Mrs Angie Motshekga,
Minister of Basic
Education

Mr Enver Surty,
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, Mr Enver Surty.

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.

ISBN 978-1-4315-0180-9

Rainbow WORKBOOKS

MATHEMATICS IN ENGLISH
GRADE 6 – BOOK 2
TERMS 3 & 4
ISBN 978-1-4315-0180-9
THIS BOOK MAY NOT BE SOLD.

1 2 3 4

Published by the Department of Basic Education
222 Struben Street
Pretoria
South Africa

Sixth edition 2016

Author team: Blom, L. and Aitchison J.J.W.

MATHEMATICS IN ENGLISH – Grade 6 Book 2

ISBN 978-1-4315-0180-9

Revised and CAPS aligned

Grade 6

MATHEMATICS IN ENGLISH

Book 2
Terms 3 & 4

Name:

Class:

basic education
Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

Contents

AU Anthem

Let us all unite and celebrate together
The victories won for our liberation
Let us dedicate ourselves to rise together
To defend our liberty and unity

O Sons and Daughters of Africa
Flesh of the Sun and Flesh of the Sky
Let us make Africa the Tree of Life

Let us all unite and sing together
To uphold the bonds that frame our destiny
Let us dedicate ourselves to fight together
For lasting peace and justice on earth

O Sons and Daughters of Africa
Flesh of the Sun and Flesh of the Sky
Let us make Africa the Tree of Life

Let us all unite and toil together
To give the best we have to Africa
The cradle of mankind and fount of culture
Our pride and hope at break of dawn.

O Sons and Daughters of Africa
Flesh of the Sun and Flesh of the Sky
Let us make Africa the Tree of Life

Life can be difficult sometimes, if you need someone to talk to

Childline Hotline:08000 55 555

LoveLife Free Plz Cal Me 083 323 1023

SADAG
Suicide Crisis Line 0800 567 567/ 0800 212 223
or SMS 31393
Substance Abuse Line 0800 12 13 14 or SMS 32312

PLEASE CONTACT

Rainbow WORKBOOKS

Grade 6

Mathematics

PART 3

WORKSHEETS 65 to 144

ENGLISH Book 2

Name:

65 Measuring instruments for mass and weight

What would you weigh with these scales? Are they analogue or digital scales?

a.

b.

c.

d.

1. What would you weigh with the following measuring instruments? Would you weigh it in kilograms or grams?

Type	For measuring:	Kilograms or grams
Bathroom scale 		
Balance scale 		
Kitchen scale 		
Spring scale 		

We use **scales** to measure **mass** and **weight**. Most people use both words as if they are the same, though they are different. The **mass** of an object is how much matter it contains. It does not change. The **weight** of an object changes according to gravity. An objects weighs six times more on earth than on the moon, and weighs nothing in empty space, even though its mass remains the same everywhere.

A **balance scale** measures **mass**. A **spring scale** measures **weight**. On earth both types of scale give us the same approximate reading, so for everyday practical activities we can also use spring scales (such as bathroom and kitchen scales) to measure mass.

2. How would you measure the mass of the following (with what instrument and in grams or kilograms)?

a. A bunch of bananas:

b. Sugar for a cake recipe:

c. A child visiting the clinic:

d. A laptop computer:

3. Answer the following questions.

a. We make use of scales to weigh objects.

i. Is there only one type of scale? _____

ii. Name some of the types of scales we use and what we use them for.

b. Will a bag full of cotton waste have a larger mass than the same size bag half filled with steel nails? _____

c. We use grams (g) and kilograms (kg) when measuring mass.

i. Which unit of measurement do you think we use to measure heavier objects? _____

ii. Which unit of measurement do you think we use for lighter objects? _____

Measuring the ingredients

My mother baked a cake. What did she use to measure the ingredients?

Sign:

Date:

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

66a Weight

What is a scale? Circle all the measuring instruments used to weigh objects.

What would you weight with each of those measuring instruments?

1. What do we weigh with measuring instruments?

Measuring instrument	Give an example what you can weigh with it
Spring scale	Meat

2. Answer the following:

a. How many grams are there in a kilogram? _____

b. How many grams are there in 2,4 kilograms? _____

c. How many grams are there in 100 kilograms? _____

d. How many kilograms is 23 500 grams? _____

e. How many kilograms is 48 250 grams? _____

3. **What do you see around you that weighs about 1 kilogram? (You may not answer, "1 kilogram packet of sugar etc."!).**

4. **Look at these things. Estimate how much each one weighs.**

a. Tennis ball

_____

b. Medium sized dog

_____

c. Car

_____

d. Sport shoes

_____

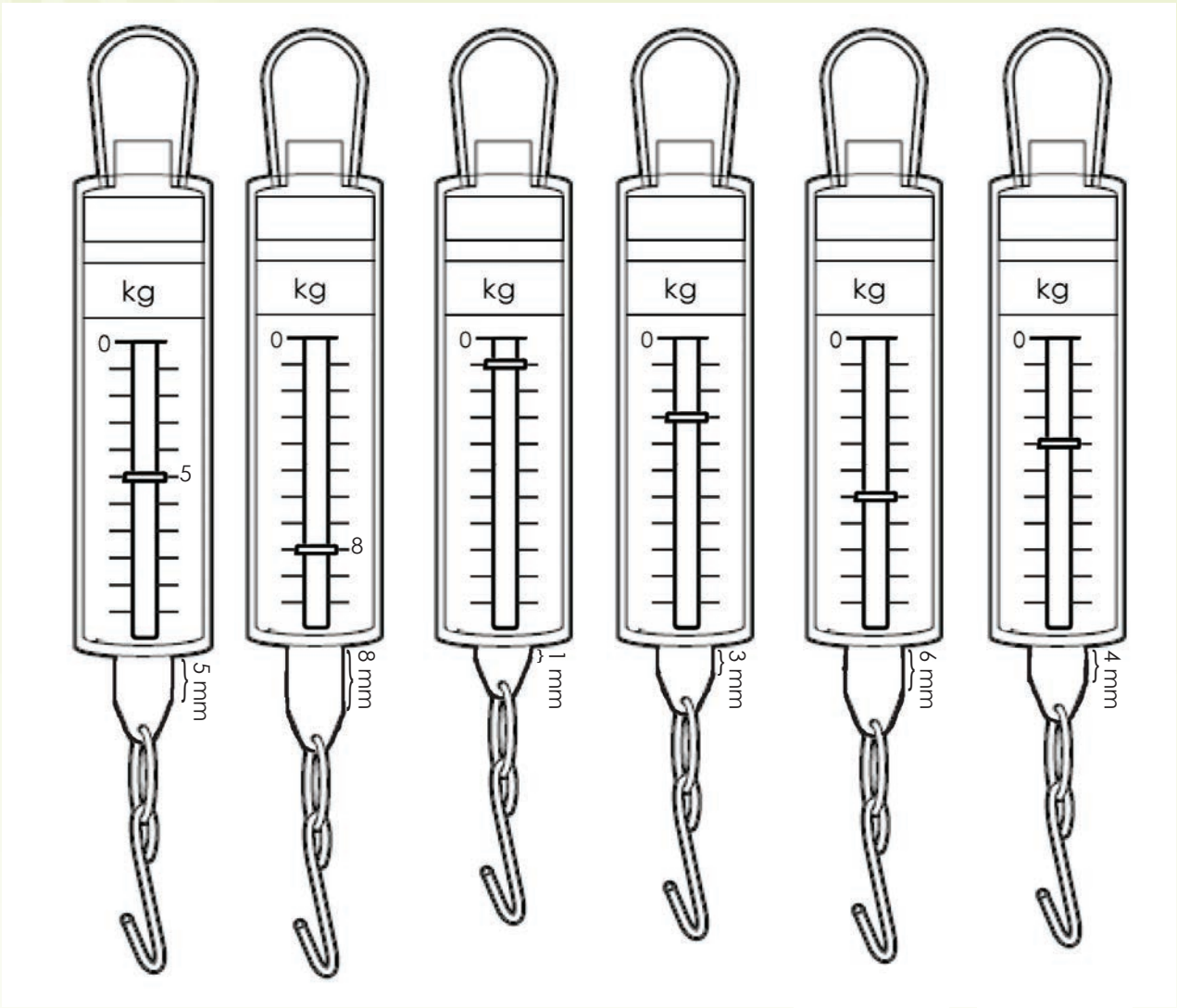
Sign:

Date:

continued ☛

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

5. Complete the intervals for this spring balance and number them.



6. What is the reading on each of these spring scales?

i. a. _____ b. _____

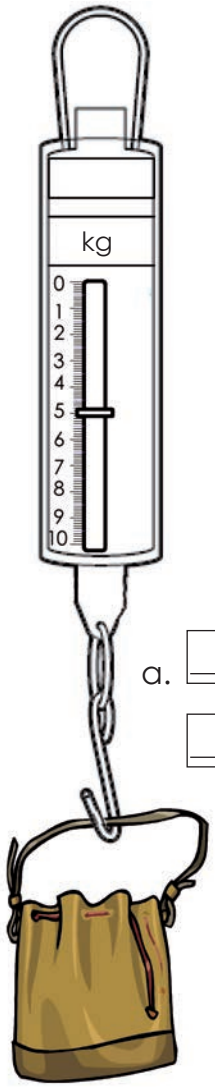
c. _____ d. _____

c. _____ f. _____

ii. 1 kg = _____ mm on the spring balance? _____

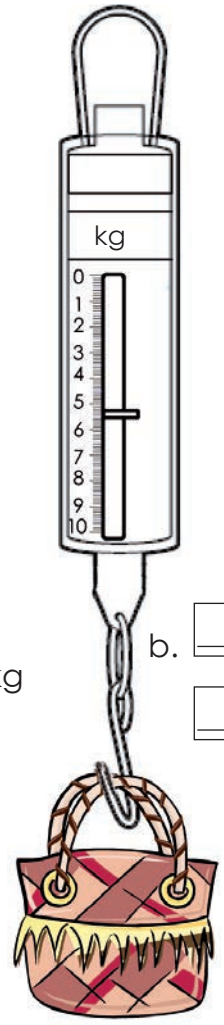
iii. Will this be the same for all spring balances? _____

7. How much does the object weigh on these spring scales?



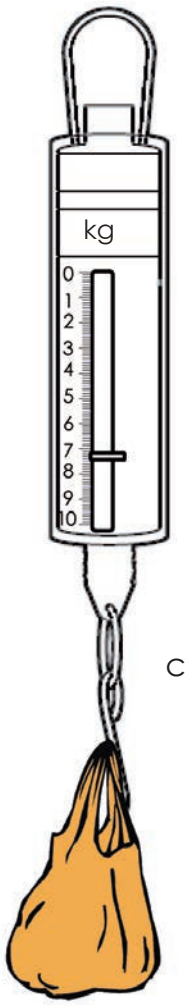
a. _____ kg

_____ g



b. _____ kg

_____ g



c. _____ kg

_____ g

Make your own scales

You can make your own scales from household objects.

You can make a spring scale using a spring and paper clips.

You can make a balance scale as illustrated here.

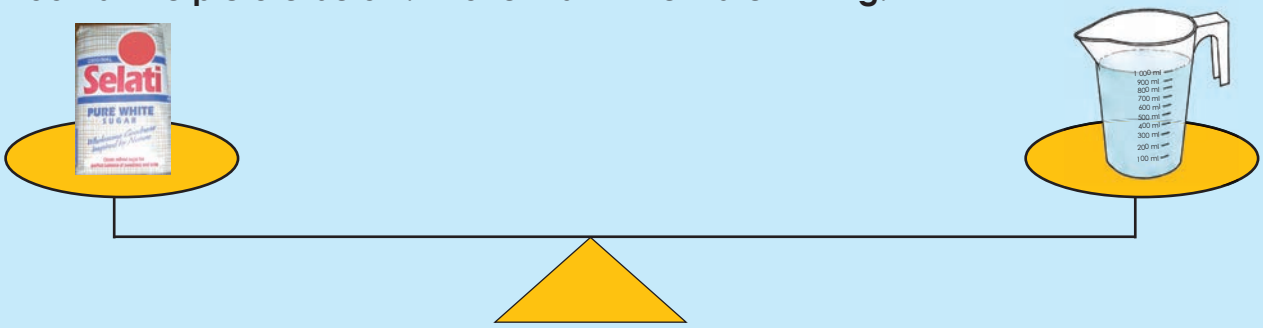
Sign:

Date:

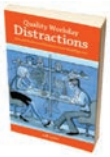
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Mass and capacity

Look at the picture below. Prove that 1 litre water = 1 kg.



1. Circle the most appropriate unit to measure each object.

Mass			Capacity		
Truck		mg g kg	Glass of water		ml litre
Book		mg g kg	Water in a basin		ml litre
Insect		mg g kg	Water tank		ml litre
Chicken		mg g kg	Scientific chemicals		ml litre

2. The mass of 1 litre of water = 1 kg. Complete the following:

a. 2 litre of water = _____ kg.

b. 500 ml of water = _____ kg.

c. 250 ml of water = _____ kg.

d. 125 ml of water = _____ kg.

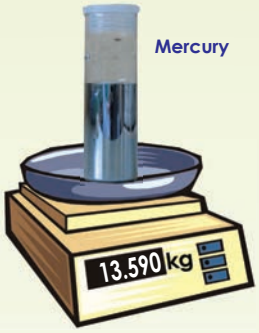
e. 50 ml of water = _____ kg.

f. 2 300 ml of water = _____ kg.

g. 1,5 litre of water = _____ kg.

h. 4,55 litre of water = _____ kg.

3. Complete the table below and answer the questions.



Liquid (1 litre)	Weight	
	Kg	g
Water		
Sea water		
Milk		
Paraffin		
Petrol		
Cooking oil		
Mercury		

a. Which liquid is the lightest? _____

b. Which liquid is the heaviest? _____

c. Why do the mass of these liquids differ?

_____

Some thinking fun …

- With an unlimited supply of water and only two unmarked containers with a capacity of exactly 9 litres and 4 litres.
- How can you measure out exactly 6 litres of water into one or both of these containers?
- What will happen if the task spoke of 9 kg, 4 kg and 6 kg of water instead of litres? Would your answer be the same or different? Why?

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

68a Solving problems with mass

Revise: go through this summary on solving a problem using the questions as a guide

i. Read and underline the question. *What are you looking for in this problem?*	ii. Write down the numbers and hidden numbers. *Note that sometimes the numbers are written in words.*	iii. Write down the key word/s. *What basic operation (+, -, x or ÷) will you use?*
iv. Cross out the numbers you don't need. *What information is not needed in solving this problem?*	v. Solve by using pictures, drawings or concrete apparatus. *Draw a picture to help you to solve the problem.*	vi. Write a number sentence. *What numbers and basic operation(s) will you use?*
vii. Show all your work. *Why did you choose this response?*	viii. Does your answer make sense? Try it out. *After getting an answer, how can I check to see if it is correct?*	

1. Do the following problems in your writing books.

a. A 500 g bag of flour costs R3,50. How much will 1,5 kg cost?

Possible solution:

i. How much will 1,5 kg cost?

ii. The key numbers are 500 g, R3,50 and 1,5 kg.

iii. Addition or multiplication and division

iv. You will need all the numbers in this word problem.

v.  **R3,50**  **R3,50**  **R3,50**

vi. R3,50 + R3,50 + R3,50 = _____ OR 1 500 g ÷ 500 g = 3; 3 x R3,50 = _____

vii. R9 + R1,50 = R10,50

viii. R10,50 ÷ 3 = R3,50

b. My mother uses 7,45 kg of rice out of a 10 kg bag. How much is left?

c. My brother has a mass of 25 kg and my sister is double that. What is my sister's mass?

d. If one cake needs 275 g of self-raising flour, how much flour will I need to make three cakes?

e. A shop sells 40 kg of rice for R450. How much does 1 kg cost?

Sign:

Date:

continued ☛

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

Solving problems with mass continued

f. Ken's family uses 3,5 kg of rice a week. How much rice does his mother buy a week?

g. When my mother buys washing powder she pays R45,65 for a 3 kg bag. How much does she pay for 1 kg?

h. My father eats 125 g of chocolate a day. How many grams will he eat in two weeks?

i. I was given a 4 kg bag of rice to take to my grandmother's house. On the way there the bag tore and a quarter of it spilled out. How many kilograms of rice will my grandmother have to cook?

j. A chocolate cake needs 445 g of flour. If my aunt wants to bake 20 cakes, how much flour will she need?

k. A school book weighs 25 g and I have 12 books in a bag. How much do the books weigh?

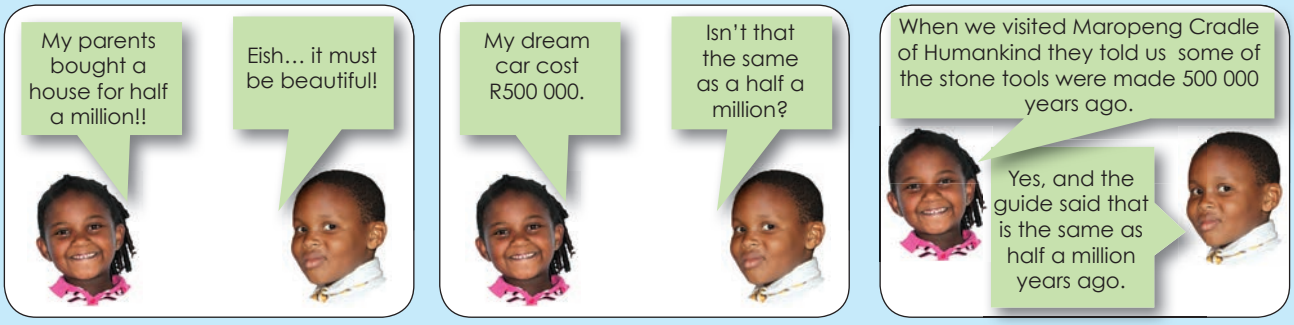
Sign:

Date:

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

69a Number work up to 9-digits

People sometimes speak of a half a million. What does that mean?



1. State whether the following is true or false:

a. The South African population grows by more than 500 000 in a year. ____

b. There are l2 500 000 people living in Gauteng. ____

c. The South African government plans to upgrade 500 000 shacks by 2014. ____

d. In the first 10 days of the World Cup in 2010 some 500 000 tickets were sold. ____

e. In an average South African school we will find 500 children. ____

2. Complete the following:

a 500 + 40 + 300 000 + 5 000 + 90 000 + 1 = ____

b. 6 + 900 + 9 000 + 70 + 10 000 + 400 000 = ____

c. 80 + 6 + 500 + 6 000 + 400 000 + 20 000 = ____

d. 400 000 + 20 000 + 5 000 + 8 = ____

e. 300 000 + 400 + 20 = ____

3. Change the digit 5 to zero in each number. Show the operation that will make it zero.

a. 478 578 = ____

b. 353 897 = ____

c. 294 025 = ____

d. 500 000 = ____

e. 893 257 = ____

4. Your uncle won R12 million in the lotto. He went to purchase items at different stores. Help him to fill in his cheques. Guess what he purchased with these cheques.

5. Write in expanded notation. Use the digits 1 to 9 to make five different 9-digit numbers smaller than 500 000 000 but bigger than 200 000 000.

a. _____

b. _____

c. _____

d. _____

e. _____

Sign:

Date:

continued ☛

Number work up to 9-digits continued

6. What do ascending and descending order mean?

7. Write the following in ascending order.

a. 22 256 276, 22 256 672, 22 256 267, 22 256 627

b. 73 782 894, 73 782 498, 73 782 849, 73 782 489

c. 83 243 228, 83 242 283, 83 243 822, 83 243 282

d. 44 219 248, 44 219 284, 44 219 842, 44 219 824

e. 63 318 278, 63 318 827, 63 318 872, 63 318 287

f. 63 318 278, 63 318 827, 63 318 872, 63 318 287

8. Write the following in descending order.

a. 11 271 872, 11 271 278, 11 172 827, 11 721 782

b. 92 287 198, 92 782 891, 92 278 189, 92 891 782

c. 74 357 543, 74 753 345, 74 375 543, 74 357 534

d. 53 573 798, 53 375 897, 53 537 798, 53 573 789

e. 32 122 678, 32 221 876, 32 122 687, 32 212 678

f. 91 847 324, 91 748 423, 91 874 324, 91 847 342

9. Compare the underlined digits, and explain the relationship that you see in your own words.

a. 3 5<u>6</u>3 and 1 <u>6</u>35

b. 2 00<u>2</u> and <u>2</u> 002

c. <u>9</u>99 and 9 <u>9</u>99

d. <u>1</u> and <u>1</u> 001

e. <u>4</u> 000 and <u>44</u>

10. Look at the numbers board and answer the questions?

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

a. Colour all the prime numbers.

b. What is a prime number?

c. What is a composite number?

Number puzzle

My father remembers seeing a beautiful house for sale. It was a beautiful place. He couldn't remember the price of the house, but he knew it was a 6 digit number.

