\frac{1}{5}$ or	
		$\frac{1}{25}$ or	
		or	

2. Write the following in decimal notation.

a. $3\frac{37}{100}$ = _____

b. $5\frac{88}{100}$ = _____

c. $6\frac{1}{25}$ = _____

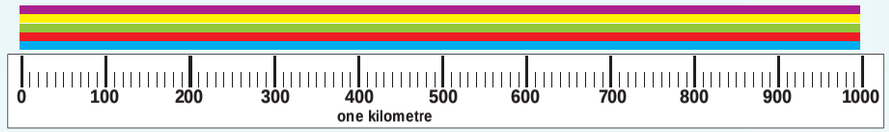
d. $9\frac{1}{5}$ = _____

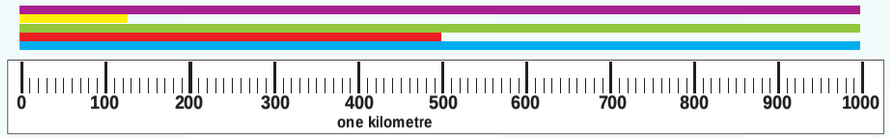
e. $8\frac{1}{4}$ = _____

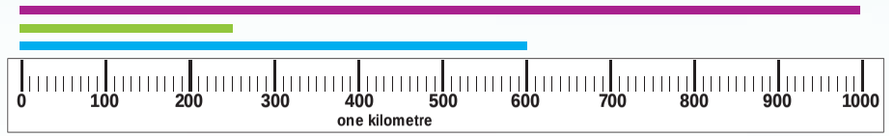
f. $7\frac{4}{5}$ = _____

Use the diagrams on the previous page to help you. A mixed number is the same as a mixed fraction.

3. Look at all the rulers and coloured lines and complete the table on the next page.







Sign:

Date:

continued ☛

53 More decimal notation

What is the total length of the ...	mm	Whole numbers and common fractions		Mixed fraction	Decimal fraction or m
		Whole metre(s)	Fraction of one metre		
blue line	1 000 mm + 1 000 mm + 600 mm = 2 600 mm	2	$\frac{600}{1\,000}$	$\frac{2600}{1\,000}$	2,6 m
red line					
green line					
yellow line					
purple line					

4. Write the following as a decimal fraction.

a. $3\frac{457}{1\,000}$ = _____

b. $5\frac{88}{100}$ = _____

c. $2\frac{1}{250}$ = _____

d. $7\frac{1}{500}$ = _____

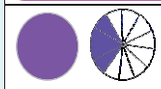
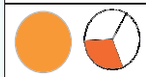
e. $15\frac{1}{125}$ = _____

f. $62\frac{1}{200}$ = _____

Mixed Fraction
A Mixed Fraction is a whole number and a proper fraction combined into one 'mixed' number.

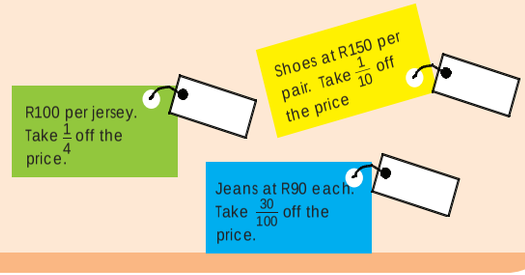
Improper Fraction
An improper fraction has a numerator (the top number) that is greater than or equal to the denominator (bottom number).
Example: $\frac{4}{3}, \frac{5}{2}, \frac{7}{5}, \frac{2}{2}$.

5. What parts are shaded? Complete the table.

Shapes	Mixed number		Improper fraction
	Whole number	Proper fraction	
	3	$\frac{1}{2}$	$\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2} = \frac{7}{2}$
			
			
			
			
			
			
			

SALE

- Your are working at a clothing shop.
- Your manager says that he is going to reduce prices for a sale. How quick can your write the new prices on the labels?

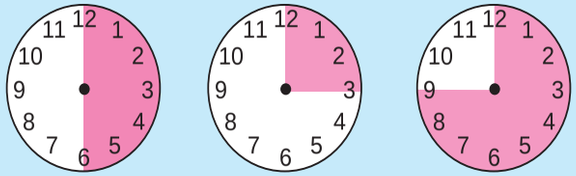


Term 2

54 Time in decimal form

Use the words below to explain the pink on the clocks.

- 15 minutes
- 30 minutes
- 45 minutes
- quarters
- half
- three quarters



Very important to remember!

- 0,5 hours = 30 minutes, not 50 minutes. This is because decimals show fractions of tenths, hundredths, thousandths and so on. Minutes are measured in **sixtieths** of an hour.
- Similarly, $\frac{1}{4}$ hour = 15 minutes, and $\frac{1}{10}$ hour = 6 minutes.

1. Write your answer in common fractions.

a. 30 minutes = _____ hour. b. 15 minutes = _____ hour.

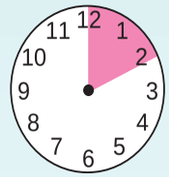
c. 45 minutes = _____ hour d. 60 minutes = _____ hour.

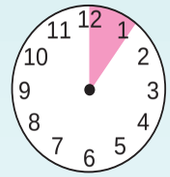
$\frac{1}{2}$ = 0,5 $\frac{1}{4}$ = 0,25 $\frac{1}{5}$ = 0,2 $\frac{1}{10}$ = 0,1

2. Write the answers in decimal fractions.

a. 30 minutes = _____ hours. b. 15 minutes = _____ hours.

c. 12 minutes = _____ hours. d. 6 minutes = _____ hours.





3. Complete the table:

Minutes	Hours in common fraction	Hours in decimal fraction	Division sum
6	$\frac{6}{60} \div 6 = \frac{1}{10}$	0,1	1 ÷ 10 = 0,1
12	$\frac{12}{60} \div 6 = \frac{2}{10}$		
18			
24			
30			
36			
42			
48			
54			
60			

How long does it take to do my homework?