- He remembered that the first digit was a 5 and the ten thousand's place was a 7.
- He remembered seeing a number 1.
- In the hundred's place he remembered the number was 3 times the number in the thousand's place.
- He said the number in the one's place was 4 times the number in the ten's place.
- Finally he said the number 2 was in the thousand's place.
- What is the number?

Sign:

Date:

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

70 Rounding off

What would you rather say?

My mother is going to purchase a house for **R498 789**

My mother is going to purchase a house for **R500 000.**

My brother is going to buy a car for **R201 987.**

My brother is going to buy a car for **R200 000**

The truck transported **334 579** tomatoes

The truck transported **300 000** tomatoes.

1. Round off to the nearest 10. Circle the digit which you look at when deciding whether to round up or down to the nearest 10. Complete the sentences.

a. 345 882 is between 345 880 and 345 890 and would be rounded to 345 880.

b. 278 947 is between _____ and _____ and rounded to _____.

c. 2 489 371 is between _____ and _____ and rounded to _____.

d. 15 218 965 is between _____ and _____ and rounded to _____.

e. 593 499 999 is between _____ and _____ and rounded to _____.

2. Round off to the nearest 100. Circle the digit which you look at when deciding whether to round up or down to the nearest 100. Complete the sentences.

a. 345 882 is between 345 800 and 345 900 and would be rounded to 345 900.

b. 278 947 is between _____ and _____ and rounded to _____.

c. 3 489 371 is between _____ and _____ and rounded to _____.

d. 87 218 965 is between _____ and _____ and rounded to _____.

e. 357 499 999 is between _____ and _____ and rounded to _____.

3. Round off to the nearest 1 000. Circle the digit which you look at when deciding whether to round up or down to the nearest 1000. Complete the sentences.

a. 345 882 is between 345 000 and 346 000 and would be rounded to 346 000.

b. 278 947 is between _____ and _____ and rounded to _____.

c. 4 489 371 is between _____ and _____ and rounded to _____.

d. 60 218 965 is between _____ and _____ and rounded to _____.

e. 300 499 999 is between _____ and _____ and rounded to _____.

To estimate the cost of 11 pens at 95c each, you round down 11 to 10 pens and round up 95c to R1.

The estimated cost would then be 10 x R1 = R10,00

4. Complete the questions below:

a. Estimate the cost of 27 sweets at 81c each? _____

b. Estimate the cost of 41 chocolate at R5,40 each? _____

c. Estimate the cost of 199 cool drinks at R6,90 each? _____

d. Estimate the cost of 1 002 packets of chips at R4,10 each? _____

e. Estimate the cost of 19 542 lollipops at R1,99 each? _____

5. The first number below was rounded off to the second number. Was it rounded off to the nearest 5, 10, 100 or 1 000? (The answer could be more than one of the options.)

a. R83 was rounded off to R100. _____

b. R1 836 was rounded off to R1 840. _____

c. R104 was rounded off to R0. _____

d. R5 790 was rounded off to R6 000. _____

e. R5 080 was rounded off to R5 100. _____

f. R5 049 was rounded off to R5 050. _____

Help a friend

Create a picture which explains to a small child the concept of "rounding off". (For example, if you are walking from … to …, and it starts to rain, which place of shelter is closer?)

Remember to show very carefully the point at which you start rounding off in the opposite direction.

Sign:

Date:

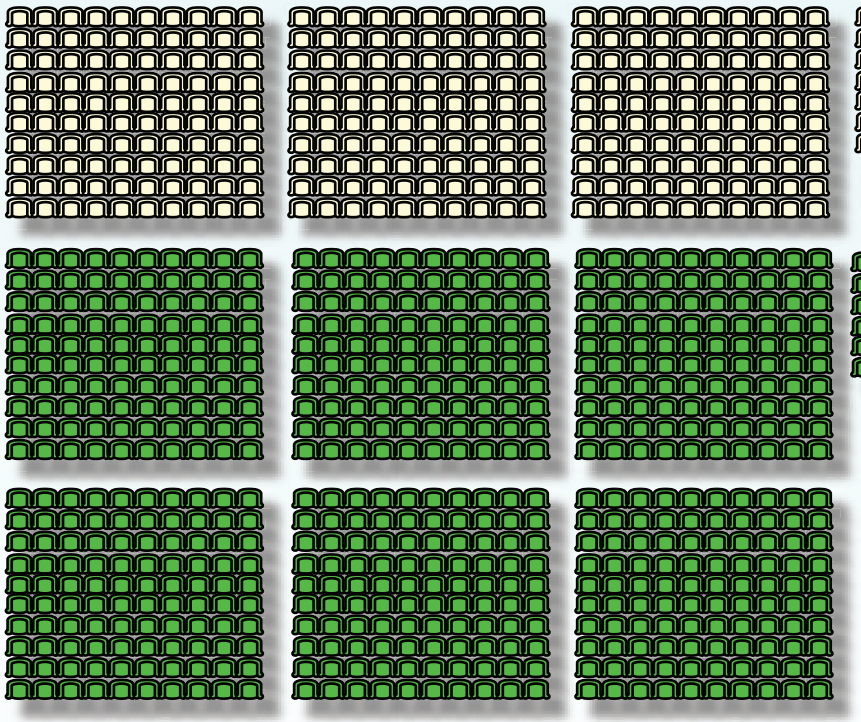
71a Addition problems with up to 5-digit numbers

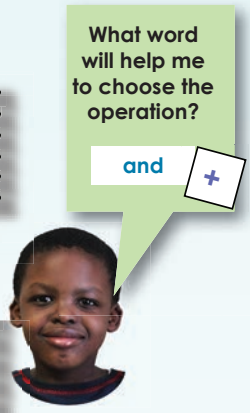
How fast can you answer this?

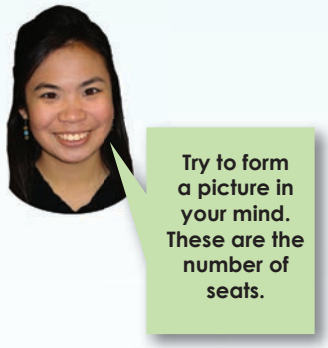
- **Add** 40 000 + 3 000 + 200 + 30 + 2 +1.
- What is the **sum** of 2 300 and 6 500?
- How many are 250 and 4 000 **altogether**?
- What three numbers have a **total** of 250?
- **Add** 190 and 45.
- What is the **sum** of 2 000 and 456?
- How many are 375 and 15 **altogether**?
- Which three numbers have a **total** of 1 000?

1. Solve the following problems. The pictures may guide you. Also use the blue word.

a. At a school concert, 363 adults **and** 655 children were seated in a hall. How many chairs were needed altogether?







300 + 600 + _____ + 50 + _____ + 5

=

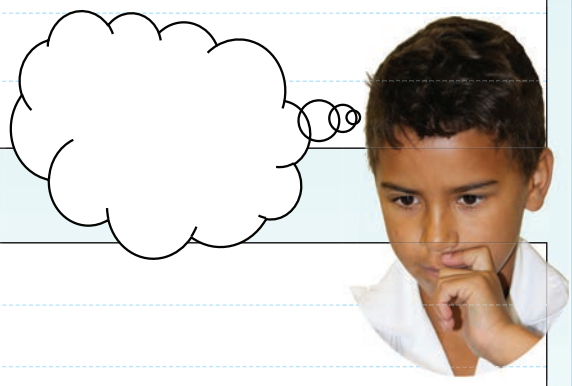
=

=

=

b. There were 4 876 spectators at the Pirates soccer match and 6 973 spectators at the Chiefs soccer match. How many people watched these soccer matches?

i. What picture do you see in your mind?



ii. What operation should you use?

iii. Solve the problem.

Sign:

Date:

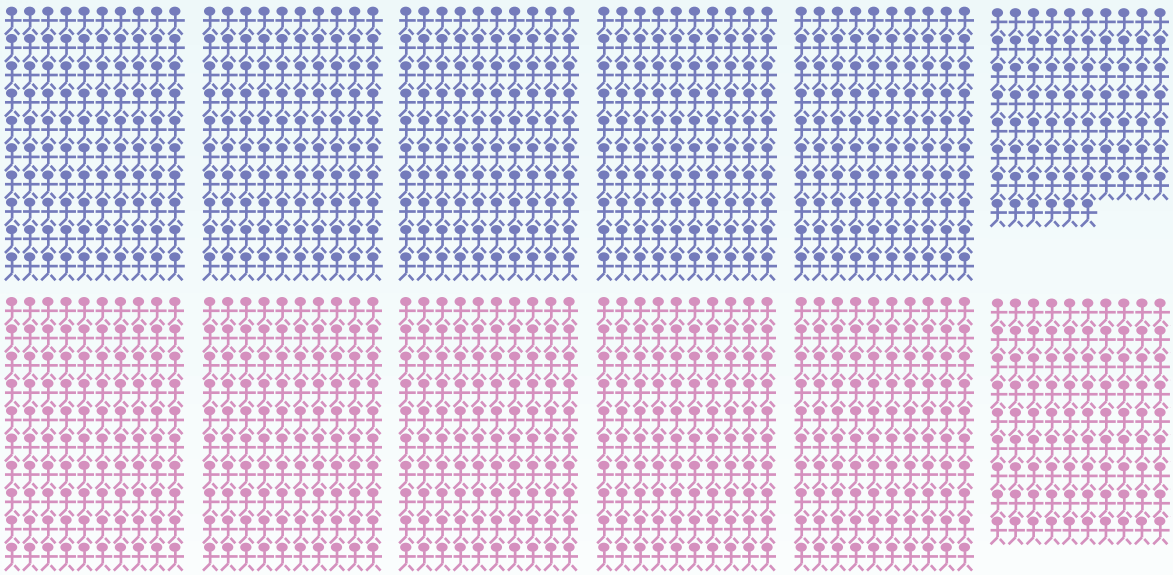
continued ☛

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

Addition problems with up to 5-digit numbers continued

c. A farmer planted 5 389 trees in a new plantation. The old plantation has 3 893 trees. How many trees are there altogether?

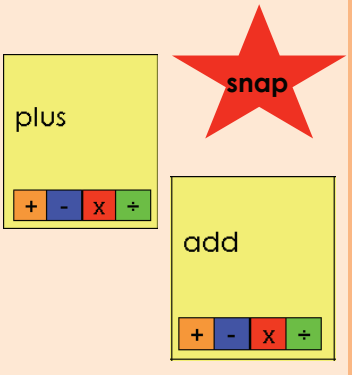
2. Look at the pictures below and write an interesting addition word problem.



3. **Write an appropriate and interesting word problem for: 37 802 and 65 321. Solve it.**

Operation "Snap"

What do you need:
Cut-out 6.



What to do:

Step 1: Deal out an equal number of cards to each player.
Step 2: Each player puts their stack of cards face down in front of them.
Step 3: Players all turn one card face up and place it next to their face down stack.
Step 4: Players look at each others cards to see if any of the cards have words with same meaning).

- If yes, someone says "Snap."
- The first person to say "Snap" gets all the cards in the face-up stacks that match each other. Play then continues from Step 3.
- If no, play continue from Step 3.
- If a player gets to the end of the face-down stack before the end of the game, he or she turns the face up stack over again and continues.
- The winner is the player with the most cards.

Sign:

Date:

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

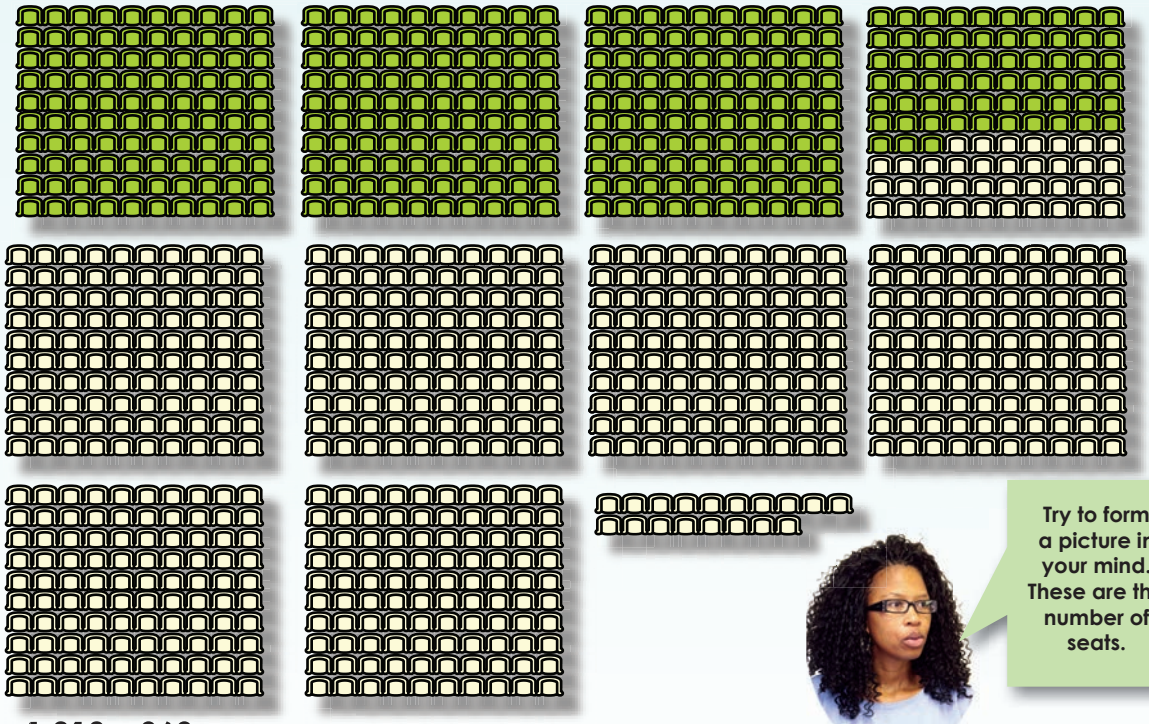
72a Subtraction problems with up 5-digit numbers

How fast can you answer this?

- **Subtract** 40 000 **from** 80 000.
- What is the **difference between** 7 800 and 5 400?
- **Minus** 90 000 and 55.
- **Decrease** 100 000 **by** 10 000.
- **Subtract** 19 000 **and** 450.
- **Reduce** 50 000 with 1 000.
- **Take** 15 000 **from** 45 000.
- **Take away** 25 000 **from** 100 000.

1. Solve the following problems. The pictures may guide you. Also use the blue word.

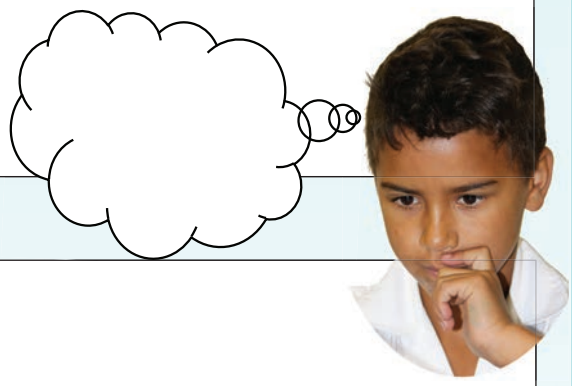
a. At the school concert, 1 018 people attended.
363 are adults. How many seats are **left** over for the children?



1 018 – 363

b. There are 34 763 trees in a plantation. In a storm 14 999 trees fell. How many trees are still standing?

i. What picture do you see?



ii. What operation should you use?

iii. Solve the problem.

Sign:

Date:

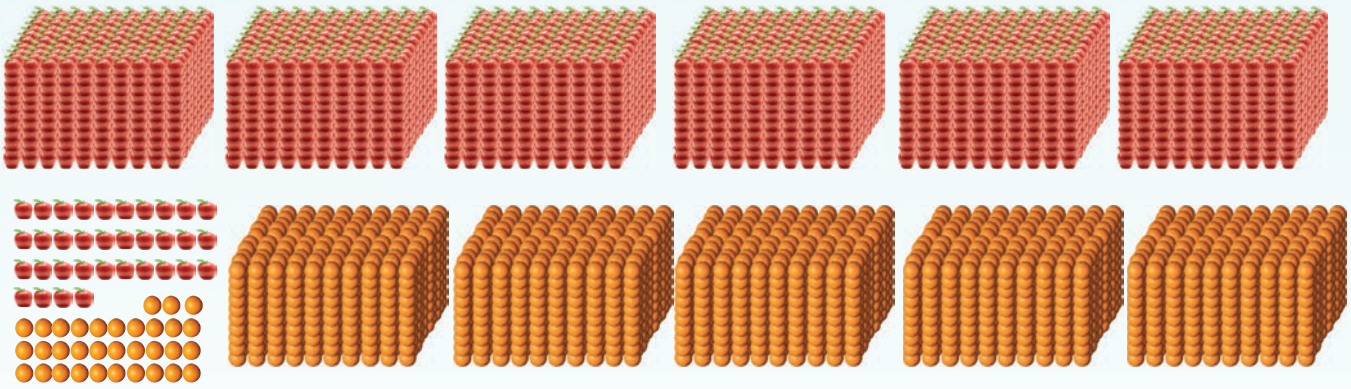
continued ☛

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

Subtraction problems with up to 5-digit numbers continued

c. There 24 789 people traveling in taxis? 17 989 people get off after 30 minutes. How many people are still in taxis?

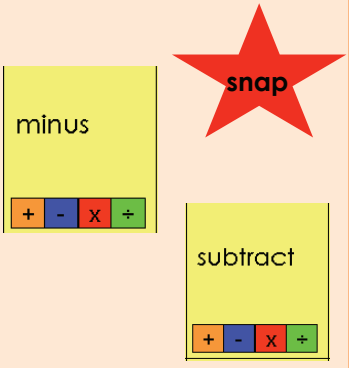
2. Look at the pictures below and write an interesting subtraction word problem.



3. **Write an appropriate and interesting word problem for: 99 999 and 38 238. Solve it.**

Play Operation "Snap"

What do you need:
Cut-out 6.



What to do:

Step 1: Deal out an equal number of cards to each player.
Step 2: Each player puts their stack of cards face down in front of them.
Step 3: Players all turn one card face up and place it next to their face down stack.
Step 4: Players look at each others cards to see if any of the cards have words with same meaning).

- If yes, someone says "Snap."
- The first person to say "Snap" gets all the cards in the face-up stacks that match each other. Play then continues from Step 3.
- If no, play continue from Step 3.
- If a player gets to the end of the face-down stack before the end of the game, he or she turns the face up stack over again and continues.
- The winner is the player with the most cards.

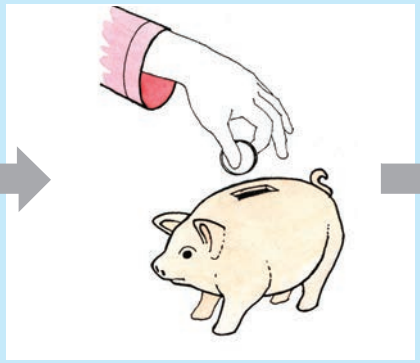
Sign:

Date:

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

73 Solving money problems

Talk about money. Look at the picture and make your own story.


1. Give five different combinations of these money notes. Your combinations should be in rands or cents.

a. 	R5 + R5				
b. 					
c. 					
d. 					
e. 					

2. How much does it cost? Gina wants to buy some clothes and accessories. She visits various shops on different days. Every time she looks at her purse. Does she have enough money?

Money available	Cost	Need more money?	How much do I still need?	Will get change?	How much change will I get?
	**Shop 1:** R79,95 for jeans				
	**Shop 2:** R99,95 for a jersey				
	**Shop 3:** R65,75 for shoes				
	**Shop 4:** R39,95 for a bag				
	**Shop 5:** R55 for cellphone airtime				

3. I kept record of my money matters last year. Please help me, I lost some information.

Month	Pocket Money	Expenditure	Savings
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			
Total:			

a. What was the total amount of money you received in one year?