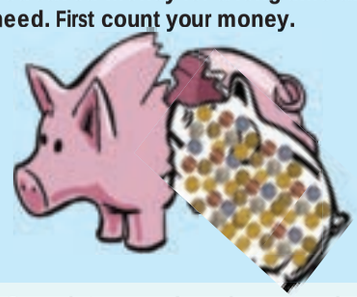
I spent 0,4 hours on doing my language homework, and 0,7 hours on my mathematics homework.

How many minutes did I spend in total?

Sign:

Date:

You saved money for a long time and now you are going to buy all the things you need. First count your money.



1. Complete your shopping game below and then answer these questions.

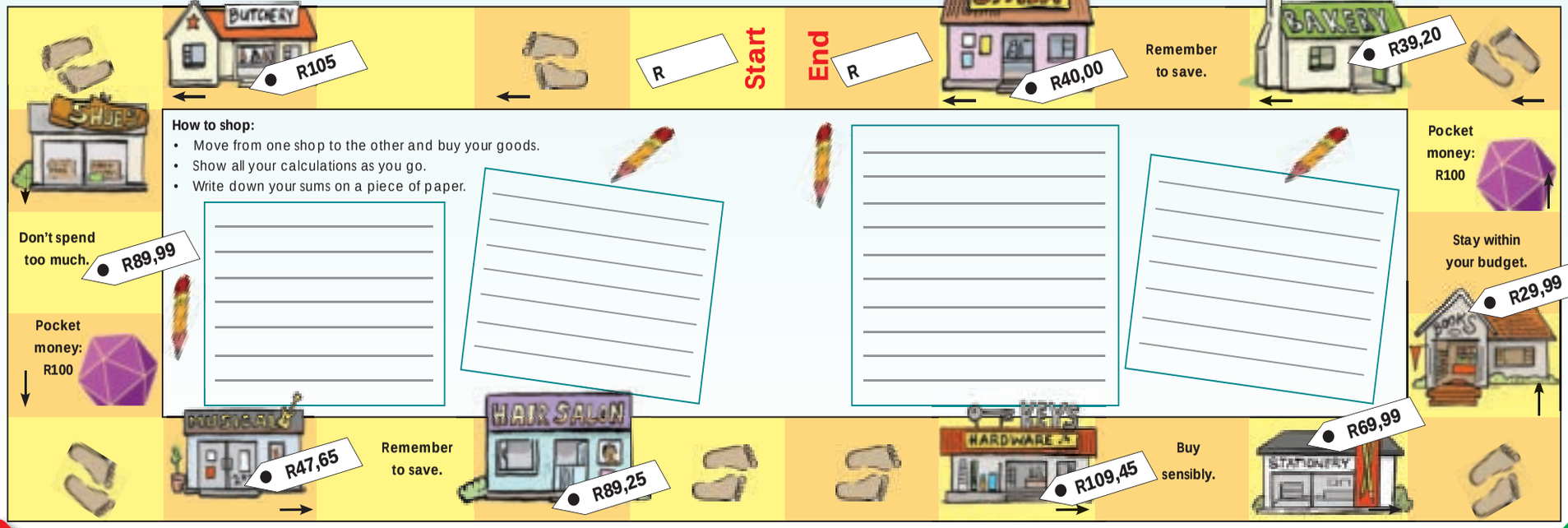
a. I counted my money and I have R _____ to start the game with.

b. I spend R _____.

c. I will save R _____.

2. Calculate the following:

a. R89,25/pair of shoes. How much will 4 pairs cost?	b. R29,99/CD. How much will you pay for 5 CDs on special?
c. R69,99/book. How much will you pay for 7 books?	d. R39,20/teddy bear. How much will 10 teddy bears cost?



56 Adding and subtracting decimals

What is the difference between the numbers? Fill in the last number.

Count forwards:

0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	
0,01	0,02	0,03	0,04	0,05	0,06	0,07	0,08	0,09	
0,001	0,002	0,003	0,004	0,005	0,006	0,007	0,008	0,009	

Count backwards:

1. Complete the following:

a. 0,3; 0,6; 0,9; ____; ____; ____; ____; ____

b. 3,5; 4; 4,5; ____; ____; ____; ____; ____

c. 7,2; 6,9; 6,6; ____; ____; ____; ____; ____

d. 0,02; 0,04; 0,06; ____; ____; ____; ____; ____

e. 0,79; 0,84; 0;89; ____; ____; ____; ____; ____

f. 4,99, 4,88; 4,77; ____; ____; ____; ____; ____

g. 0,125; 0,130; 0,135; ____; ____; ____; ____; ____

h. 0,125; 0,250; 0,375; ____; ____; ____; ____; ____

i 9,937; 9,837; 9,737; ____; ____; ____; ____; ____

2. Complete the table.

Number	Add 0,1	Add 0,01	Add 0,001	Subtract 0,1	Subtract 0,01	Subtract 0,001
0,657						
0,248						
232,232						
9,999						
1						

3. Fill in the missing number:

a. 32,4 + ____ = 32,9

b. 7,64 + ____ = 7,94

c. 1,32 + ____ = 1,38

d. 8,452 + ____ = 8,492

e. 4,125 + ____ = 4,127

f. 9,328 + ____ = 9,33

4. Complete the table.

		Complete up to the next hundredth	Complete up to the next tenth	Complete up to the next unit
a.	2,534	2,534 + ____ = 2,540	2,534 + ____ = 2,600	2,534 + ____ = 3
b.	6,876	6,876 + ____ = 6,880	6,876 + ____ = 6,900	6,876 + ____ = 7
c.	5,163	5,163 + ____ = 5,170	5,163 + ____ = 5,200	5,163 + ____ = 6
d.	4,087	4,087 + ____ = 4,090	4,087 + ____ = 4,100	4,087 + ____ = 5
e.	9,999	9,999 + ____ = ____	9,999 + ____ = ____	9,999 + ____ = ____

5. Write the following in expanded notation:

a. 4,578 = 4 + 0,5 + 0,07 + 0, 008

b. 9,341 = ____

c. 3,782 = ____

d. 15,342 = ____

e. 89,294 = ____

f. 82,059 = ____

g. 456, 321 = ____

h. 809,402 = ____

Examples:

Example 1:

4,234 + 1,452

= 4 + 1 + 0,2 + 0,4 + 0,03 + 0,05 + 0,004 + 0,002

= 5 + 0,6 + 0,08 + 0,006

= 5,686

Example 2:

	4 , 2 3 4	
+	1 , 4 5 2	
	0 , 0 0 6	(0,004 + 0,002)
	0 , 0 8 0	(0,03 + 0,05)
	0 , 6 0 0	(0,2 + 0,4)
+	5 , 0 0 0	(4 + 1)
	5 , 6 8 6	

6. Calculate the following using any method.

Do your calculations on an extra piece of paper.

a. 5,326 + 4,542 = ____

b. 3,234 + 2,549 = ____

c. 3,785 + 4,156 = ____

d. 4,349 + 1,874 = ____

e. Test your answers.

What can you do?

What can this number mean in a measurement?

1,255

Sign:

Date:

57 Adding and subtracting more decimals

Look at the table and discuss.

hundred thousands	ten thousands	thousands	hundreds	tens	units	tenths	hundredths	thousandths
1	9	6	2	3	7	5	4	8

Decimal fraction revision

1. Complete the table below:

Decimal fraction	Common fraction	Words
0,345	$\frac{345}{1\,000}$	Zero comma three four five
5,879		
3,402		
18,005		
23,900		

2. Write in expanded notation.

Decimal fraction	Common fraction	Decimal fraction
0,345	$\frac{3}{10} + \frac{4}{100} + \frac{5}{1\,000}$	0,3 + 0,04 + 0,005
5,879		
3,402		
18,005		
23,900		

3. Match column B with column A.

Column A	Column b
a. 0,500	i. 5
b. 0,250	ii. 0,5
c. 0,205	iii. 0,025
d. 0,025	iv. 0,25
e. 5,000	v. 0,205

4. Fill in <, > or =

a. 0,43 _____ 0,430
b. 0,027 _____ 0,27
c. 0,900 _____ 0,90
d. 0,900 _____ 0,09
e. 1,004 _____ 0,14
f. 2,760 _____ 2,76
g. 5,400 _____ 5,4
h. 4,5 _____ 5,4
i. 18,1 _____ 18,100
j. 9,999 _____ 99,99

Example 1:
5,678 + 4,9
= 5 + 4 + 0,6 + 0,9 + 0,07 + 0,008
= 5 + 4 + 1,5 + 0,07 + 0,008
= 5 + 4 + 1 + 0,5 + 0,07 + 0,008
= 10,578

Example 2:
5,678 + 4,9

	5 , 6 7 8	
+	4 , 9 0 0	
	0 , 0 0 8	(0,008 + 0)
	0 , 0 7 0	(0,07 + 0)
	1 , 5 0 0	(0,6 + 0,9)
+	9 , 0 0 0	(5 + 4)
	10 , 5 7 8	

Example 3:
4,9 – 1,783

	4 , 9 0 0	
–	1 , 7 8 3	
	0 , 0 0 7	(0,010 – 0,003)
	0 , 0 1 0	(0,09 – 0,08)
	0 , 1 0 0	(0,8 – 0,7)
+	3 , 0 0 0	(4 – 1)
	3 , 1 1 7	

5. Calculate the following using any method.

a. 45,783 + 8,92 = _____
b. 32,24 + 19,387 = _____
c. 52,793 + 28,32 = _____
d. 69,8 + 21,876 = _____
e. 87,683 + 49,9 = _____
f. 7,63 – 4,476 = _____
g. 38,7 – 25,534 = _____
h. 384,4 – 123,789 = _____
i. 873,5 – 299,999 = _____

What can you do?

What can this number mean?
2,500

Sign:
Date:

Term 2

58 More adding and subtracting of decimals

Count **one tenth** and then **one hundredth** forward from the given number.

	Add 0,1	Add 0,01
0,45		
0,68		
1,34		
2,41		
3,06		

Count **one tenth** and then **one hundredth** backward from the given number.

	Subtract 0,1	Subtract 0,01
0,45		
0,68		
1,34		
2,41		
3,06		

1. Add the following using the examples to guide you.

Example 1: 0,2 + 0,4 = 0,6	a. 0,1 + 0,5 =	b. 0,5 + 0,4 =
Example 2: 0,25 + 0,4 = (0,2 + 0,4) + 0,05 = 0,6 + 0,05 = 0,65	c. 0,64 + 0,2 =	d. 0,73 + 0,2 =
Example 3: 0,38 + 0,9 = (0,3 + 0,9) + 0,08 = 1,2 + 0,08 = 1 + 0,2 + 0,08 = 1,28	e. 0,38 + 0,7 =	f. 0,79 + 0,4 =
Example 4: 0,42 + 0,35 = (0,4 + 0,3) + (0,02 + 0,05) = 0,7 + 0,07 = 0,77	g. 0,63 + 0,23 =	h. 0,65 + 0,24 =
Example 5: 0,46 + 0,28 = (04 + 0,2) + (0,06 + 0,08) = 0,6 + 0,14 = 0,6 + 0,1 + 0,04 = 0,7 + 0,04 = 0,74	i. 0,62 + 0,19 =	j. 0,57 + 0,25 =
Example 6: 0,99 + 0,35 = (0,9 + 0,3) + (0,09 + 0,05) = 1,2 + 0,14 = 1 + 0,2 + 0,1 + 0,04 = 1 + 0,3 + 0,04 = 1,34	k. 0,32 + 0,99 =	l. 0,32 + 0,99 =