_____

b. What was your total **expenditure** for the year? _____

c. What was your total **savings** for the year? _____

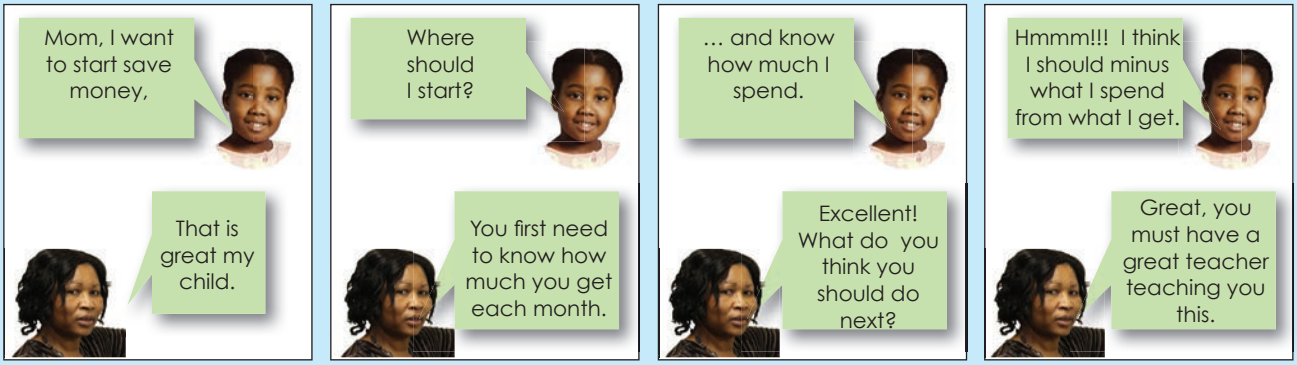
Sign:

Date:

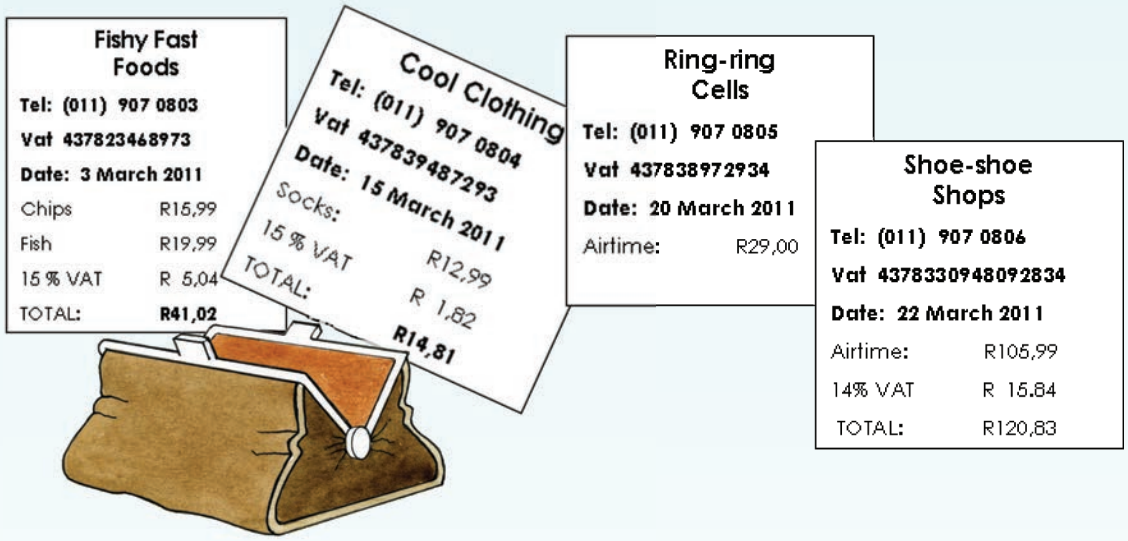
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

74 More about money problems

Read the comic strip, and tell what you think Palesa will do next?



1. Help me to calculate my savings for the month using the table below. The till slips may help you.



Income		Expenditure		Savings
Pocket money: Birthday money: Washing and polishing Dad's car:	R150,00 R120,75 R25,00	Charity:	R50,00	
Totals				

2. Do the following money problems.

a. My pocket money is R75 per month. I spend the following: R15,00 at the school tuck shop. R14,75 for a new pair of socks, R25 for a movie ticket. I also gave R12,50 to charity. Complete the table below.

Income		Expenditure		Savings
Totals				

a. Look at the information in the table below. Write down your own word problem.

Income		Expenditure		Savings
	350	Airtime: Tuck shop money: Charity: Jeans: Movie ticket:	R29 R52,50 R75,75 R95,99 R25	
Totals				

Use the following words/phrases to create a picture:

Savings

Cost

Money makes the world go round.

Income

Sign:

Date:

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

75a Addition up to 6-digit numbers

What is the difference between the numbers.

10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000	100 000
10 005	20 005	30 005	40 005	50 005	60 005	70 005	80 005	90 005	100 005
10 750	20 750	30 750	40 750	50 750	60 750	70 750	80 750	90 750	100 750
100 050	119 050	129 050	139 050	149 050	159 050	169 050	179 050	189 050	199 050
110 400	120 400	130 400	140 400	150 400	160 400	170 400	180 400	190 400	200 400

1. What number comes next?

a. 60 000, 70 000, 80 000, _____ b. 72 500, 82 500, 92 500, _____

c. 149 999, 159 999, 169 999, _____ d. 165 250, 175 250, 185 250, _____

2. Complete the table: Use the given number each time.

Number	Add 10	Add 100	Add 1 000	Add 10 000
187 563	18573			
143 784				
127 899				
136 999				
189 999				

Examples:

Example 1:

135 689 + 42 999

= 100 000 + 30 000 + 40 000 + 5 000 + 2 000 + 600 + 900 + 80 + 90 + 9 + 9

= 100 000 + 70 000 + 7 000 + 1 500 + 170 + 18

= 100 000 + 70 000 + 7 000 + 1 000 + 500 + 100 + 70 + 10 + 8

= 100 000 + 70 000 + 8 000 + 600 + 80 + 8

= 178 688

Example 2:

	1	3	5	6	8	9
+		4	2	9	9	9
					1	8
				1	7	0
			1	5	0	0
			7	0	0	0
		7	0	0	0	0
	1	0	0	0	0	0
	1	7	8	6	8	8

(9 + 9)
(80 + 90)
(600 + 900)
(5 000 + 2 000)
(30 000 + 40 000)
(100 000 + 0)

Example 3:

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

3. Use any two methods to calculate the following. Write the steps down.

a. 145 345 + 32 453 =

b. 137 876 + 52 128 =

c. 163 762 + 25 289 =

d. 152 784 + 35 568 =

e. 172 689 + 29 999 =

f. 99 999 + 99 999 =

4. Test your answers to questions 3 a to f using the inverse operation of addition. Use a separate piece of paper.

Sign:

Date:

continued ☛

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

Addition up to 6-digit numbers continued

5. Solve the following word problems.

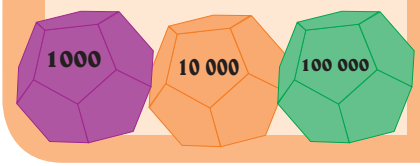
a. The chicken farmer delivered 29 500 eggs on Monday and 32 700 on Tuesday. How many eggs are there in total?

b. We walked 120 000 mm from point A to B. We walked another 350 000 mm from point B to C. How far did we walk. Give your answer in mm and m. Which is more appropriate to use m or mm?

6. **Write an appropriate and interesting word sum for: 150 000 and 30 000. Solve it.**

What is the size of your number:

What do you need:
- Use the 1 000s, and 10 000s and 100 000s dice. (Cut out 3)
- Piece of paper.



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

45 999
32 372
65 392
99 999
76 690

Sign:

Date:

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

76a Subtraction with up to 6-digit numbers

What is the difference between the numbers.

10 000	20 000	30 000	40 000	50 000	60 000	70 000	80 000	90 000	100 000
10 009	20 009	30 005	40 009	50 009	60 009	70 009	80 009	90 009	100 009
10 055	20 055	30 055	40 055	50 055	60 055	70 055	80 055	90 055	100 055
10 065	20 065	30 065	40 065	50 065	60 065	70 065	80 065	90 065	100 065
110 400	120 400	130 400	140 400	150 400	160 400	170 400	180 400	190 400	200 400

1. What number comes next?

a. 187 500, 177 500, 167 500, _____

b. 135 250, 125 250, 115 250, _____

c. 152 999, 142 999, 132 999, _____

d. 143 654, 133 654, 123 654, _____

2. Complete the table: use the given numbers:

Number	Subtract 10	Subtract 100	Subtract 1 000	Subtract 10 000
164 389	164 289			
158 304				
187 643				
199 999				
109 000				

Examples:

Example 1:

185 743 – 59 857

= 100 000 + (80 000 – 50 000) + (5 000 – 9 000) + (700 – 800) + (40 – 50) + (3-7)

= 100 000 + 30 000 + (5 000 – 9 000) + (700 – 800) + (30 – 50) + (13-7)

= 100 000 + 30 000 + (5 000 – 9 000) + (600 – 800) + (130 – 50) + (13-7)

= 100 000 + 30 000 + (4 000 – 9 000) + (1 600 – 800) + (130 – 50) + (13-7)

= 100 000 + 20 000 + (14 000 – 9 000) + (1 600 – 800) + (130 – 50) + (13-7)

= 100 000 + 20 000 + 5 000 + 800 + 80 + 6

= 125 886

Example 2:

	1	8	5	7	4	3
–		5	9	8	5	7
						6
					8	0
				8	0	0
			5	0	0	0
		2	0	0	0	0
+	1	0	0	0	0	0
	1	2	5	8	8	6

(13 – 7)
(130 – 50)
(1 600 – 800)
(14 000 – 9 000)
(70 000 – 50 000)
(100 000 – 0)

Example 3:

		7	14	16	13	10
	1	~~8~~	~~5~~	~~7~~	~~4~~	3
–		5	9	8	5	7
	1	2	5	8	8	6

3. Use both methods to solve the sums:

a. 188 763 – 56 541 =

Continue on an extra sheet of paper

b. 175 754 – 44 639 =

Continue on an extra sheet of paper

c. 169 657 – 53 489 =

Continue on an extra sheet of paper

d. 163 864 – 48 986 =

Continue on an extra sheet of paper

e. 157 802 – 99 999 =

Continue on an extra sheet of paper

f. What method do you prefer? Why?

Sign:

Date:

continued ☛

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

Subtraction with up to 6-digit numbers

continued

4. Solve the following word problems:

a. There are 190 500 tomatoes coming from a tomato farm. 47 925 were rotten. How many tomatoes can we send to the market?

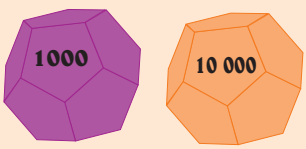
b. Children in our grade drank 145 000 ml of water. The grade fives drank 28 500 ml less than us. How much did they drink? Write your answer in ml and litres. Which measurement is more appropriate to use?

5. Use a calculator to check your answers in question 4.

6. **Write an appropriate and interesting subtraction word sum for: 190 000 and 35 000. Solve it.**

What is the size of your number:

What do you need:
- Use the 1 000s and 10 000s dice.
- Piece of paper.



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

189 382
135 201
199 000
147 542
190 005

Sign:

Date:

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

Addition and subtraction

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

100 000	200 000	300 000	400 000	500 000
91 000	101 000	201 000	301 000	401 000
70 500	80 500	90 500	100 500	110 500
89 999	99 999	109 999	119 999	129 999
187 663	287 663	387 663	487 663	587 663

What is the difference between the numbers? Count backwards.

1. What number comes next?

a. 100 000, 200 000, 300 000, _____

b. 172 500, 272 500, 372 500, _____

c. 199 999, 299 999, 399 999, _____

d. 283 321, 293 321, 303 321 , _____

2. Complete the table:

Number	Add 10 000	Subtract 10 000	Add 100 000	Subtract 100 000
223 340				
367 245				
378 392				
263 287				
399 999				

Examples

Example 1:

278 467 + 197 539

= 200 000 + 100 000 + 70 000 + 90 000 + 8 000 + 7 000 + 400 + 500 + 60 + 30 + 7 + 9

= 300 000 + 160 000 + 15 000 + 900 + 90 + 16

= 300 000 + 100 000 + 60 000 + 10 000 + 5 000 + 900 + 90 + 10 + 6

= 400 000+ 70 000 + 5 000 + 900 + 100 + 6

= 400 000 + 70 000 + 5 000 + 1 000 + 6

= 400 000 + 70 000 + 6 000 + 6

= 476 006

Example 2:

	2	7	8	4	6	7
+	1	9	7	5	3	9
					1	6
					9	0
				9	0	0
			1	5	0	0	0
		1	6	0	0	0	0
+		3	0	0	0	0	0
		4	7	6	0	0	6

(7 + 9)

(60 + 30)

(400 + 500)

(8 000 + 7 000)

(70 000 + 90 000)

(200 000 + 100 000)

Example 3:

	1	1	1	1	1	
	2	7	8	4	6	7
+	1	9	7	5	3	9
	4	7	6	0	0	6

Test your answer.

	4	7	6	0	0	6
-	1	9	7	5	3	9
						7
					6	0
				4	0	0
			8	0	0	0
		7	0	0	0	0
+	2	0	0	0	0	0
	2	7	8	4	6	7

(16 – 9)

(90 – 30)

(900 – 500)

(15 000 – 7 000)

(16 000 – 9 000)

(300 000 – 100 000)

Test your answer.

	9	9	9	9		
	3	~~10~~	~~16~~	~~10~~	~~10~~	10
	~~4~~	~~7~~	~~6~~	0	0	6
–	1	9	7	5	3	9
	2	7	8	4	6	7

Sign:

Date:

continued ☛

Addition and subtraction continued!

3. Use any two methods to calculate the following. Write down the steps.

a. 233 432 + 124 321 =

b. 256 782 + 243 219 =

Continue on an extra sheet of paper

c. 318 764 + 271 287 =

d. 357 573 + 122 847 =

Continue on an extra sheet of paper

e. 276 894 + 228 248 =

f. 278 872 + 199 999 =

Continue on an extra sheet of paper

4. Check your answers to Question 3. (Remember the inverse operation of addition is subtraction.) Show your checks.

Continue on an extra sheet of paper

5. Complete the following:

a. You live in a street with 6 houses. Each family owns a car. The 1st family's car cost R100 000. The 2nd family's car cost R59 900 more. The 3rd family's car cost R25 000 less than the 2nd family's car. The 4th family paid a half a million rand for their car. The 5th family paid the same as the 1st family, and the last family paid R250 000 less than the 4th family.

How much did each of these families pay for their cars?

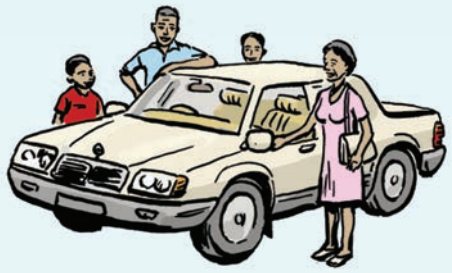
i. 2nd family _____

ii. 3rd family _____

iii. 4th family _____

iv. 5th family _____

v. 6th family _____



b. What is the value of the first and second family's cars? _____.

c. Show your calculations for a. and b.

Continue on an extra sheet of paper

d. What is the value of the fourth and third family's cars? _____

e. What is the difference in price between the 4th and the 3rd family's cars?

I dropped my puzzle pieces ...

What to do:

I dropped my puzzle pieces. Help me to fill the spaces so that each row and column adds up to 30. You can only use each number once.

There are 144 ways to place the pieces

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

Sign:

Date:

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

More addition and subtraction

What is the difference between the numbers? Count forwards.

600 000	700 000	800 000	900 000	1 000 000
500 010	600 010	700 010	800 010	900 010
507 000	607 000	707 000	807 000	907 000
590 000	690 000	790 000	890 000	990 000
546 999	556 999	566 999	576 999	586 999

What is the difference between the numbers? Count backwards.

1. What number comes next?

a. 700 000, 800 000, 900 000, _____ b. 683 500, 783 500, 883 500, _____

c. 699 999, 799 999, 899 999, _____ d. 577 382, 587 382, 597 382, _____

2. Complete the table:

Number	Add 10 000	Subtract 10 000	Add 100 000	Subtract 100 000
1 893 490				
1 473 894				
1 302 809				
1 200 008				
1 500 900				

3. First estimate and then calculate the answers to the following:

a. 784 459 + 378 =

Continue on an extra sheet of paper

b. 654 458 + 9 832 =

c. 689 492 + 12 599 =

Continue on an extra sheet of paper

d. 529 376 + 298 743 =

4. Subtract the following. Before you calculate estimate the answer. Then estimate the answer by rounding off the two numbers to be subtracted. How do the three answers differ?

a. 987 342 – 199 =

b. 856 439 – 5 568 =

Continue on an extra sheet of paper

c. 789 453 – 78 999 =

d. 654 342 – 285 492 =

Continue on an extra sheet of paper

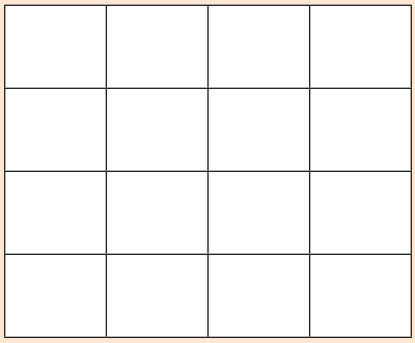
5. Mpho and David had 52 sweets. If Mpho ate 11 sweets and gave 5 sweets to David he would have 19 fewer sweets than David. How many sweets did David have in the beginning?

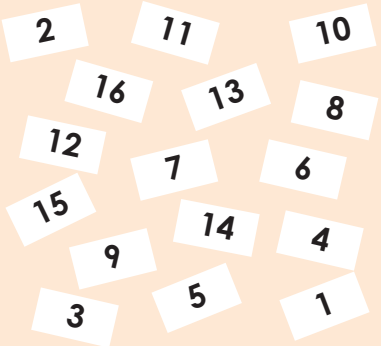
Continue on an extra sheet of paper

I dropped my puzzle pieces

What to do.

I dropped my number puzzle pieces. Help me to fill the spaces so that each row and column adds up to 34. You can only use each number once.





Sign:

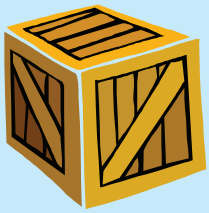
Date:

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

79a Views

What shape would we see from above if we turned each object shown here upside down?





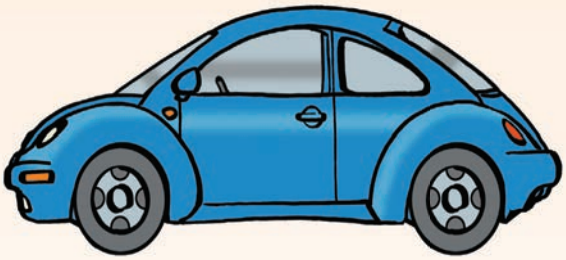

Words to remember:

top view
bottom view

side view

front view
back view

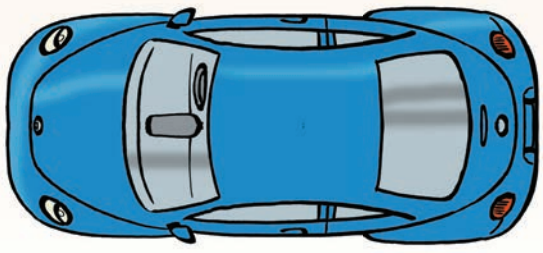
1. This person is looking at a car. Where is the person standing?



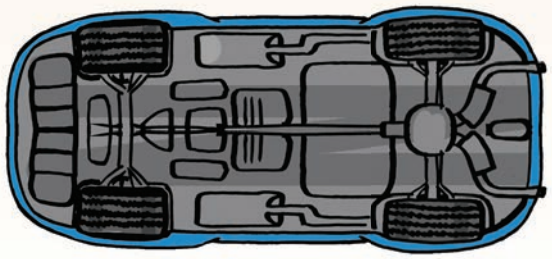
a. _____

b. _____

c. _____



d. _____



e. _____

2. Imagine a round cake.

a. If you look at the cake directly from above, what shape will you see?

b. If you look at the cake directly from the side?

c. If someone has cut a piece out of the cake, and you are looking at the side of the piece of cake, what shape will you see?

3. We often think of houses as looking like this:

a. Where would we be standing for the house to look like that?

b. Move to a different side of the house. What does it look like now (what shapes make up the picture we see now)?

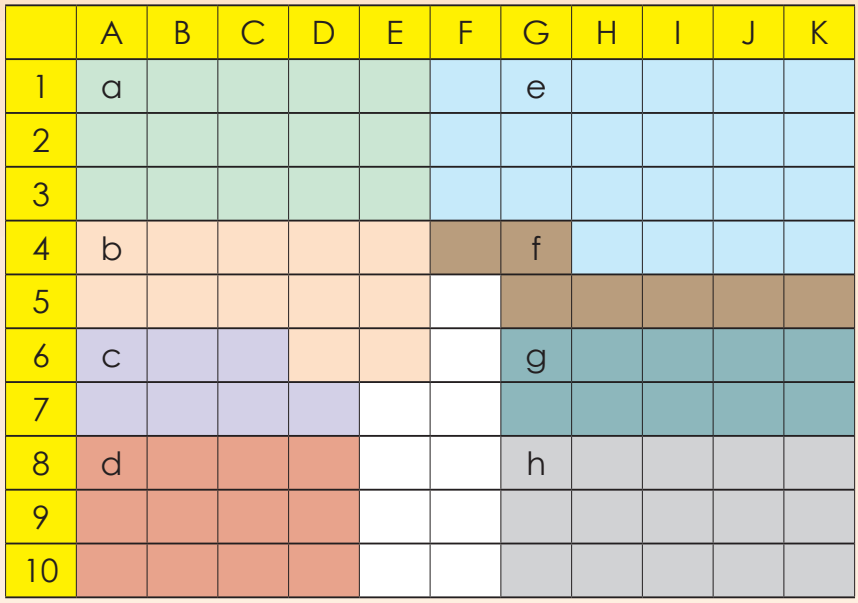
Sign:

Date:

continued

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

4. Look at the plan below. It shows the view of a house from above. The white squares in the middle represent the garden. Complete the table below.



Room	Co-ordinates	Area (in square units)	Room area as fraction of whole house
a	A1, B1, C1, D1, E1, A3, B3, C3, D3, E3	5 x 3 = 15	$\frac{15}{100}$ or 0,15
b		5 x 2 + 2 = 12	
c			
d			
e			
f			
g			
h			

5. Draw your dream house:

a. From above (top view).

b. From the front.

Views everywhere

How fast can you identify the view. Tick the correct answer.

top	front	side

top	front	side

top	front	side

top	front	side

top	front	side

top	front	side

top	front	side

top	front	side

Sign:

Date:

continued

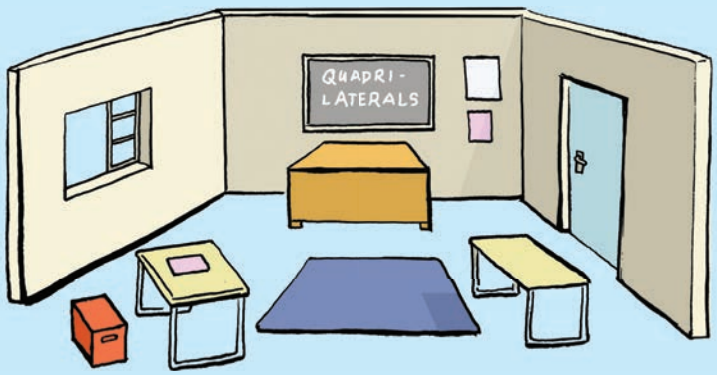
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Regular and irregular polygons

Find all the quadrilaterals in this picture.

Can you identify the same quadrilaterals in your class?

Measure their sides.



1. Answer the following questions:

a. You know the lengths of 3 sides of a parallelogram: 14 cm, 9 cm and 9 cm. Is that enough information to work out the 4th side? If so, what is it? Make a drawing to support your answer.

Continue on an extra sheet of paper

b. You know the lengths of 4 sides of a pentagon: 3 cm, 4 cm, 3,5 cm and 6 cm. What will the 5th side be? Make a drawing to support your answer.

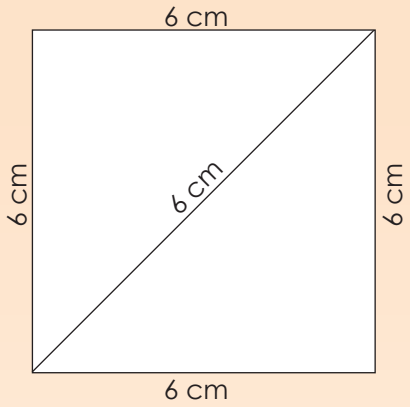
Continue on an extra sheet of paper

c. What do we name a shape where not all sides are equal? _____

d. Circle the irregular shapes. Name each shape

_____ _____ _____ _____ _____ _____

2. How can you tell that there is something wrong with this diagram?



3. Draw the following:

a. A rectangle with sides: 4,5 cm and 14 mm.

b. A square with sides of 2,3 cm.

c. An irregular pentagon with one side that equals to18 mm.

d. An irregular hexagon with all sides of different length.

Magazine or newspaper search

Find the following shapes in a magazine: parallelogram, rectangle and a square. Paste it here and describe it according to angles and sides.

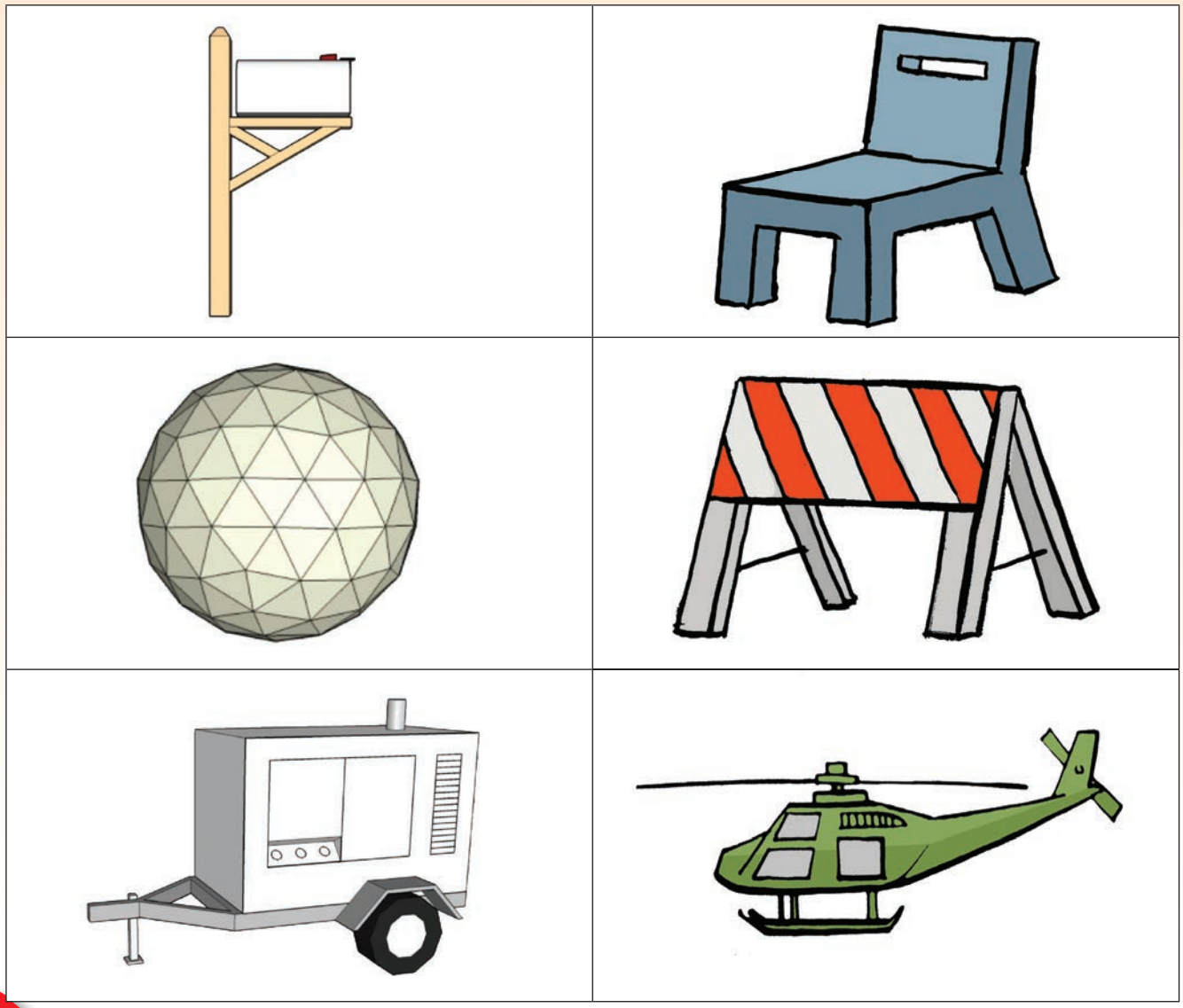
Sign:

Date:

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

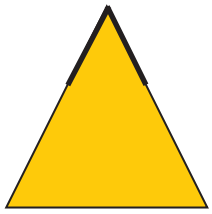
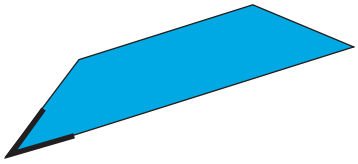
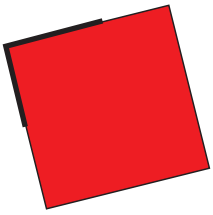
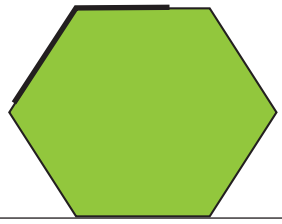
81 Right angles

1. Identify the angles that are smaller, bigger and equal to 90°.



Angles smaller than 90 °	Angles bigger than 90 °	Angles equal to 90 °
An angle of less than 90 ° is an acute angle.	An obtuse angle is more than 90 ° but less than 180 °. A reflex angle is more than 180 ° but less than 360 °.	An angle equal to 90 ° is a right angle.

3. Say if the shown angles are bigger, smaller or equal to 90º and give them their correct names: acute, right, obtuse or reflex.

a. 	b. 	c. 
d. 	e. 	f. 

I am an architect

Draw a building with angles bigger, smaller, and equal to 90 degrees.

Sign:

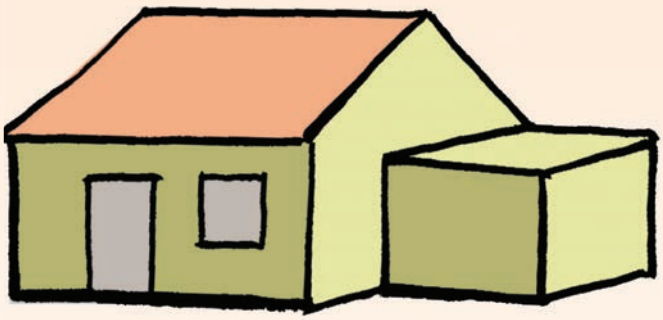
Date:

82 Angles bigger or smaller than 90 °

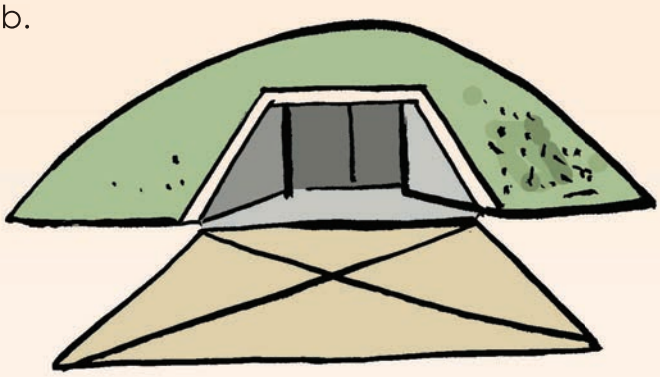
Look at the pictures. Find angles that are smaller and angles that are bigger than 90 ° on the South African flag.

1. Outline at least 2 angles that are bigger than 90 ° in red, and/or 2 angles that are less than 90 ° in blue in each photograph.

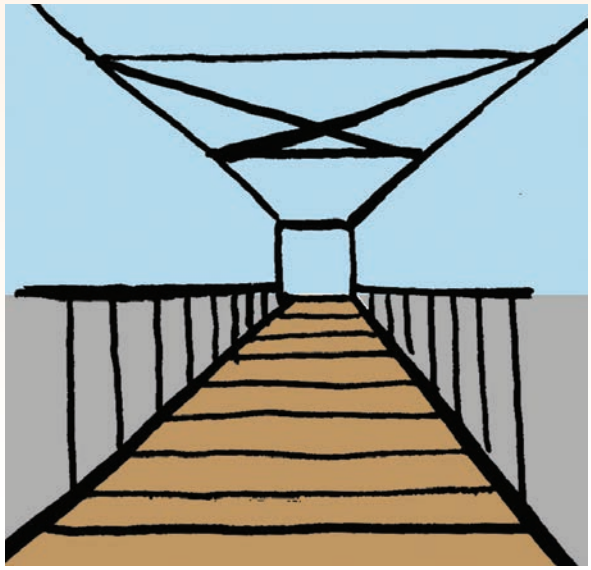
a.



b.



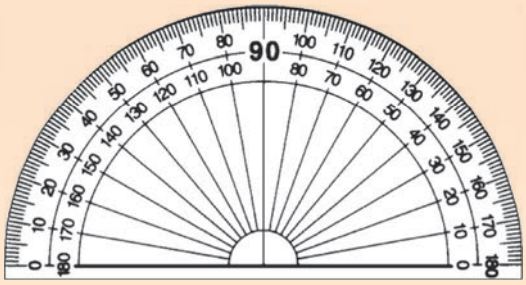
c.



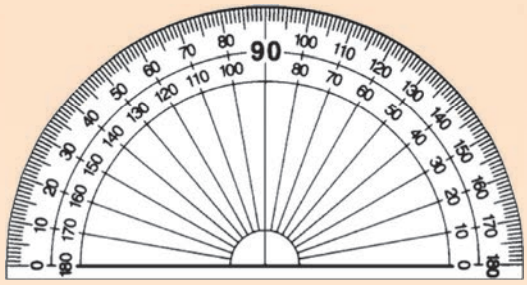
d.

2. On the protractor draw in red:

a. An angle bigger than 90 °.

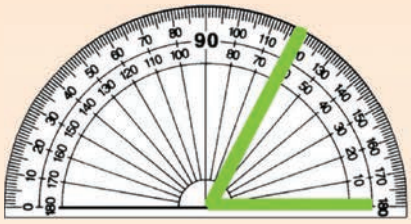


b. An angle smaller than 90 °.

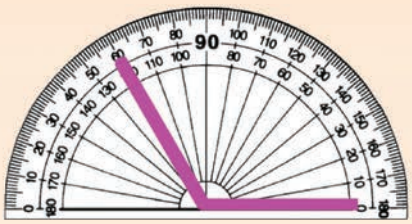


c. Tick which protractor/s shows an angle bigger than 90 °.

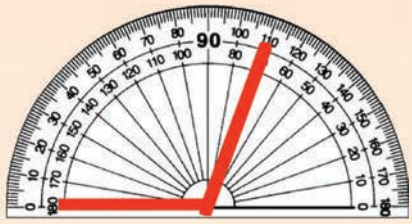
i.



ii.

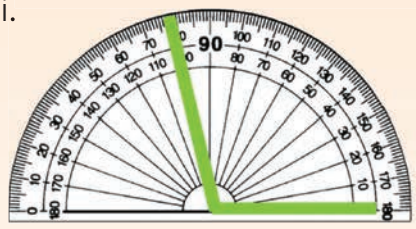


iii.

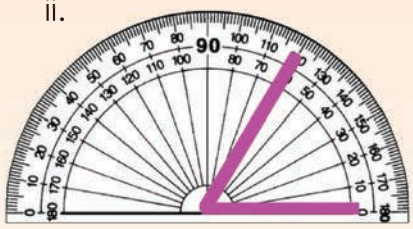


d. Tick which protractor/s shows an angle smaller than 90 °.

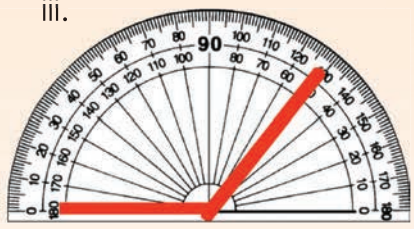
i.



ii.

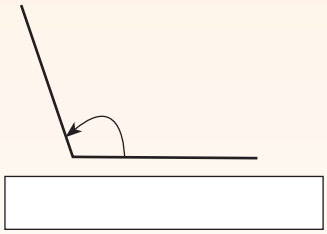


iii.

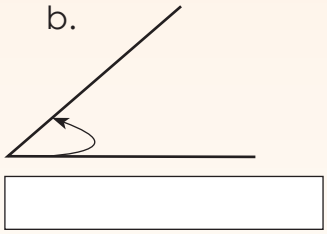


3. Tick the angles that are bigger than 90 ° in red and those that are smaller than 90 ° in blue. Name the type of angle. Name the type of angle.

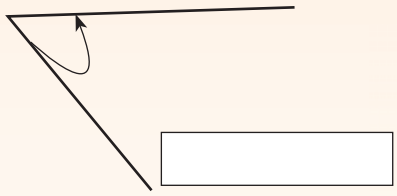
a.



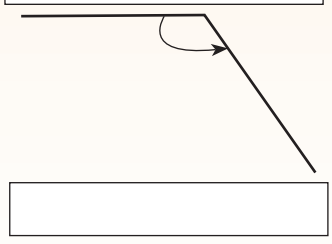
b.



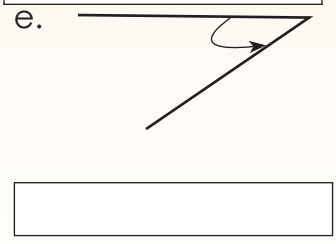
c.



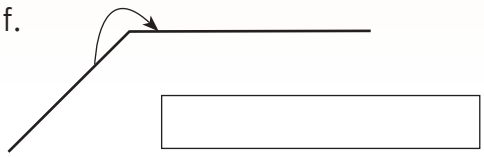
d.



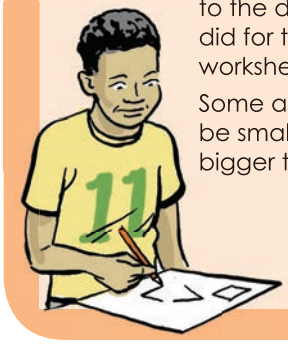
e.



f.



I am an architect



Add more angles to the drawing you did for the previous worksheet.

Some angles should be smaller and others bigger than 90°.

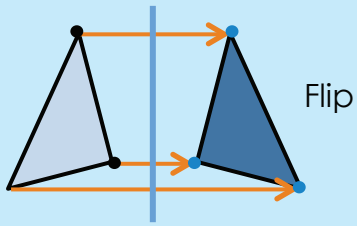
Sign:

Date:

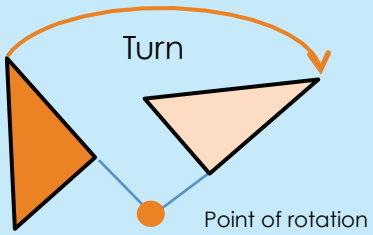
83 Reflection, rotation and translation

Revise the following. Say which shape is the original shape.

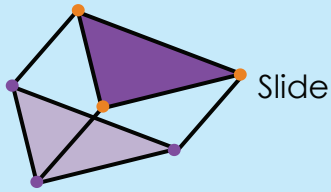
Reflection



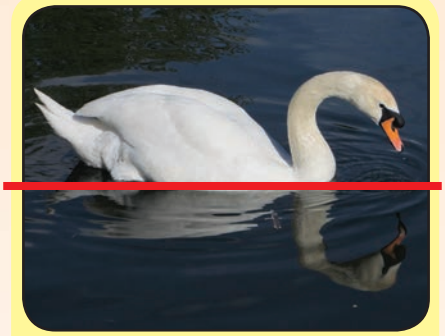
Rotation



Translation



1. In nature we get the most beautiful examples of reflections. Show the line of reflection on each picture and then describe each reflection.



The centre line is called the line of reflection or mirror line.

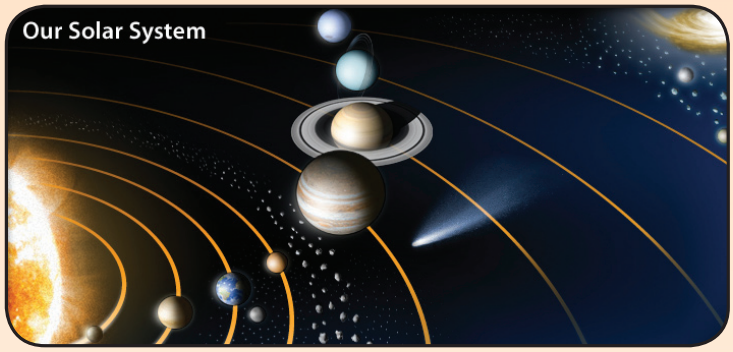
The line of reflection is horizontal. The reflection of the elephants, trees and island have the same size as the original image.

2. Find a picture on reflection, paste it here and describe it.

2. **Show the centre of rotation and describe each rotation. Here are some words that might help you to describe the rotation: distance from the centre, circle around the centre, point of rotation, angle. Note that in picture b we have two examples**

a.

b.



3. **Describe the translation. Here are some words that will help you to describe the translation: moving, rotating, not rotating, reflecting, not reflecting, same distance, same direction, shapes.**

Maths and Nature

Describe this plant using transformations.