2. Subtract the following using the examples to guide you.

Example 1: 0,4 – 0,2 = 0,2	a. 0,7 – 0,3 =	b. 0,5 – 0,1 =
Example 2: 0,42 – 0,3 = (0,4 + 0,02) – 0,3 = 0,1 + 0,02 = 0,12	c. 0,83 – 0,2 =	d. 0,38 – 0,1 =
Example 3: 1,42 – 0,5 = (1 + 0,4 + 0,02) – 0,5 = (1,4 + 0,02) – 0,5 = 0,9 + 0,02 = 0,92	e. 1,83 – 0,9 =	f. 0,67 – 0,23 =
Example 4: 0,76 – 0,34 = (0,7 + 0,06) – (0,3 + 0,04) = 0,7 – 0,3) + (0,06 – 0,04) = 0,4 + 0,02 = 0,42	g. 0,69 – 0,46 =	h. 0,58 – 0,23 =
Example 5: 0,76 – 0,49 = (0,7 + 0,06) – (0,4 + 0,09) = (0,6 + 0,16) – (0,4 + 0,09) = (0,6 – 0,4) + (0,16 – 0,09) = 0,2 + 0,07 = 0,27	i. 0, 85 – 0,47 =	j. 0,53 – 0,37 =
Example 6: 1,46 – 0,99 = (1 + 0,4 + 0,06) – (0,9 + 0.09) = (1,4 + 0,06) – (0,9 + 0,09) = (1,3 + 0,16) – (0,9 + 0,09) = (1,3 – 0,9) + (0,16 – 0,09) = 0,4 + 0,07 = 0,47	k. 1,57 – 0,78 =	l. 1,63 – 0,87 =

Sign:

Date:

59 Place value of digits to at least two decimal places

We use decimal fractions on a daily basis. Here is one example. Give more examples.

Note that in South Africa we use a decimal comma, although, as in this example the decimal point is also used.

1. Write the numbers in the correct column.

Number	Thousands	Hundreds	Tens	Units		Tenths	Hundredths
a. 2 456,45					,		
b. 5 789,32					,		
c. 8 987,42					,		
d. 8 901,34					,		
e. 5 789,21					,		
f. 7 632,45					,		
g. 9 078,21					,		
h. 8 007,08					,		

2. Write in expanded notation. **Example:** 5,34 = 5 units + 3 tenths + 4 hundredths

a. 1,13 = _____

b. 5,89 = _____

c. 3,05 = _____

d. 2,99 = _____

3. Write the following in words. **Example:** 5,37 = five comma three seven

a. 4,37 = _____

b. 8,99 = _____

c. 9,01 = _____

4. Write in expanded notation. **Example:** 9,12 = 9 + 0,1 + 0,02

a. 1,13 = _____

b. 5,89 = _____

c. 3,05 = _____

d. 2,99 = _____

5. Write a number for: **Example:** 8 + 0,5 + 0,04 = 8,54

a. 3 + 0,7 + 0,02 = _____

b. 7 + 0,9 + 0,01 = _____

c. 9 + 0,8 + 0,03 = _____

d. 5 + 0,1 + 0,01 = _____

6. Count in halves. Colour the pattern on the board.

0,1	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1
1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8	1,9	2
2,1	2,2	2,3	2,4	2,5	2,6	2,7	2,8	2,9	3
3,1	3,2	3,3	3,4	3,5	3,6	3,7	3,8	3,9	4
4,1	4,2	4,3	4,4	4,5	4,6	4,7	4,8	4,9	5
5,1	5,2	5,3	5,4	5,5	5,6	5,7	5,8	5,9	6
6,1	6,2	6,3	6,4	6,5	6,6	6,7	6,8	6,9	7
7,1	7,2	7,3	7,4	7,5	7,6	7,7	7,8	7,9	8
8,1	8,2	8,3	8,4	8,5	8,6	8,7	8,8	8,9	9
9,1	9,2	9,3	9,4	9,5	9,6	9,7	9,8	9,9	10

How much water?

I had 0,4 of the glass of water. My friend says she had 0,04. Which one is more realistic and why?

Sign:

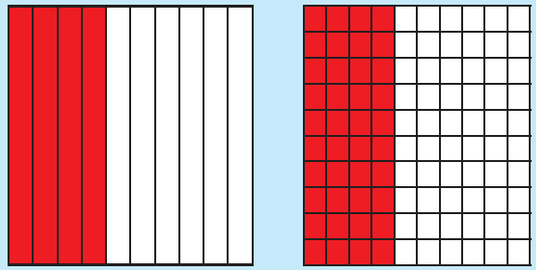
Date:

60 Compare and order decimal fractions to at least two decimal places

Term 2

Do you know that 0,4 and 0,40 are the same.

You can show it by using a drawing like the one on the right.

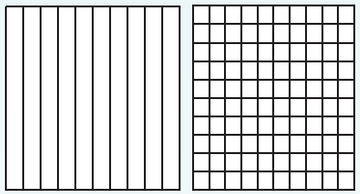


$\frac{4}{10} = 0,4$

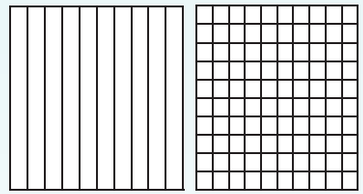
$\frac{40}{100} = 0,40$

1. On the diagrams show that:

a. 0,6 = 0,60

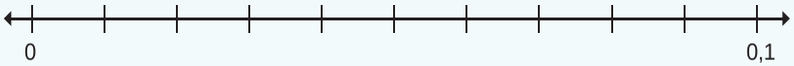


b. 0,7 = 0,70

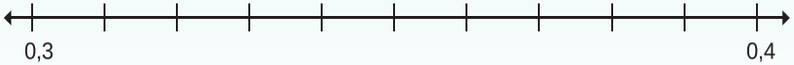


2. Complete the number lines.

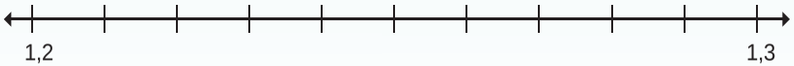
a.



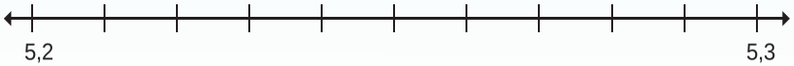
b.