Sign:

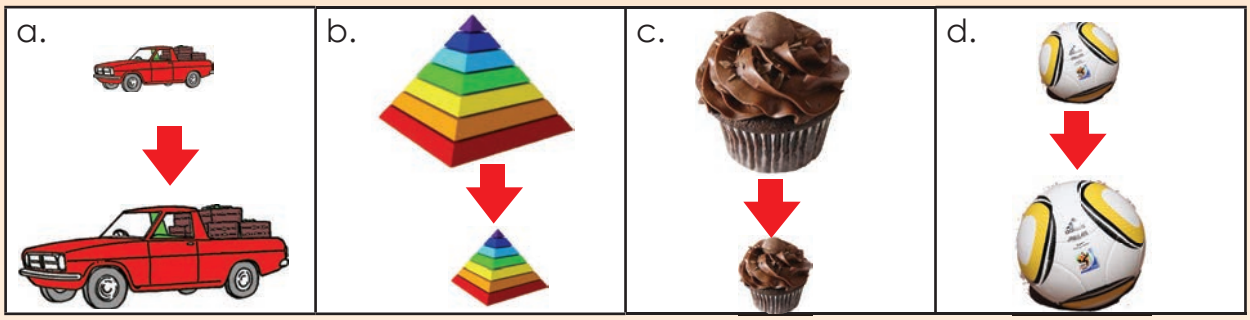
Date:

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

84a Enlargement and reduction

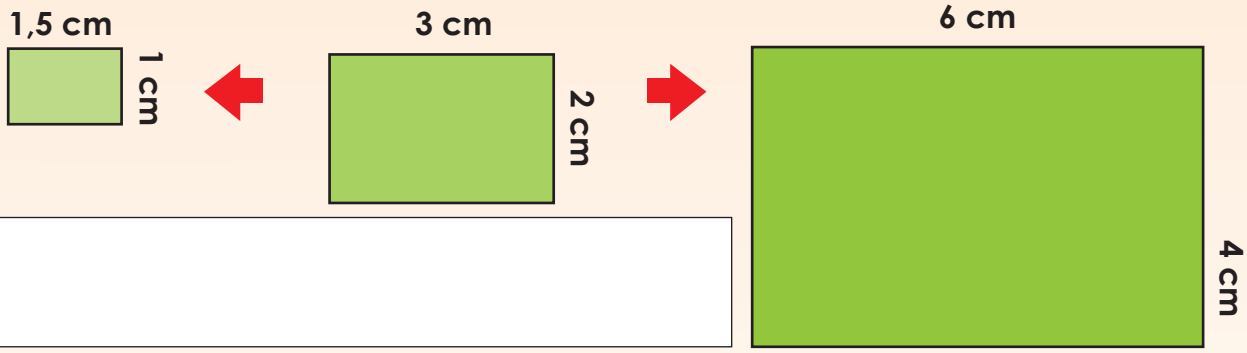
- What does enlargement mean?
- What does reduction mean?
- If we don't have grid paper can we still reduce or enlarge items?
- Yes, by using a ruler!

1. Say whether the following have been enlarged or reduced.

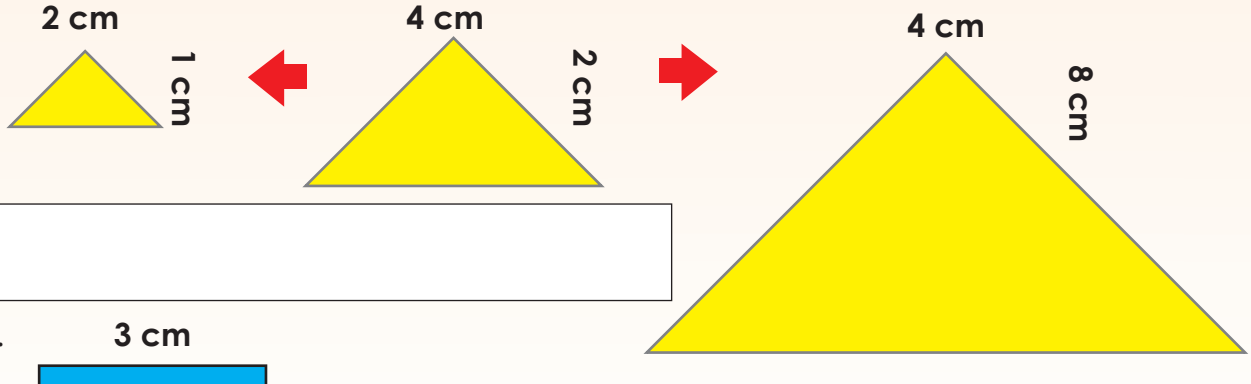


2. Explain what happened with the shape using words such as enlarge and reduce.

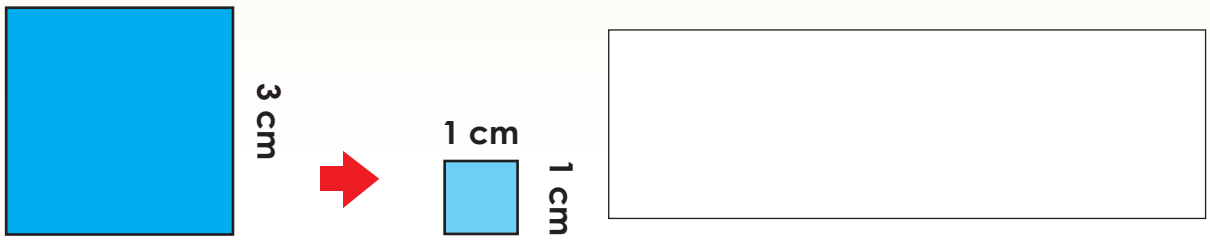
a.

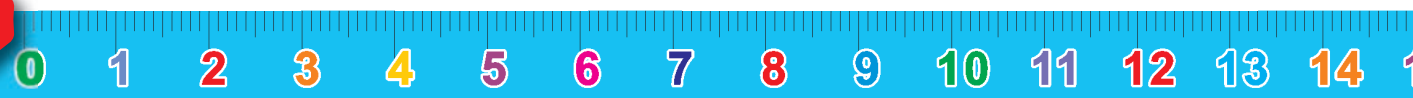


b.



c.





3. Use the grid paper below to draw the following:

a. Draw a rectangle with an area of six blocks. Then draw the same rectangle reduced by two in green. Then draw a rectangle enlarged by three in blue.

b. If each block in the grid above is 1 cm by 1 cm, explain the reduction and enlargement in cms.

c. Draw any object in red. Reduce it to half its size, in blue. Explain your reduction in cm.

Sign:

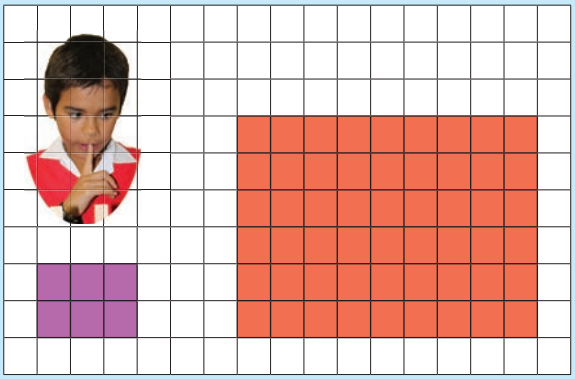
Date:

continued ☛

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

Enlargement and reduction continued

Look at the diagram below. Discuss it in your groups.



Purple rectangle:
The length = 3
The width = 2

Red rectangle:
The length = 9
The width = 6

The length of the **red rectangle** is **3** times more than the **purple rectangle**.

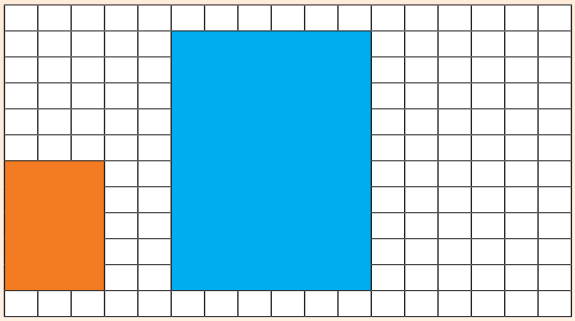
3 x 3 = 9

The width of the **red rectangle** is **3** times more than the **purple rectangle**.

2 x 3 = 6

Therefore, we say that the red rectangle is **enlarged 3 times.**

4. Look at the rectangles. Answer the questions below.



Orange rectangle

a. The length = _____

b. The width = _____

Blue rectangle

c. The length = _____

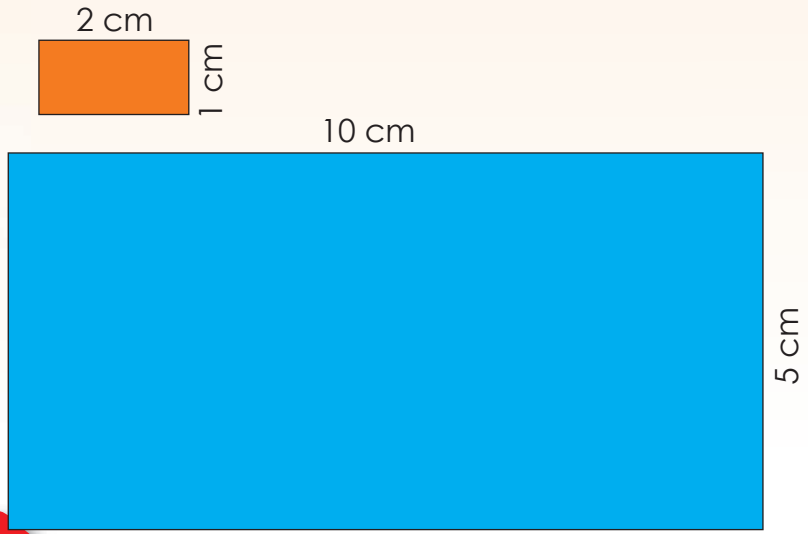
d. The width = _____

e. The length of the blue rectangle is _____ times more than the orange rectangle.

f. The width of the blue rectangle is _____ times more than the orange rectangle.

g. The blue rectangle is enlarged _____ times.

5. Answer the following questions:



Orange rectangle

a. The length = _____

b. The width = _____

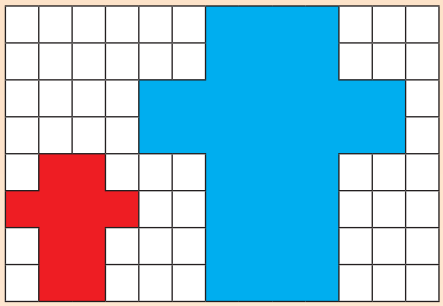
Blue rectangle

c. The length = _____

d. The width = _____

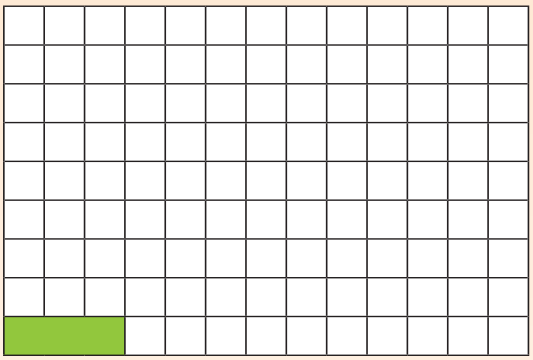
e. The blue rectangle is enlarged _____ times.

6. **By what factor is this shape enlarged? Write down all the steps.**

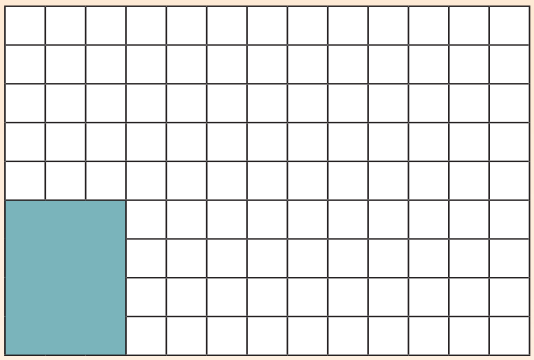


7. **Enlarge the rectangle by:**

a. 4



b. 2



8. **Complete the table. Make drawings if needed.**

Rectangle	Perimeter	Area	Enlarge by:	Perimeter	Area
a. Length: 4 cm Width: 2 cm			5 Length: Width:		
b. Length: 3 cm Width: 2 cm			8 Length: Width:		
c. Length: 7 m Width: 5 m			6 Length: Width:		
d. Length: 9 m Width: 8 m			10 Length: Width:		

I am an artist

What do you need:
Square paper

What to do:
Find or draw a picture. Enlarge the picture by 2.

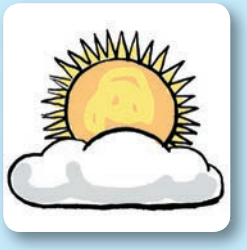
Sign:

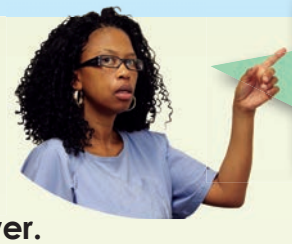
Date:

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

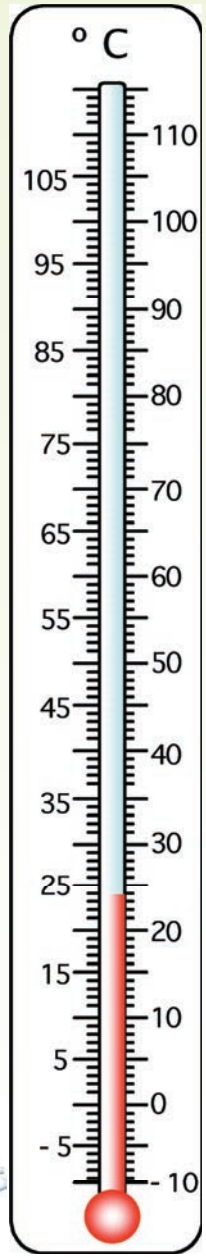
85a Temperature

Look at the pictures. What do you think is the temperature for each?

The degree Celsius (°C) is the metric unit for measuring temperature.



Water boils at 100 °C

37 °C
Body temperature

35 °C
Hot day

15 °C
Cool day

0 °C
Water freezes

1. Choose the correct answer.

a. What happens to the liquid in the thermometer when the temperature rises?
   i. The mercury rises.
   ii. The mercury drops.

b. What happens to the liquid when the temperature drops?
   i. The mercury rises.
   ii. The mercury drops.

c. The temperature on a very hot day in South Africa is:
   i. 15 °C
   ii. 35 °C
   iii. 0 °C

d. The temperature on a very cold day in South Africa is:
   i. 18 °C
   ii. 28 °C
   iii. 4 °C

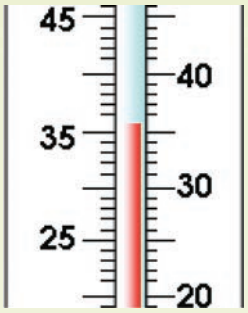
e. The temperature shown on the thermometer is:
   i. 15 °C
   ii. 24 °C
   iii. 29 °C

2. Match the temperature to the correct thermometer.

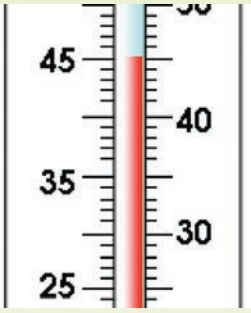
Body temperature = 37 °C

Soup temperature = 45 °C

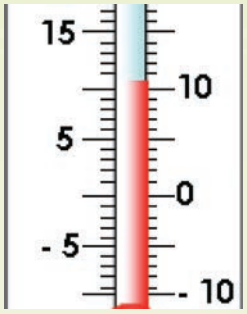
Cool drink temperature = 10 °C



b.

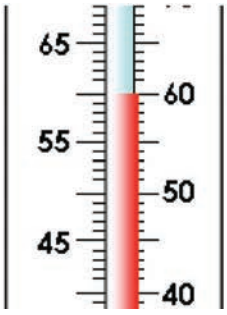


c.

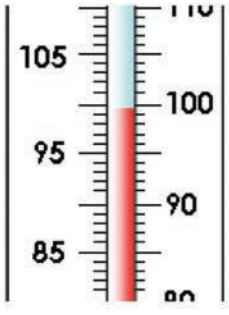


3. Write down each temperature.

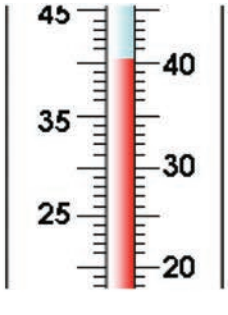
a. _____



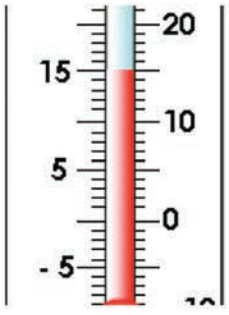
b. _____



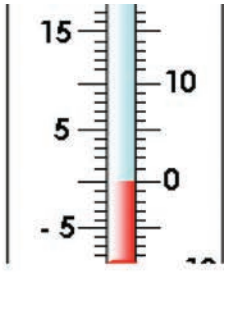
c. _____



d. _____



e. _____



4. Record this week's minimum and maximum temperature.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Min:	Min:	Min:	Min:	Min:	Min:	Min:
Max:	Max:	Max:	Max:	Max:	Max:	Max:

Describe the temperature for the week:

Celsius and Fahrenheit

Have you ever heard of the word Fahrenheit?

Find out what it means.

How does it differ from Celsius?

Sign:

Date:

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

85b Measuring temperature

What did we learn so far? How to read a thermometer.

Look at the top of the red line.

↓

Look down at the number line for the nearest ten.

↓

Count up the lines to find the exact temperature.

↓

Write the temperature with a degree mark ° and a C.

1. Answer the following questions on temperature:

a. What is the temperature on a hot, sunny day? Show it on the thermometer on the right hand side.

b. What does it mean for the temperature to be 2 degrees below zero?

_____

Show it on the thermometer.

c. What sign would you use to show this number is below zero? ____

2. Write the following temperature in numbers and symbols:

a. 5 degrees Celsius. ____

b. 3 degrees Celsius below zero. ____

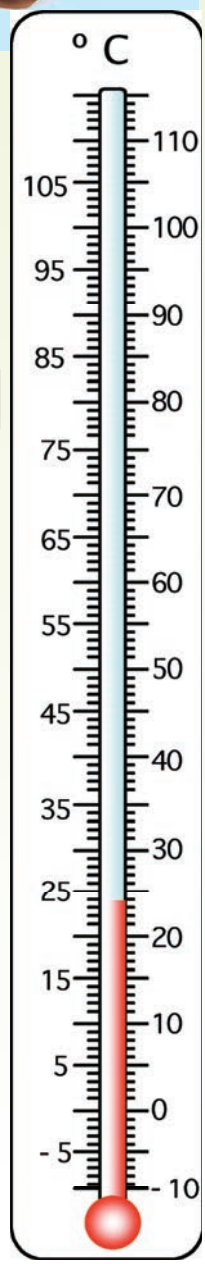
c. 10 degrees Celsius above zero. ____

d. 10 degrees Celsius below zero. ____

e. The temperature is minus 2 this morning in Joburg. ____

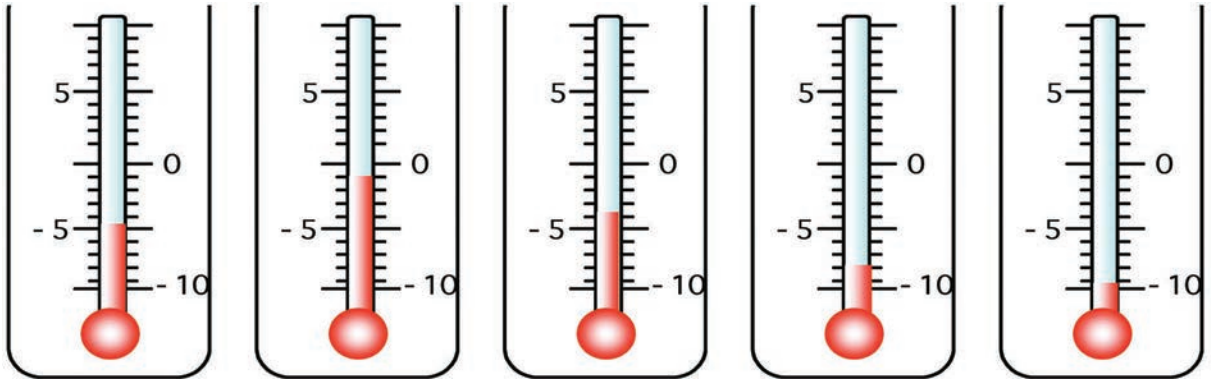
I understand now. If the temperature falls below 0 °C (zero degrees Celsius) we use negative numbers to say how far below zero it has fallen. Such as – 5 °C.

3. Is it very often below zero degrees Celsius in South Africa? Explain your answer.



4. Write down each temperature.

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



f. Which temperature is the coldest? _____

g. Which temperature is the warmest? _____

5. Complete the following:

a. The temperature -6 °C is colder than -4 °C as it is 2 ° less than _____.

b. The temperature 7 °C is warmer than -8 °C as it is _____ more than _____.

c. The temperature -9 ° C is colder than -6 °C as it is _____ less than _____.

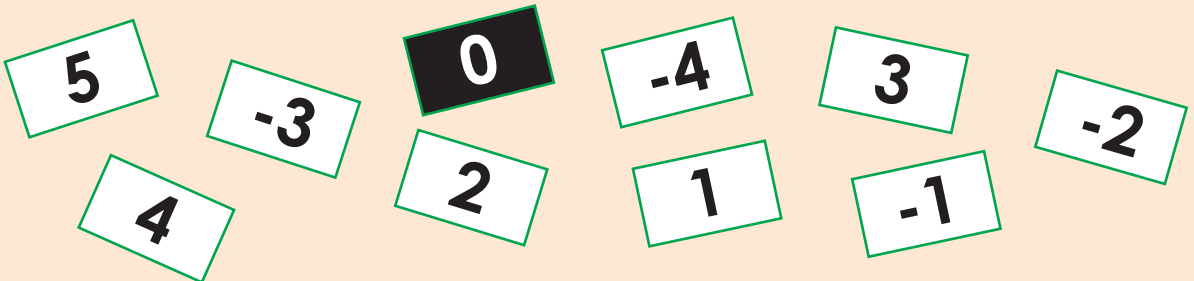
d. The temperature -5 °C is warmer than -10 °C as it is _____ more than _____.

e. The temperature -15 °C is colder than -9 °C as it is _____ less than _____.

6. Write down what you will do if it is below zero in your area.

Temperature and negative numbers

Make the same cards as below from paper or cardboard. Cut them out and place them in order from the smallest to the largest number.



Sign:

Date:

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

Temperature scales and displays

Look at the pictures and compare it to the thermometer used in the previous worksheet. Explain how you think each one is used.

We use thermometers to measure the temperature of the air, our bodies, food, and many other things.

There are analogue and digital thermometers. An analogue thermometer shows the temperature directly on a scale or dial; a digital thermometer changes the analogue reading into an electric one shown as numbers on a display screen .

1. Fill in the correct answers

a. Temperature is measured in many different scales, including _____, _____, and _____ scales.

b. The units of the _____ and _____ scales are called degrees; the units of the Kelvin scale are called kelvins.

c. The symbol for degree is ___.

d. We use the _____ in South Africa to measure temperature.

Share this table with an adult that needs to convert Fahrenheit to Celsius or vice versa.

2. Complete the table below.

Temperature	Fahrenheit	Celsius
Water boils	212 ^{0}F	a.
Water freezes	32 ^{0}F	b.
Normal human body temperature	98,6 ^{0}F	c.
Room temperature	70 ^{0}F	d.

3. Write the digital times in words.

a. 73 °

b. 102 °

c. -5 °

d. 36.5 °

e. 0 °

4. Use the temperatures above to answer the questions.

a. What will ascending order mean when we work with temperature?

_____

b. Write the temperatures in Question 3 in ascending order.

_____

c. What will descending order mean when we work with temperature?

_____

d. Write the temperatures in Question 3 in descending order.

_____

e. When in everyday life will we write temperature in ascending or descending order? Why?

_____

_____

_____

5. We have learnt that normal body temperature is 37 °. Studies show us that body temperature can vary from person-to-person, their age, what they have been doing, the time of the day and the part of the body you take the temperature from. This is the range for the normal body temperature. Fill in all the other possible readings you can have on a digital thermometer counting in tenths.

36,1 °											37,2 °

Challenge

Beneath Earth's surface, the temperature increases 10 °C every kilometre. Suppose that the surface temperature is 22 °C, and the temperature at the bottom of a gold mine is 45 °C.What is the depth of the gold mine?

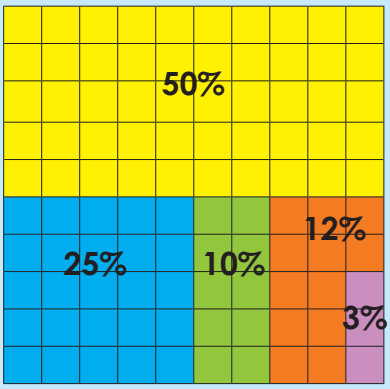
Sign:

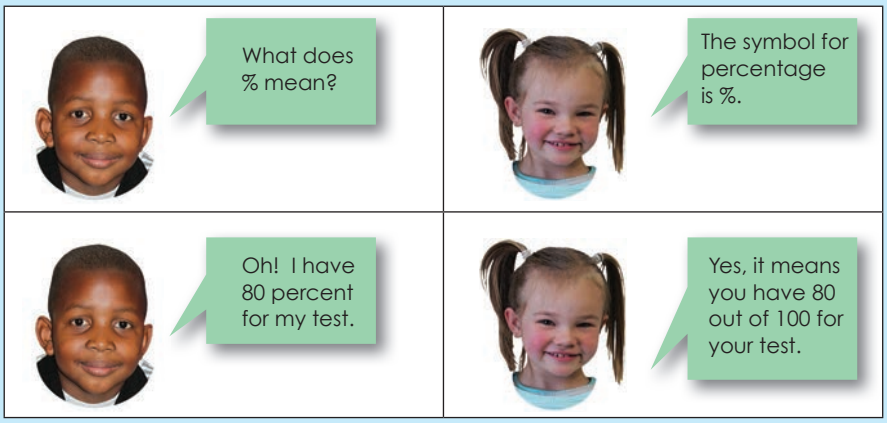
Date:

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

Percentage and fractions

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

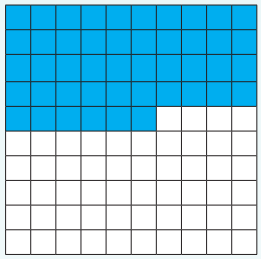




1. **What fraction of the square is blue?**

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

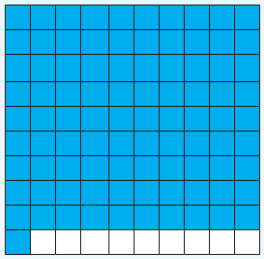
a.



i. _____

ii. _____

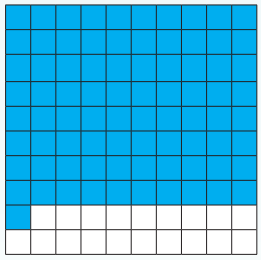
b.



i. _____

ii. _____

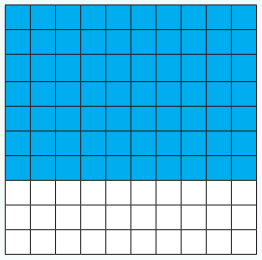
c.



i. _____

ii. _____

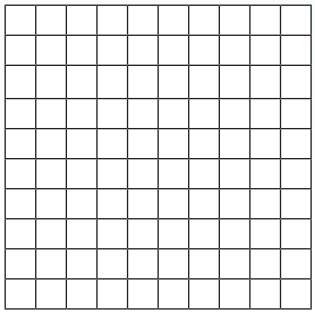
d.



i. _____

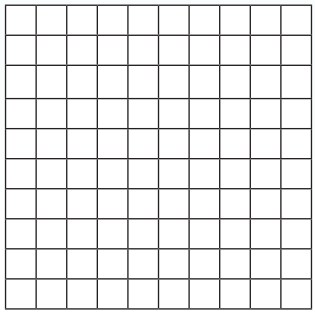
ii. _____

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



_____

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



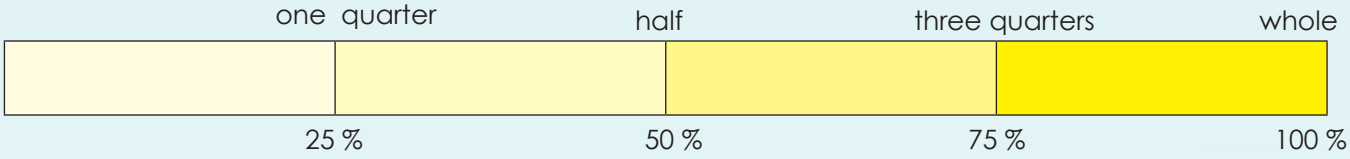
_____

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.

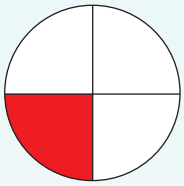
b. 50 % means _____ of a whole.

c. 25 % means _____ of a whole.

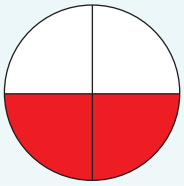
d. 75 % means _____ of a whole.

6. What percentage of the circle is red?

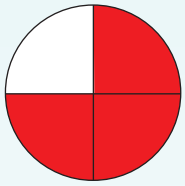
a. _____



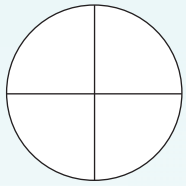
b. _____



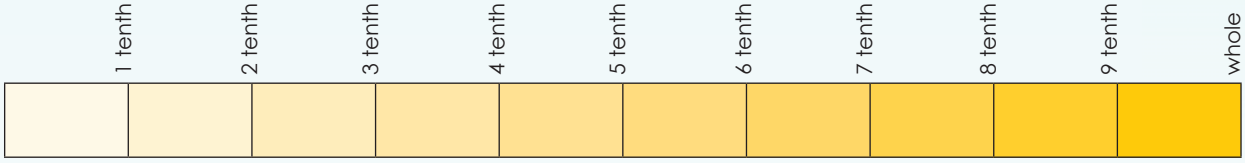
c. _____



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

Percentages and decimals

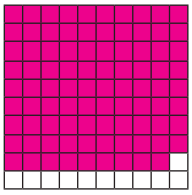
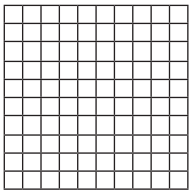
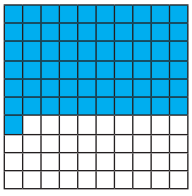
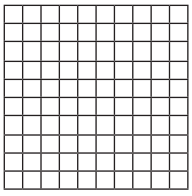
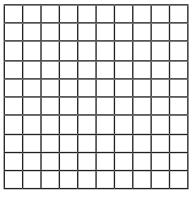
Match the fractions, decimal fractions and percentages that stand for the same amount:

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

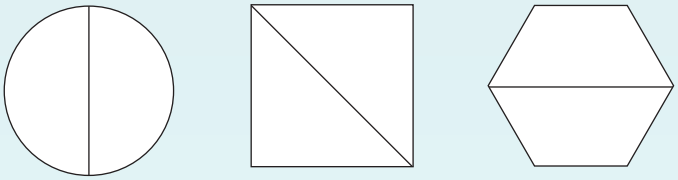
0,5 | $\frac{1}{100}$ | 25 % | 0,3 | 1 % | 0,25 | 10 %

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.



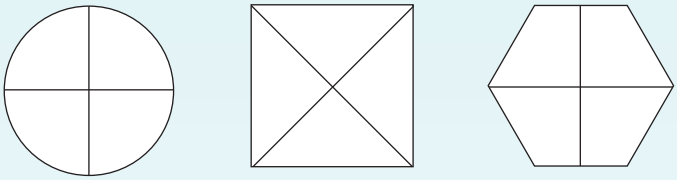
A **half** can be written...

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

Percentages of a whole number

Look at the pictures below. Make up you own prices to explain the discount.

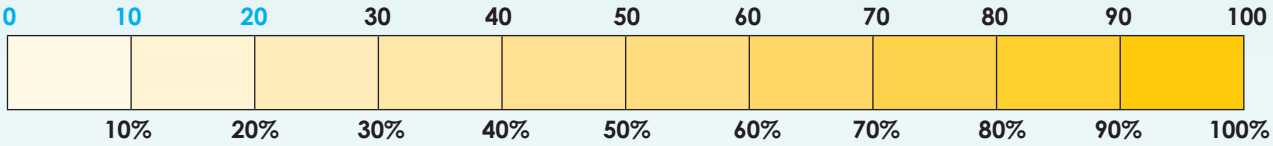
All shoes 50 % discount.

All jackets 25 % discount.

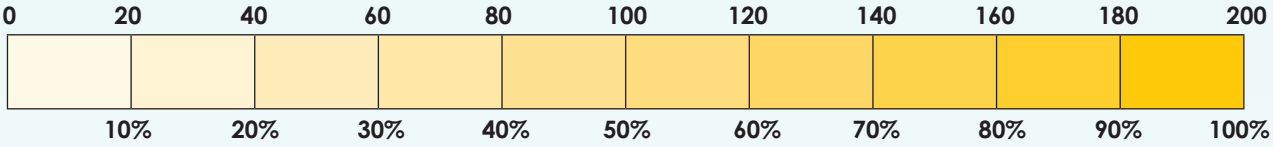
All skirts 10 % discount.

1. Look at the diagrams and answer the following:

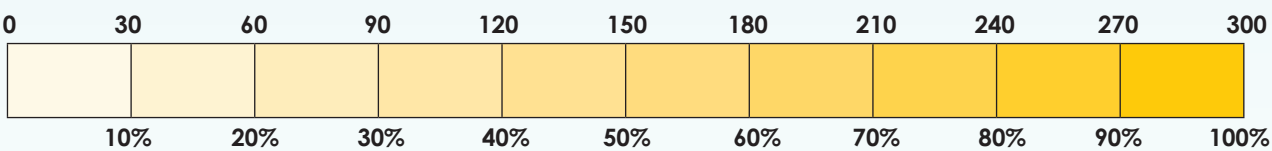
a. What is 20 % of 100? 20



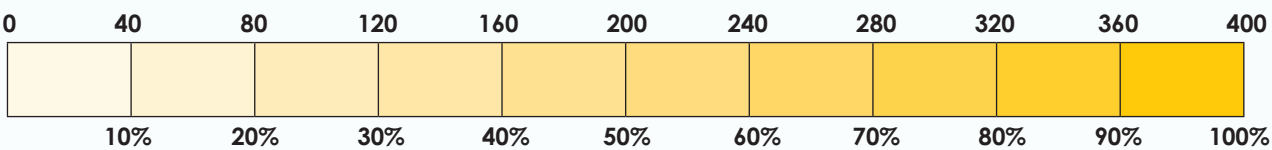
b. What is 40 % of 200? _____



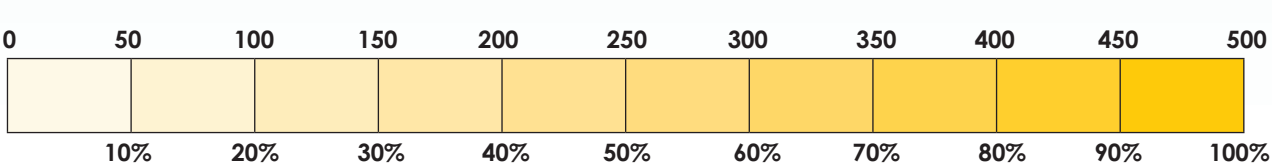
c. What is 60 % of 300? _____



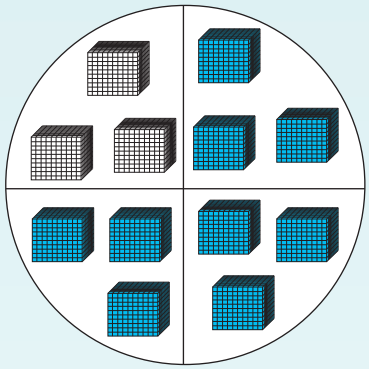
d. What is 80 % of 400? _____



e. What is 70 % of 500? _____



2. Look at the diagram and answer the questions.



= 1 000 small cubes

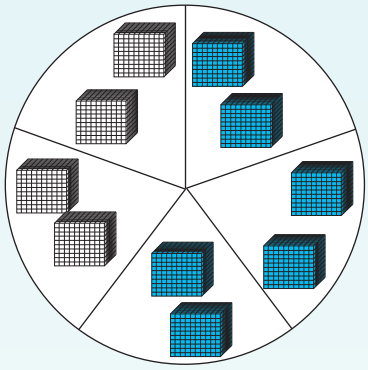
a. How many small cubes are there? _____

b. How many small blue cubes are there? _____

c. How many small white cubes are there? _____

d. What percentage of the small cubes are blue? _____

e. What percentage of the small cubes are white? _____



f. How many small cubes are there? _____

g. How many small blue cubes are there? _____

h. How many small white cubes are there? _____

i. What percentage of the small cubes are blue? _____

j. What percentage of the small cubes are white? _____

3. Answer the following:

a. What is 50 % of R100? _____

b. What is 25 % of R100? _____

c. What is 50 % of R50? _____

d. What is 25 % of R50? _____

4. The music shop is having a sale in which they are offering 30% off the marked price of a CD you want to buy. Another shop nearby is offering the same CD at the same price, and the sale sticker says you can get $\frac{1}{4}$ of the price off. Which shop will you buy from and why?

Advertisement search

Go through a newspaper.

See how many times can you find discounts offered on goods.

Sign:

Date:

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

Percentages and money

What is in my basket? Calculate the total cost of each basket.

Basket 1 **Basket 2** **Basket 3**

1. How much do I save on each basket?

Which basket	Discount	Amount after discount	Savings
Basket 1 	25 %		
Basket 2 	50 %		
Basket 3 	10 %		

a. Which basket cost the least? _____

b. Which basket cost the most? _____

c. On which basket did you save the least? _____

d. On which basket did you save the most? _____

e. What is the total cost of all the baskets before discount? _____

f. What is the total cost of all the baskets after discount? _____

2. Here are four families' groceries for the month.

LUCKY CUSTOMER
Scratch card

Three trolleys in a row.	10 % off.
Four trolleys in a row.	20 % off.
Five trolleys in a row.	50 % off.

Family 1

R1 500,00

Family 2

R1 275,00

Family 3

R1 687,25

Family 4

R999,99

Total cost	Discount coupons	Total amount
Family 1 	Washing powder R2,00 off; Soap 50c off; Bread R1,50 off; Milk R3,50 off	
Family 2 	Lucky Customer scratch card. 	
Family 3 	Lucky Customer scratch card. 	
Family 4 	Lucky Customer scratch card. 	

Shopping search

Go to your nearest shop or shopping centre.
Find out about discount prices.
How much can you save?

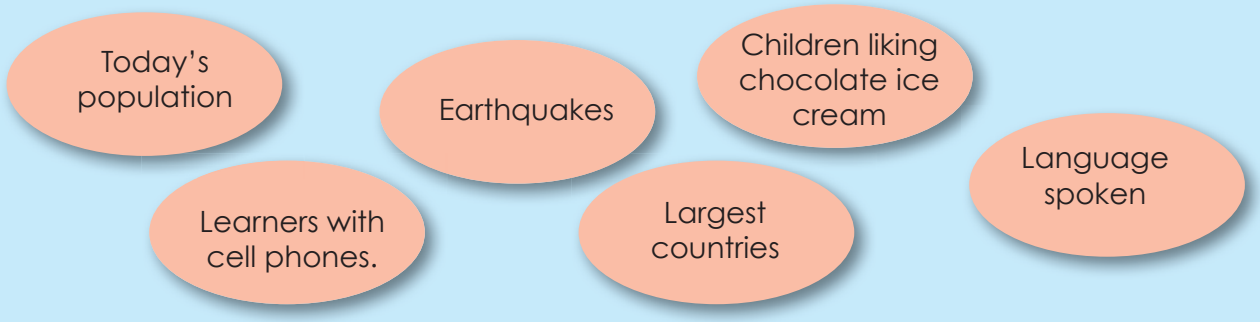
Sign:

Date:

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

91 Tally marks and frequency tables

Say where you think you will look for the following world data.



1. "Do the children in our school eat a healthy breakfast?" What do you normally eat for breakfast? Tick whether you normally eat any of these things for breakfast.

a) Cooked porridge ☐
b) Cereal with added sugar ☐
c) Cereal without added sugar ☐
d) Bread ☐
e) Fruit ☐
f) Yoghurt ☐
g) I don't eat breakfast ☐
h) Something else (please say what). ☐ _____

2. You need to find out what the favourite chocolate of each learner in your school.

a. What type of data will you collect? _____

b. How will you collect it? _____

c. Where will you find the information?

_____

d. What will the data tell us?

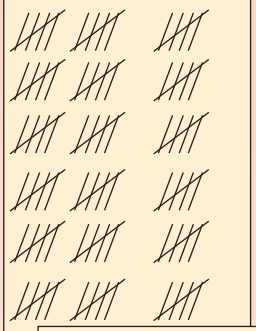
_____

e. Do I think the data can help us to answer the question? Why?

_____

3. Draw up a frequency to record the data given below.
Put the names in order starting with the most common name.

Betty's tally for people called Jonathan.



Bongi: "Quite a few people are called Mbali."

Sam said: "120 people are called Sam."

Susan said: "127 people are called Max."

Bongi said: "Another 52 people are called Mbali."

Thabo said: "I was surprised to find that my name did not win!" "99 people have the same name as me."

Lilly said: "128 people are called Peter."

Betty said: "I found 2 more people with the name Jonathan."

Thabo found more people with the same name.

Lilly said: "I forgot about the 5 Peter's living in Second Avenue."

Susan said: "I forgot my brother and cousin are also called Max."

Names	Frequency

Remember our tally competition …

In pairs we are going to see who can count the tallies this time the fastest.