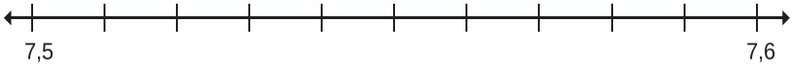
c.



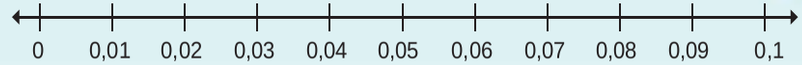
d.



e.



3. Look at the number line and answer the questions.



a. Which decimal is smaller than 0,04? _____

b. Which decimal is bigger than 0,04? _____

c. Which decimals are between 0,03 and 0,05? _____

d. Which number comes after 0,1 on this number line? _____

4. Fill in <, >, =.

a. 0,4 ☐ 4 b. 0,12 ☐ 0,21 c. 6,8 ☐ 6,18

d. 1,11 ☐ 1,01 e. 8,6 ☐ 8,06 f. 3,5 ☐ 3,05

g. 4,72 ☐ 7,42 h. 9,05 ☐ 9,5 i. 3,42 ☐ 3,04

5. Write in ascending order.

a. 0,12; 0,2; 0,02; 0,21; 0,22 _____

b. 0,05; 0,5; 0,15; 0,51; 0,55 _____

6. Write in descending order.

0,09; 0,99; 0,91; 0,19; 0,9 _____

0,01; 0,11; 0,12; 0,22; 0,21 _____

Who paid more?

My brother paid 350c for his juice. I bought mine for R3,05. Who paid the least?

Sign:

Date:

61 Multiplying with decimals

What pattern do you see?

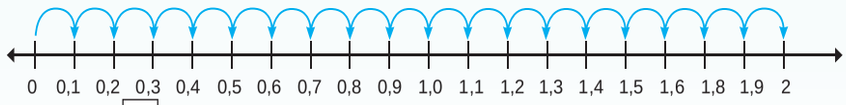
1 x 1 = 1	1 x 10 = 10	1 x 100 = 100	0,1 x 1 = 0,1	0,1 x 10 = 1	0,1 x 100 = 10
2 x 1 = 2	2 x 10 = 20	2 x 100 = 200	0,2 x 1 = 0,2	0,2 x 10 = 2	0,2 x 100 = 20
3 x 1 = 3	3 x 10 = 30	3 x 100 = 300	0,3 x 1 = 0,3	0,3 x 10 = 3	0,3 x 100 = 30
4 x 1 = 4	4 x 10 = 40	4 x 100 = 400	0,4 x 1 = 0,4	0,4 x 10 = 4	0,4 x 100 = 40
5 x 1 = 5	5 x 10 = 50	5 x 100 = 500	0,5 x 1 = 0,5	0,5 x 10 = 5	0,5 x 100 = 50
6 x 1 = 6	6 x 10 = 60	6 x 100 = 600	0,6 x 1 = 0,6	0,6 x 10 = 6	0,6 x 100 = 60
7 x 1 = 7	7 x 10 = 70	7 x 100 = 700	0,7 x 1 = 0,7	0,7 x 10 = 7	0,7 x 100 = 70
8 x 1 = 8	8 x 10 = 80	8 x 100 = 800	0,8 x 1 = 0,8	0,8 x 10 = 8	0,8 x 100 = 80
9 x 1 = 9	9 x 10 = 90	9 x 100 = 900	0,9 x 1 = 0,9	0,9 x 10 = 9	0,9 x 100 = 90

1. Multiply with 1, 10 and 100.

	x1	x10	x100
Example: 0,2	0,2	2	20
a. 0,5			
b. 0,3			
c. 0,8			
d. 0,4			
e. 0,9			

2. Show the following on a number line.

a. 0,2 x 10 = ☐



b. 0,5 x 10 = ☐

c. 0,8 x 10 = ☐

3. Multiply with 1, 10 and 100.

	x1	x10	x100
Example: 1,2	1,2	12	120
a. 1,5			
b. 4,3			
c. 6,8			
d. 7,4			
e. 5,9			

4. Show the following on a number line.

a. 1,5 x 10 = ☐

5. Multiply with 1, 10 and 100.

	x1	x10	x100
Example: 1,2	1,25	12,5	125
a. 1,54			
b. 4,36			
c. 6,88			
d. 0,43			
e. 0,09			

6. True or false? 0,34 x 100 = 3,4 x 10

The cost of water

Find out how much you pay per kilolitre water or ask any family member or friend. How much water do they use in a month? What does it cost?

Sign:

Date:

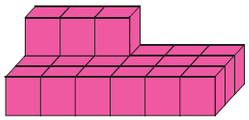
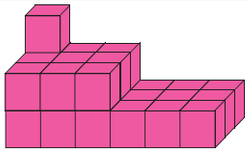
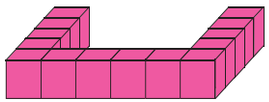
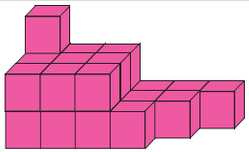
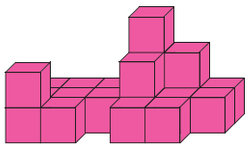
62 Volume and capacity

Can you remember what a cubic unit is?

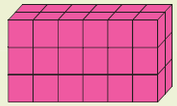
Cubic unit

Make 12 cubic units from cardboard or thick paper. Each square should be 2 cm x 2 cm.