Sign:

Date:

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

92a Grouping and ordering data

Look at the table. Make your own story using words such as.

Temperature	Tally
0 °C – 5 °C	𝍸 //
6 °C – 10 °C	𝍸 𝍸 //
11 °C – 15 °C	𝍸 𝍸 𝍸 ///
16 °C – 20 °C	𝍸 𝍸 𝍸 /
20 °C – 25 °C	𝍸 𝍸

group

temperature

tally

table

1. Grouping data

When a large amount of data has to be collected it may help to tally it.

The following tally chart represents the ages of 200 people who went to a school concert.

Age	Tally	Frequency
0–9	𝍸 ////	9
10–19	𝍸 //	
20–29	𝍸 𝍸 𝍸 𝍸 ////	
30–39	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 ///	
40–49	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 /	
50–59	𝍸 𝍸 𝍸 𝍸 //	
60–69	𝍸 𝍸 𝍸 𝍸 𝍸 ///	
70–79	𝍸 𝍸 𝍸 ///	
80–89	///	
90–99	/	

a. Complete the table by filling in the frequencies.

b. How are the ages grouped?

c. You decide to group the ages differently. The first group is 0-5. Group the rest of the ages. Draw a table like the one on the previous page and complete it.

Sign:

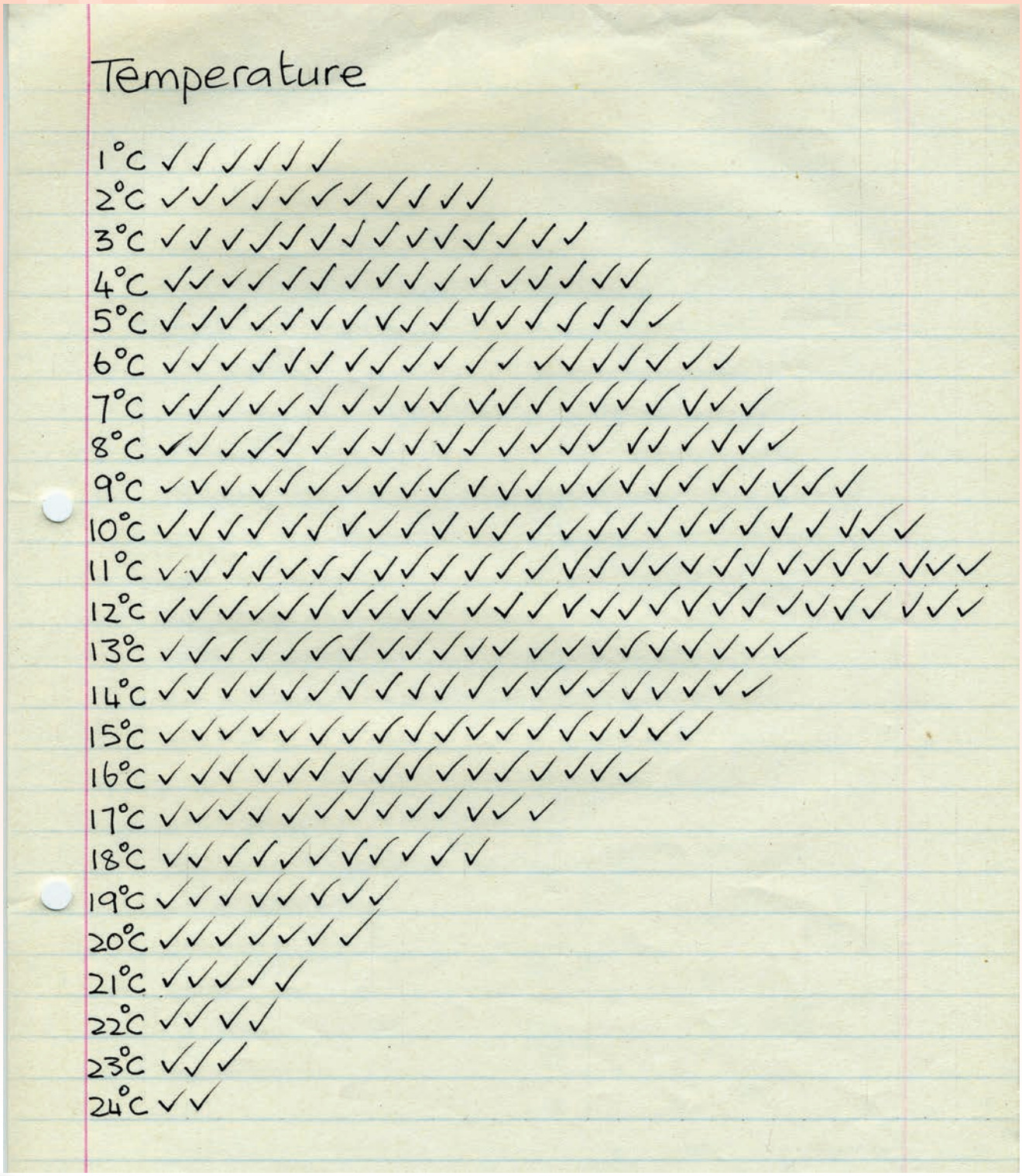
Date:

continued ☛

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

Grouping and ordering data continued

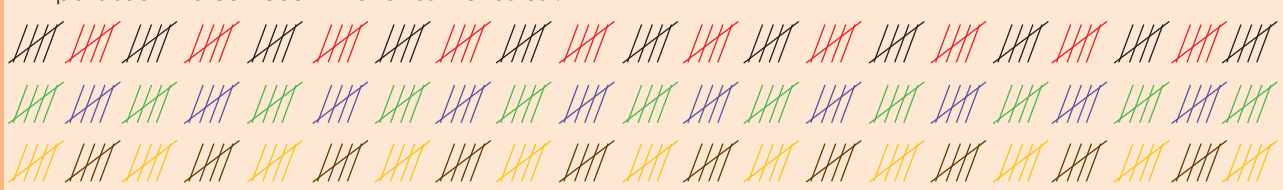
2. You got the information below on a piece of paper. Record this data onto the table on the next page.



Temperature	Tally	Frequency

Tally competition …

In pairs see who can count the tallies the fastest.



Sign:

Date:

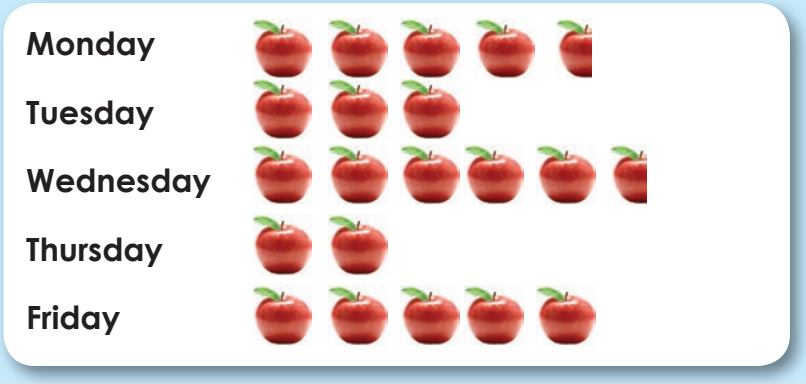
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

93 Pictographs

How many apples were eaten this week at the school?

 = 10 apples

 = 5 apples



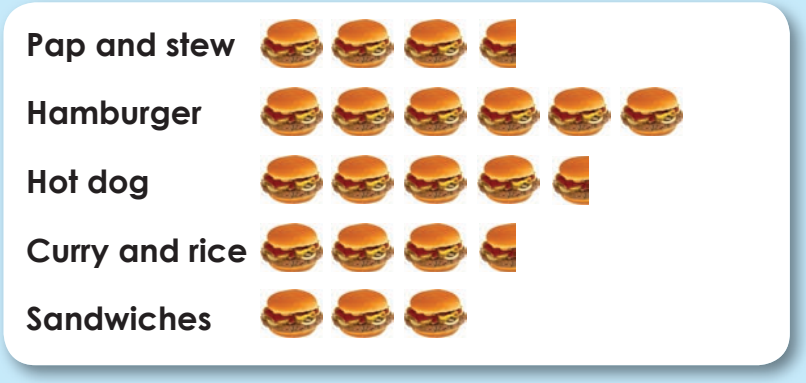
1. Look at the pictograph and answer the questions.

Favourite food in our school

Key:

 = 20 children

 = 10 children



a. How many children have chosen pap and stew as their favourite meal? _____

b. How many children have chosen sandwiches as their favourite meal? _____

c. How many children have chosen hamburgers as their favourite meal? _____

d. How many more children like the most favourite meal than the least favourite meal? _____

e. How many children were asked? _____

f. What if the burger picture represented:

	Pap and stew	Hamburger	Hot dog	Curry and rice	Sandwiches
 = 50 children					
 = 25 children					

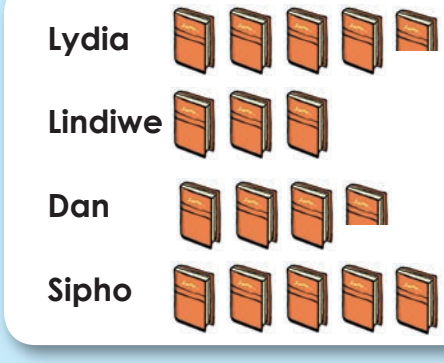
2. Use the pictograph to answer the questions.

Books read over the last 4 years.

Key:

 24 books

 12 books



a. How many books did Lindiwe read? _____

b. How many more books did Lydia read than Dan? _____

c. Two children read the least number of books. How many books did they read? _____

d. How many books do you think Lydia, Lindiwe, Dan and Sipho will read in 8 years?

_____

3. Answer the question on the pictograph.

2015 Housing project

Key:

 = 100 000 houses

 = 50 000 houses

a. How many houses should still be build? _____

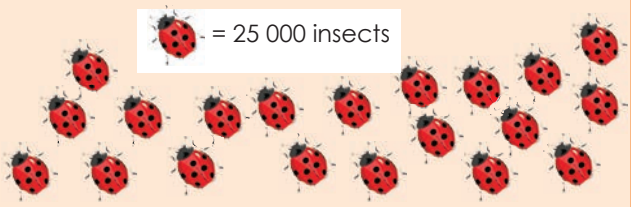
b. How many houses are built? _____

c. How many houses are in the process of being built? _____

d. Calculate the total number of houses in this housing project.

_____

How many did they see?



When and where do you think this was?

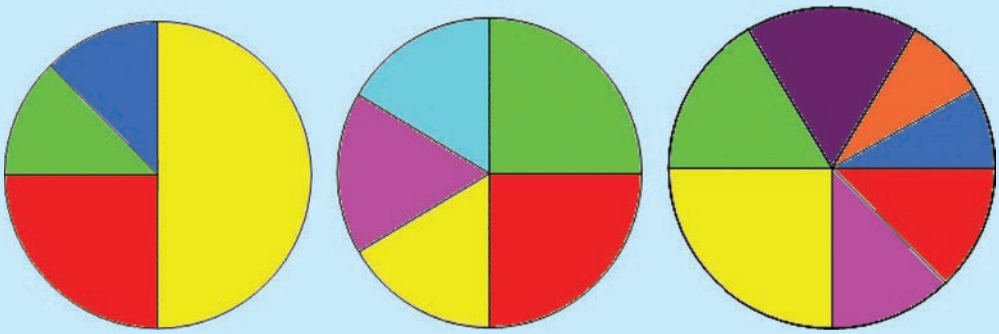
Sign:

Date:

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

94 Pie charts

Use colour and fraction to describe the circles below.



1. Look at the pictograph and complete the pie chart.

Bread eaten in four days.

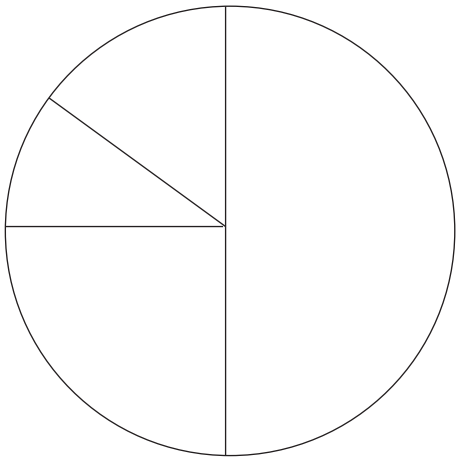
Key:

 = 10 loaves

 = 5 loaves

Monday	
Tuesday	
Wednesday	
Thursday	

Chart title: _____



2. Answer the following questions:

a. How many loaves of bread were eaten on Monday? _____

b. How much bread was eaten on Wednesday? _____

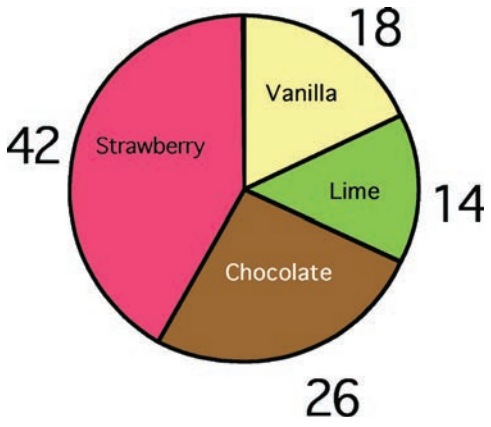
c. On which day was the most bread eaten? _____

d. How many loaves were eaten in total? _____

e. What fraction of bread was eaten on Tuesday? _____ Thursday? _____ Monday? _____ Wednesday? _____. Remember to write your answers in the simplest form.

3. Look at the pie chart and answer the questions.

Ice cream liked by children in grade 6.



a. What is the favourite ice-cream in grade 6?
_____

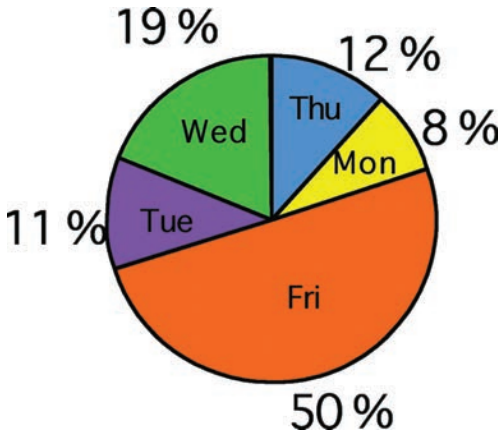
b. What is the least favourite ice-cream in grade 6? _____

c. What is the difference between the favourite and the least favourite ice-cream?
_____

d. What fraction of grade 6 like strawberry ice-cream? _____ vanilla ice-cream? _____ lime ice-cream? _____ chocolate ice cream? _____

4. Look at the pie chart and answer the questions.

Favourite day of the week.



a. What is the favourite day of the week?
_____.
Why do you think so? _____

b. What is the least favourite day of the week?
_____

c. Write the following in fractions: People that like: Monday _____ Thursday _____, Friday _____

d. Compare question 2 and 3's pie charts.
_____

Which circle shows ...?

$\frac{1}{2} + \frac{1}{4} + \frac{3}{12} =$

Sign:

Date:

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

How many hours do they help at home per week?

Simon

Making beds $\frac{1}{2}$ hour
Washing dishes 1 hour
Dusting 2 hours
Drying dishes $\frac{1}{2}$ hour
Clean my room $1\frac{1}{2}$ hours

Lee

Washing dishes 2 hours
Drying dishes $1\frac{1}{2}$ hour
Making beds $\frac{1}{2}$ hour
Clean my room 3 hours
Dusting 1 hours

Lisa

Dusting 1 hour
Washing dishes $1\frac{1}{2}$ hours
Drying dishes $\frac{1}{2}$ hour
Cleaning own bedroom $2\frac{1}{2}$ hours
Making beds $\frac{1}{2}$ hour

Suraya

Cleaning own bedroom $2\frac{1}{2}$ hours
Making beds $\frac{1}{2}$ hour
Dusting 1 hour
Washing dishes 4 hours
Drying dishes $1\frac{1}{2}$ hour

Ben

Making beds 2 hours
Dusting 3 hours
Cleaning own bedroom $2\frac{1}{2}$ hours
Washing dishes $\frac{1}{2}$ hours
Drying dishes $\frac{1}{2}$ hour

1. Use the information above to complete the pictograph.

Key:

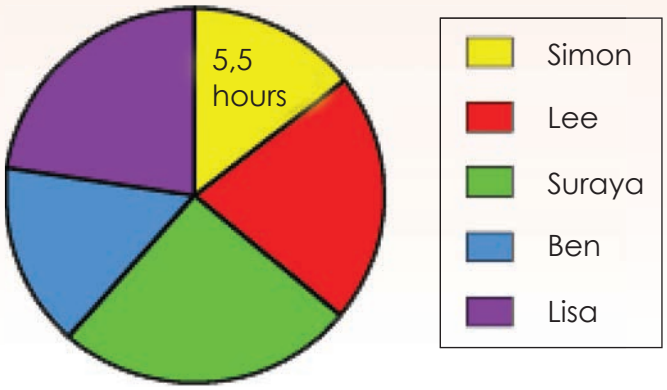
1 hour

$\frac{1}{2}$ hour

Simon	
Lee	
Suraya	
Ben	
Lisa	

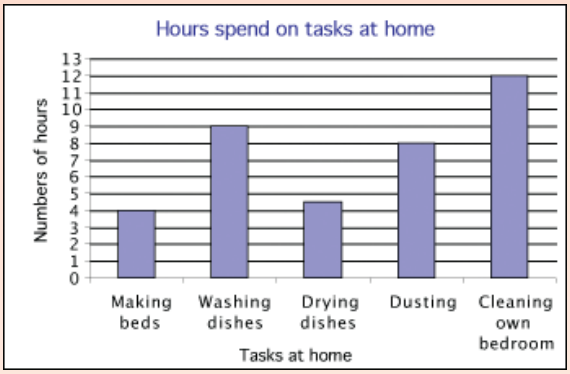
2. Use the pictograph above to label you pie chart. We did the first one for you.

Title: _____



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

	Simon	Lee	Suraya	Lisa	Ben	Total
Making beds						
Washing dishes						
Drying dishes						
Dusting						
Cleaning own bedroom						



Before answering the questions below compare the table above and the bar graph on your left.

a. Write your answers in hours and minutes. What time did they spend on:

i. Making beds? _____ hours _____ minutes

ii. Washing dishes? _____ hours _____ minutes

iii. Drying dishes? _____ hours _____ minutes

iv. Dusting? _____ hours _____ minutes

v. Cleaning own bedroom?

_____ hours _____ minutes

b. On what task did they spend the most time? _____

c. On what task did they spend the least time? _____

Newspaper search ...

Find a bar graph in a newspaper.

Write ten things down about the graph.

Sign:

Date:

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

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 materials collected. I wonder what was the average amount of material collected.

Monday	Tuesday	Wednesday	Thursday	Friday
12 kg	2 kg	4 kg	5 kg	2 kg

12 + 2 + 4 + 5 + 2
= 25
= 25 ÷ 5
= 5 kg

So we need to divide 25 by 5 to get the average, because we have five days.

There are three different types of average: the mean, the median and the mode. We are calculating the mean here.

Calculate the average (mean) of the following:

- 25, 15, 20, 9, 11 and 10
- 50, 1 000, 250, 350, 100, 500, 200, 700, 600, and 300
- 1,5; 2,7 and 4,2
- 36, 40, 80 and 100
- 21, 70, 35, 14, 63, 77 and 28

To first put the numbers in order of size makes it easier to work out the average.

After calculating the averages, say which numbers are above and which are below the mean.

Example: recycling material example above
5 kg was the average for the week.

- Monday was above the average for the week
- Tuesday, Wednesday and Friday were below the average for this week.

1. Use the tables to answer the questions.

a.

Amount of glass collected				
Week 1	Week 2	Week 3	Week 4	Week 5
5 kg	4 kg	5 kg	6 kg	5 kg

i. What is the mean score? _____

ii. What is the median score? _____

iii. What is the mode? _____

b.

Amount of plastic collected						
Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
8 kg	7 kg	6 kg	4 kg	7 kg	7 kg	5 kg

i. What is the mean score? _____

ii. What is the median score? _____

iii. What is the mode? _____

c.

Amount of metal collected				
Week 1	Week 2	Week 3	Week 4	Week 5
5 kg	6 kg	6 kg	5 kg	5 kg

i. What is the mean score? _____

ii. What is the median score? _____

iii. What is the mode? _____

2. Here are the heights of some of the recycling bins.

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

i. What is the mean score? _____

ii. What is the median score? _____

3. Here is the total amount of paper collected in seven weeks.

Amount of paper collected						
Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
7 kg	6 kg	7 kg	6 kg	6 kg	7 kg	6 kg

i. What is the mean score? _____

ii. What is the median score? _____

4. Go back to Question 1 and work out how many kilograms of each material were collected.

_____

Sign:

Date:

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

Sequence of numbers

4

- Add 4 to the number.
- Add 4 more.
- Add 4 more.
- Continue with this pattern.