1. Add the following. Remember to write your answer in the simplest form.

Object	Cubic units	Units^3
	21 cubic units	21 units^3
		
		
		
		

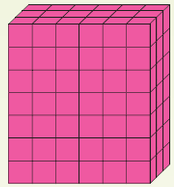
2. Look at the object, and answer the questions.



a. What is the height of the rectangular prism? _____ units.
b. What is the width of the rectangular prism? _____ units.
c. What is the length of the rectangular prism? _____ units.
d. What is the volume of the rectangular prism?
_____ cubic units or _____ unit^3

e. What is the volume if we add 1 unit to the height? _____ unit^3
f. What is the volume if we add 1 unit to the width? _____ unit^3
g. What is the volume if we add 1 unit to the length? _____ unit^3

3. Look at the object, and answer the questions.



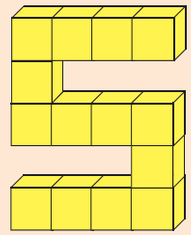
a. What is the height of the rectangular prism? _____ units
b. What is the width of the rectangular prism? _____ units
c. What is the length of the rectangular prism? _____ units
d. What is the volume of the rectangular prism?
_____ cubic units or _____ unit^3

e. What is the volume if we add 2 units to the height? _____ unit^3
f. What is the volume if we add 3 units to the width? _____ unit^3
g. What is the volume if we add 4 units to the length? _____ unit^3

4. If a rectangular prism has 36 cubic units. What might the:

a. height be? _____
b. width be? _____
c. length be? _____

Your name



It takes 14 cubic units to make the letter S.
How many cubic units does it take to make the letters of your name?

Sign:

Date:

63 Estimating, measuring and recording capacity

Describe the capacity and volume of all these containers.

2 litres

1 litre

500 millilitres

What is the total capacity of all the containers?
What is the total volume of all the containers?
How much more liquid do we need to fill all the containers?

1. Use your own containers. Complete the table below:

Container	Estimation			Measurement	Difference between estimation (ml) and measurement (ml)
	Millilitres	Common Fraction	Decimal Fraction		
A					
B					
C					
D					
E					

2. Calculate the following:

a. Container A and B.	b. Container B and C.	c. Twice container A.
d. Container C and D.	e. Container A, B and C.	f. Double container C.
g. Container D and E.	h. Container C, D and E.	i. Double container D.

Problem solving

The tank contained 4 kilolitres. The household used 2 450 litres. How much water is left?

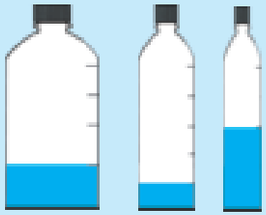
Sign:

Date:

Term 2

64a Millilitres to kilolitres

What is the capacity of each container?
What is the volume in each container?



Capacity is the amount of space (inside an object such as a container) that can hold something (such as a liquid).

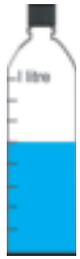
Volume is the amount of space actually occupied by something such as a liquid.

So a bottle may have a 1 litre capacity, but the volume of liquid in it could, for example, be only 250 ml.

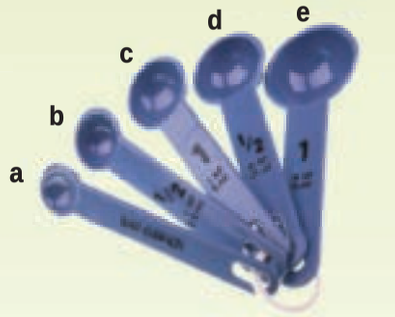
1. Use the containers below to answer the questions.

i. What is the capacity of the container (up to its highest measuring mark)?

ii. What is the volume of liquid in the container?

a.  i. _____ ii. _____	b.  i. _____ ii. _____	c.  i. _____ ii. _____
d.  i. _____ ii. _____	e.  i. _____ ii. _____	f.  i. _____ ii. _____

2. How many millilitres can each spoon take?



a. _____

b. _____

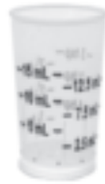
c. _____

d. _____

e. _____

3. How many spoons will fill the container?

i. Give your answer in spoons. ii. Give your answer in millimetres.

			
Spoon a	i ii	Spoon a	i ii
Spoon b	i ii	Spoon b	i ii
Spoon c	i ii	Spoon c	i ii
Spoon d	i ii	Spoon d	i ii
Spoon e	i ii	Spoon e	i ii

continued ☛

Sign:

Date:

64b Millilitres to kilolitres continued

4. Write everything down to support your answer.

a. How much is 1 litre?

b. How much is 1 millilitre?

c. How much is 1 kilolitre?

5. Complete the following:

a. 1 litre = _____ ml

b. 1 millilitre = _____ l itre

c. 1 kilolitre = _____ litre

d. 1 litre = _____ kilolitre

e. 1 kilolitre = _____ millilitre

6. What units would you use if you wanted to measure the following?

a. The amount of water you use in a month. _____

b. The amount of water to use when mixing baby milk formula for one feed.

_____

c. The amount of water in a full bathtub. _____

7. What instrument would you use if you wanted to measure the following?

a. liquid medicine for a baby._____

b. milk for a pudding recipe._____

c. water to dilute a packet of powdered cooldrink._____

8. What is a kilolitre? Name six things that we would measure in kilolitres.

a.	b.	c.
d.	e.	f.

9. Arrange the capacities of the containers from the least to the most.

2 litre milk jug	2 litre tank of a fire engine	75 ml medicine	5 kilolitre water tank	500 ml cooldrink

Problem solving

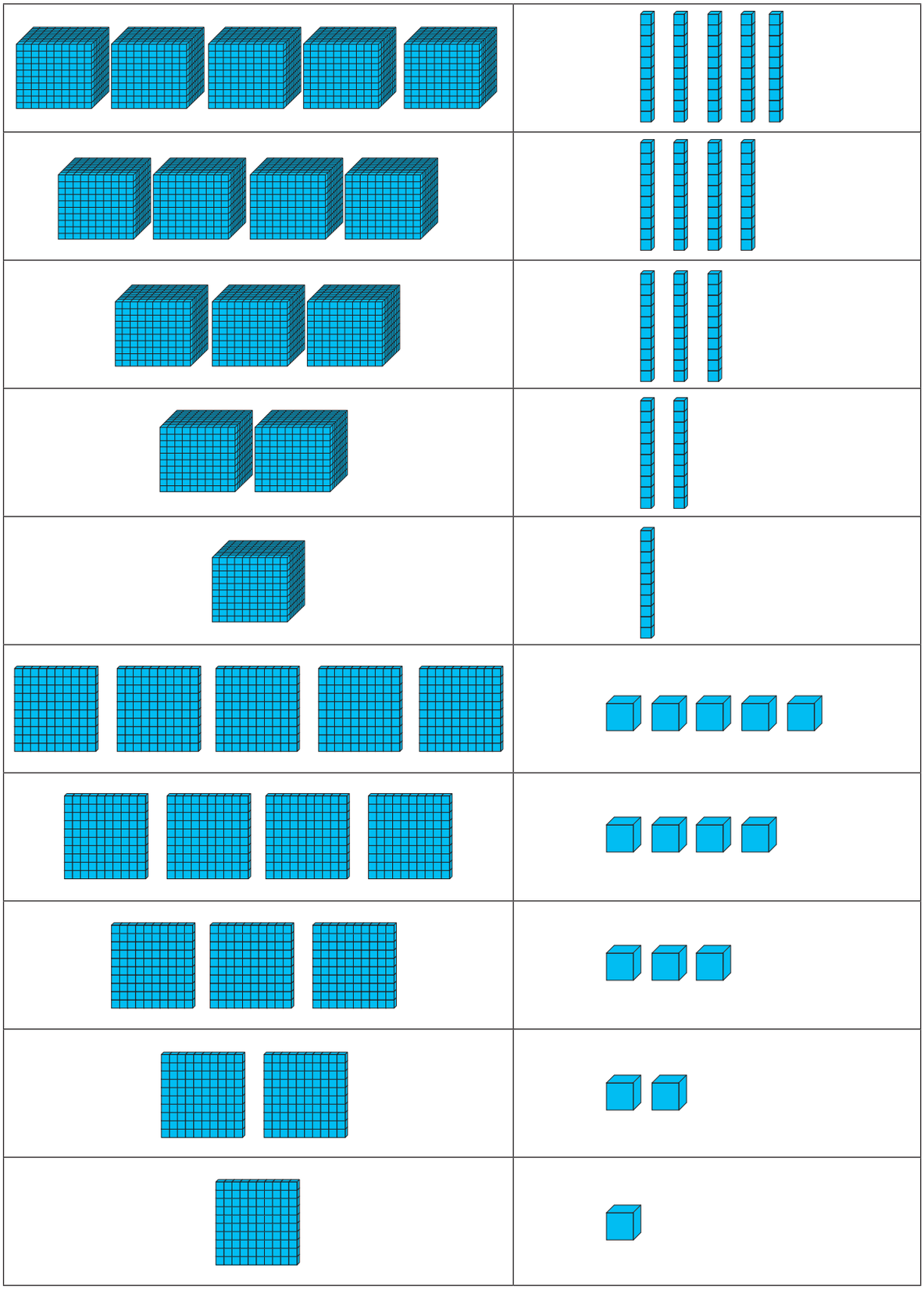
My mother paid R5,50 per 500 ml of fruit juice.
- We drank seven eighths of the 2 litre fruit juice.
- What is left? Give your answer in millimetres. What is the cost of the juice that has been drunk?

Find out how much you pay per kilolitre water or ask any family member or friend. How much water do they use in a month? What does it cost?

Sign:

Date:

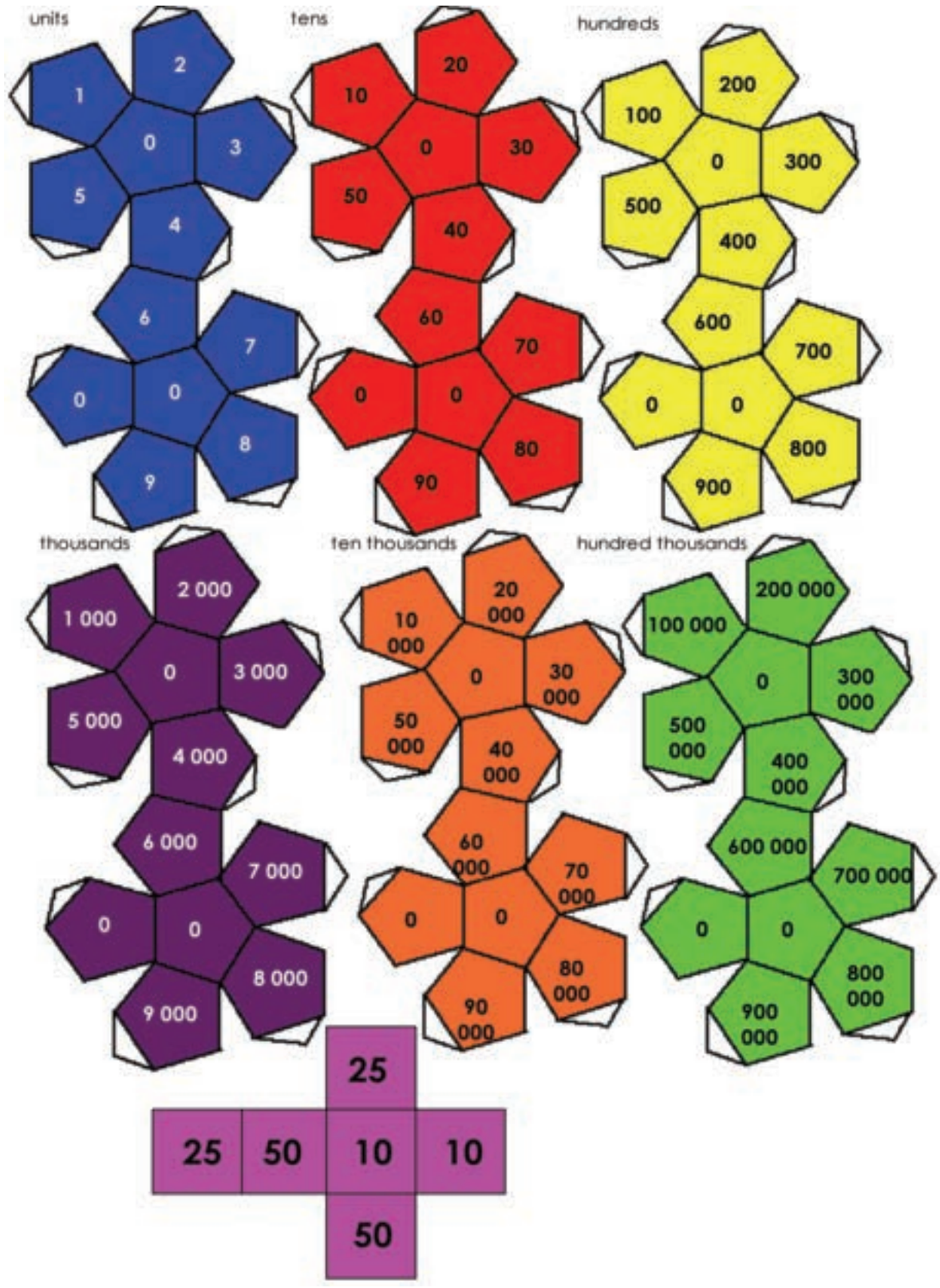
Mathematics Grade 6 Cut-out 1

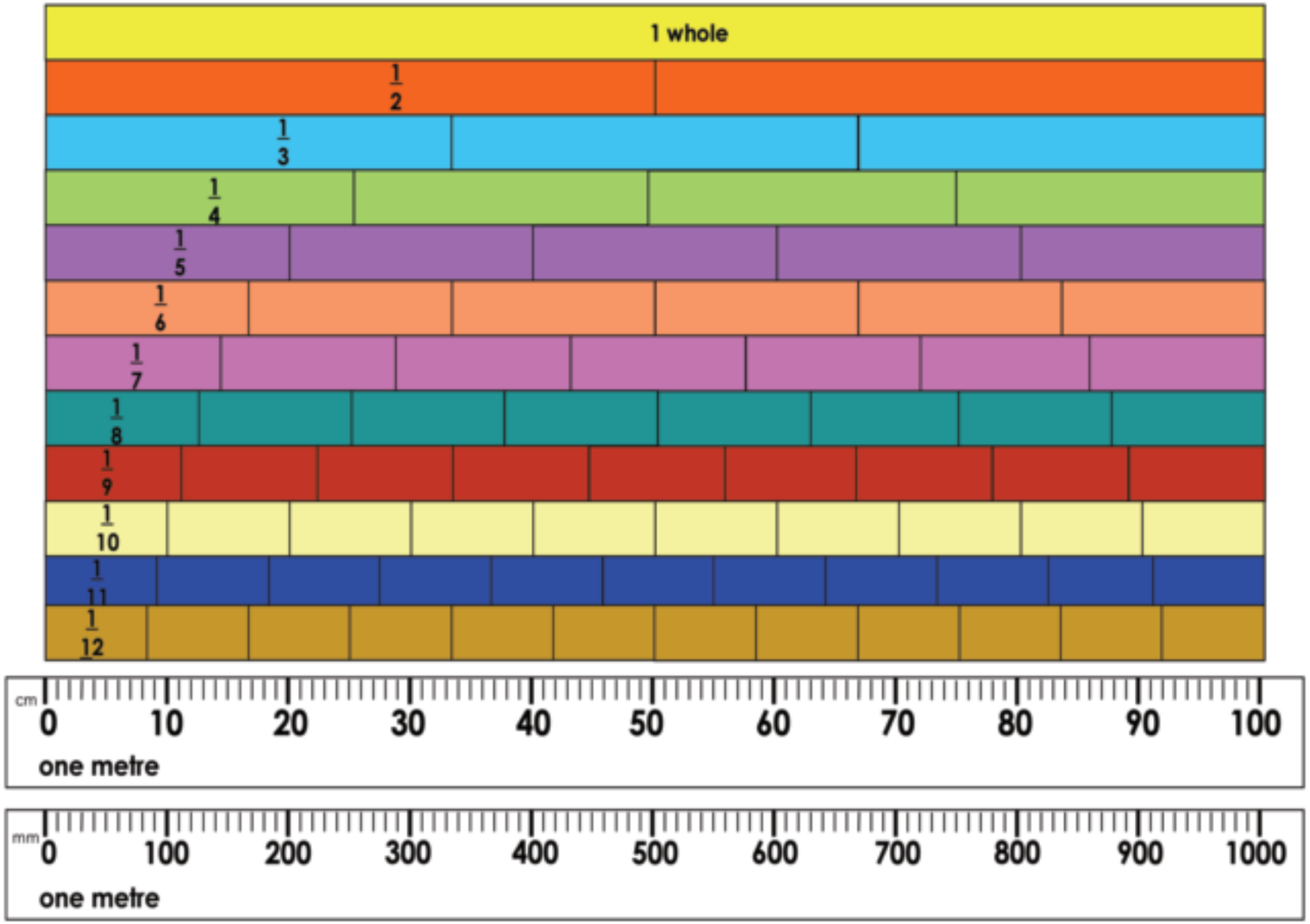


1	10	100	1000	10000
2	20	200	2000	20000
3	30	300	3000	30000
4	40	400	4000	40000
5	50	500	5000	50000
6	60	600	6000	60000
7	70	700	7000	70000
8	80	800	8000	80000
9	90	900	9000	90000

Mathematics Grade 6 Cut-out 3

Note: Make dice from these Cut-outs. After assembling the dice, keep them in a safe place because you will use it throughout the year.




1 whole
1/2
1/3
1/4
1/5
1/6
1/7
1/8
1/9
1/10
1/11
1/12
cm
0 10 20 30 40 50 60 70 80 90 100
one metre
mm
0 100 200 300 400 500 600 700 800 900 1000
one metre

$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{25}$	$\frac{1}{100}$
$\frac{1}{5}$	$\frac{1}{2}$	$\frac{1}{10}$	$\frac{1}{25}$	$\frac{1}{100}$	$\frac{1}{10}$
500 ml of a litre	750 mm of a metre	250 ml of a litre	250 g of a kilogram	125 ml of a litre	125 mm of a metre
200 ml of a litre	200 mm of a metre	100 ml of a litre	100 g of a kilogram	10 ml of a litre	10 mm of a metre