4

- Multiply the number by 4.
- Multiply the number by 4 again.
- Multiply the number by 4 again.
- Continue with this pattern.

1. Look at the number sequence 125, 250, 375, 500.

a. What is the difference between the numbers. _____

_____

b. Describe the pattern. _____

_____

2. Look at the number sequence 8, 24, 72.

a. What is the difference between the numbers. _____

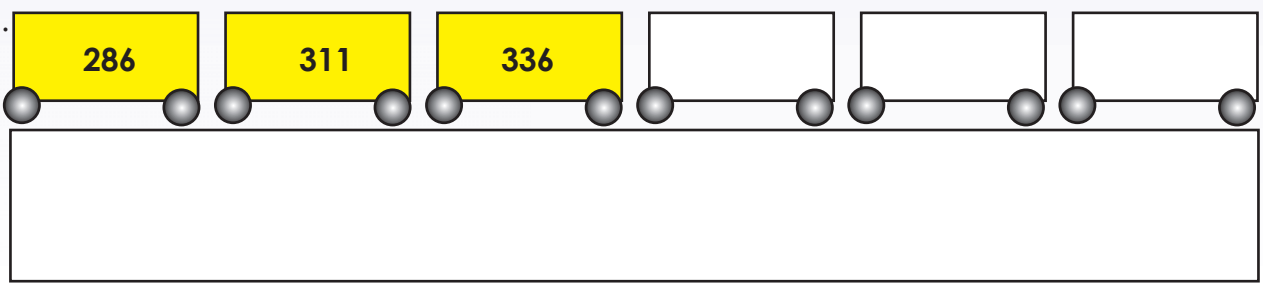
_____

b. Describe the pattern. _____

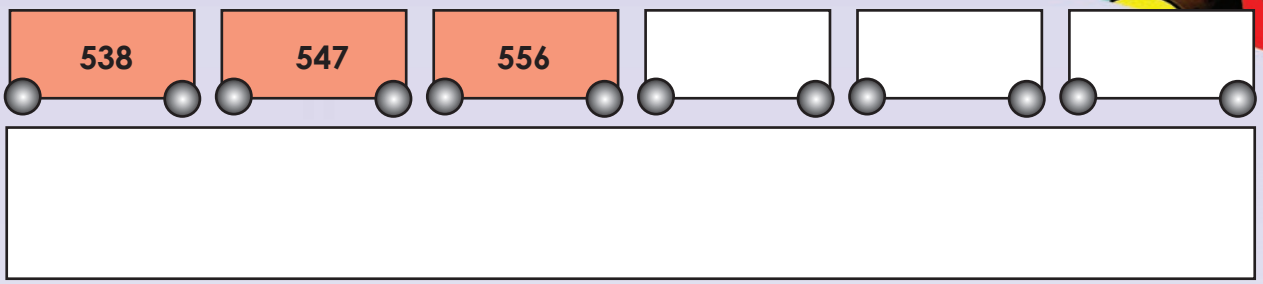
_____

3. Give the next three numbers of the sequence. Describe the pattern.

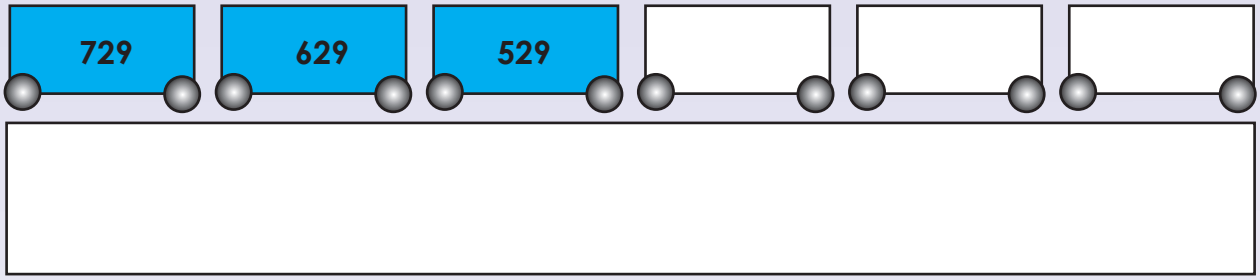
a.



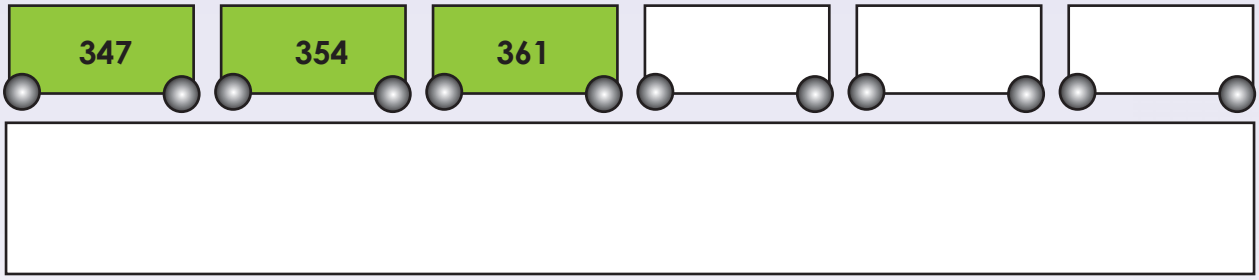
b.



c.



d.



4. Complete the pattern.

a. 373, 374, 376, _____, _____, _____

b. 650, 653, 659, _____, _____, _____

c. 298, 303, 313, _____, _____, _____

d. 642, 644, 648, _____, _____, _____

e. 589, 593, 601, _____, _____, _____

f. 461, 467, 479, _____, _____, _____

Collecting shells

James collects shells. Every day he picks up twice as many shells as the previous day. On the first day he picks up 7 shells. On the second day he picks up 14. How many shells would he collect on the ninth day?

Sign:

Date:

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

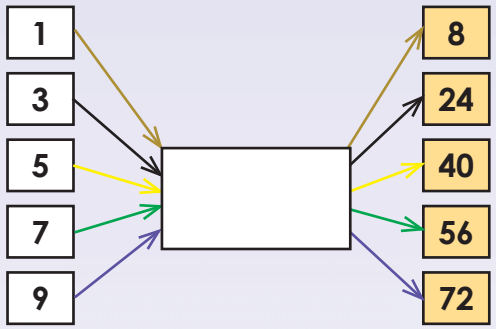
Flow diagrams and tables

- What will the next number be?
- How did you work it out?
- What would the rule be?

5	10	15	20	25	30	35	40	45
6	12	18	24	30	36	42	48	45
7	14	21	28	35	42	49	56	63

1. Answer these questions.

a.



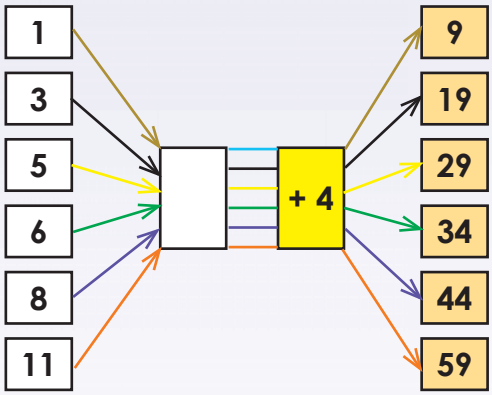
i) What would you write in the empty box?

_____

ii) What do we call it?

_____

b.



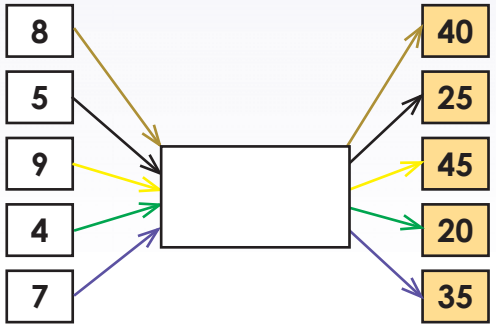
i) What would you write in the empty box?

_____

ii) What do we call it?

_____

c.



i) What would you write in the empty box?

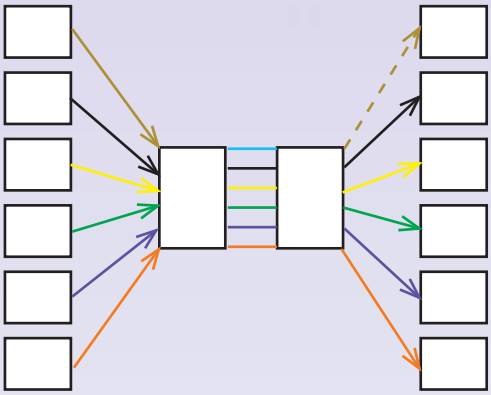
_____

ii) What do we call it?

_____

2. Create your own flow diagram and describe it.

b. **input** **output**



_____

_____

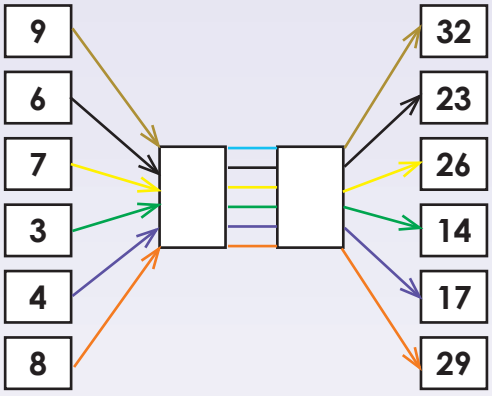
_____

_____

_____

3. Determine the rule and then write a number sentence for each.

a. **input** **output**



i. 9 ☐ ☐ = 32

ii. 6 ☐ ☐ = 23

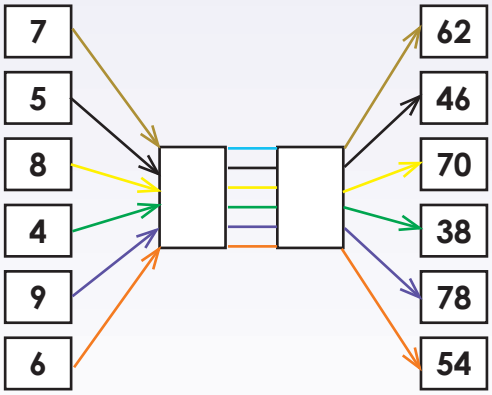
iii. 7 ☐ ☐ = 26

iv. 3 ☐ ☐ = 14

v. 4 ☐ ☐ = 17

vi. 4 ☐ ☐ = 29

b. **input** **output**



i. _____

ii. _____

iii. _____

iv. _____

v. _____

vi. _____

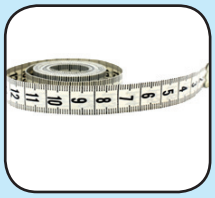
Sign:

Date:

continued ☛

Measuring instruments

Revise measuring instruments by saying what you will use these measurement instruments for.

Measuring tape	Tape measure	Ruler	Trundle wheel	Metre stick	Odometre
					

1. What would you use to measure the following with? Give 5 examples and in what unit you will measure.

a. I will measure in ___ and ___.

i. _____
ii. _____
iii. _____
iv. _____
v. _____

_____

b. I will measure in ___ and ___.

i. _____
ii. _____
iii. _____
iv. _____
v. _____

_____

b. I will measure in ___ and ___.

i. _____
ii. _____
iii. _____
iv. _____
v. _____

_____

d. I will measure in ___ and ___.

i. _____
ii. _____
iii.
iv. _____
v. _____
_____

e. I will measure in ___ and ___.

i. _____
ii. _____
iii.
iv. _____
v. _____
_____

f. I will measure in ___ and _____.

i. _____
ii. _____
iii.
iv. _____
v. _____
_____

3. Draw the following lines with your ruler.

a. 9 cm

b. 6,3 cm

c. 142 mm

Create a ruler

Draw a 10 cm ruler with its divisions.

Sign:

Date:

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

100a Converting between lengths

- Show 98 mm on the ruler.
- Show where it says cm.
- How many cm is it?

We can sometimes record measurements in centimetres and fractions of centimetres, e.g. the eraser is $2\frac{1}{2}$ cm long. This is easy to do because on a ruler, the fifth millimetre gradation line is normally longer. Once you have learnt, from reading commercial mass and capacity packaging, that $2\frac{1}{2}$ is the same as 2,5, you will also be able to use the decimal, 5 in your recording, i.e. 2,5 cm long.

1. First do the practical activity and then write the following in cm and mm and then cm only.

Show 65 mm on the ruler.

Example: 65 mm = 6 cm and 5 mm or $6\frac{1}{2}$ cm or 6,5 cm

a. 98 mm = _____ b. 57 mm = _____

c. 74 mm = _____ d. 66 mm = _____

e. 85 mm = _____ f. 49 mm = _____

2. Write the following as mm.

Show $9\frac{1}{2}$ cm on the ruler.

Example: $9\frac{1}{2}$ cm or 9 cm and 5 mm = 95 mm

a. $9\frac{1}{2}$ cm = _____ b. $5\frac{1}{2}$ cm = _____

c. $7\frac{1}{2}$ cm = _____ d. $4\frac{1}{2}$ cm = _____

e. $8\frac{1}{2}$ cm = _____ f. $6\frac{1}{2}$ cm = _____

3. Write the following in m and cm. Example: 786 cm = 7 m and 86 cm

Show 786 cm on a tape measure.

a. 963 cm _____ _____

b. 698 cm _____ _____

c. 741 cm _____ _____

d. 587 cm _____ _____

e. 852 cm _____ _____

f. 479 cm _____ _____

4. Write the following in cm. Example: 9 m and 75 cm = 975 cm

Show 9 m and 75 cm on a tape measure.

a. 9 m and 73 cm _____ _____

b. 7 m and 58 cm _____ _____

c. 6 m and 91 cm _____ _____

d. 4 m and 89 cm _____ _____

e. 8 m and 62 cm _____ _____

f. 5 m and 47 cm _____ _____

Sign:

Date:

continued ☛

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

Converting between lengths continued

5. Write the following in m and cm

Example: 3 650 cm = 36 m and 50 cm or 36,5 m

Show 3 650 cm on a long tape measure.

a. 6 260 cm _____ _____

b. 7 590 cm _____ _____

c. 3 920 cm _____ _____

d. 9 100 cm _____ _____

e. 8 450 cm _____ _____

f. 4 220 cm _____ _____

6. Write the following in m.

Example: 6 m and 400 cm = 6 400 m

Show 6 m and 400 cm on a tape measure.

a. 7 m and 300 cm

b. 6 m and 200 cm

c. 8 m and 500 cm

d. 9 m and 400 cm

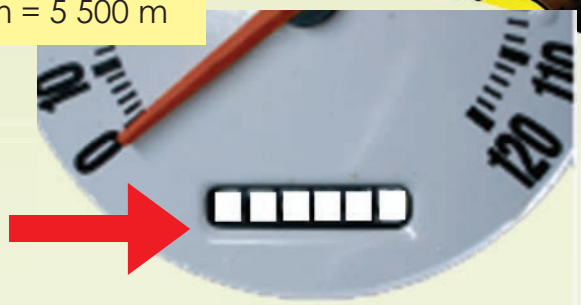
e. 3 m and 200 cm

f. 4 m and 100 cm

7. Write the following as m.

Example: $5\frac{1}{2}$ km = 5 500 m

Show $5\frac{1}{2}$ km on an odometer (trip meter).



a. $9\frac{1}{2}$ km _____

b. $6\frac{1}{2}$ km _____

c. $7\frac{1}{2}$ km _____

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

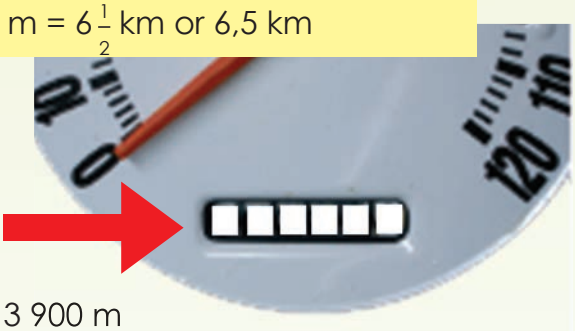
e. $8\frac{1}{2}$ km _____

f. $5\frac{1}{2}$ km _____

8. Write the following as km.

Example: 6 500 m = $6\frac{1}{2}$ km or 6,5 km

Show 6 500 m on the odometer.



a. 1 400 m _____

b. 3 900 m _____

c. 7 500 m _____

d. 2 800 m _____

e. 8 600 m _____

f. 9 700 m _____

Who travelled further?

Our friends travelled 3,5 km to the event. We travelled 3 250 m to the event. Who travelled the farthest?

Sign:

Date:

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

101 Round off length

We travelled 995 km.

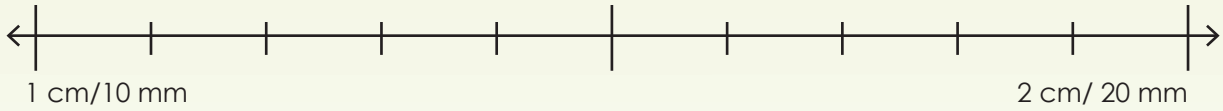
We travelled 1 000 km.

This represents 10 mm or 1 cm.

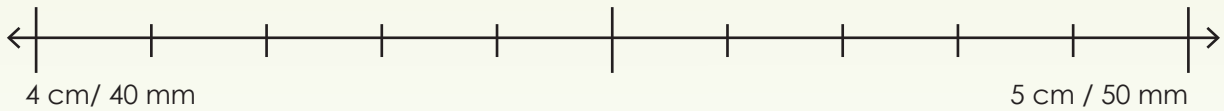
1. Round off to the nearest cm. Draw the arrows on the number lines.

Example: a. **3 mm** rounded off is **0 mm**, **6 mm** rounded off is **1 cm**

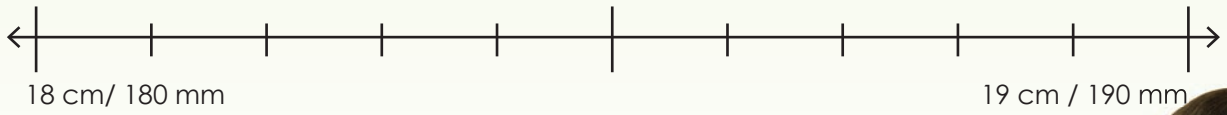
a. 14 mm rounded off is _____ 16 mm rounded off is _____



b. 44 rounded off is _____ 45 rounded off is _____



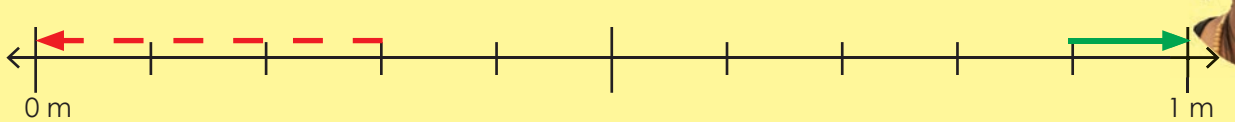
c. 189 rounded off is _____ 182 rounded off is _____



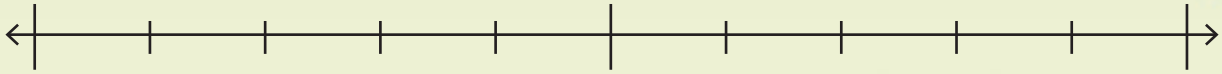
2. Round off to the nearest m.

What does each interval represent?

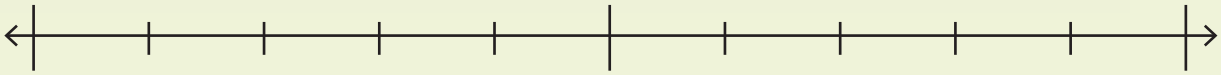
Example: a. **30 cm** rounded off is **0 m**, **90 cm** rounded off is **1 m**



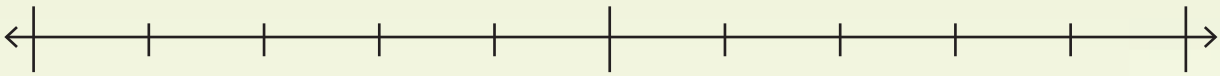
a. 645 cm rounded off is _____ 655 cm rounded off is _____



b. 845 cm rounded off is _____ 874 cm rounded off is _____

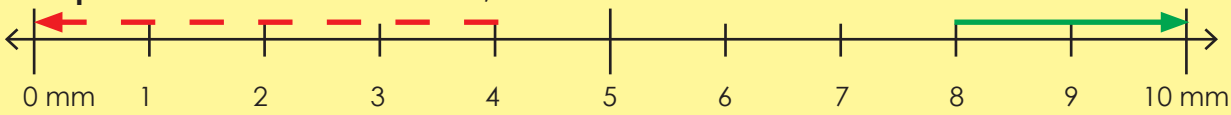


c. 335 cm rounded off is _____ 365 cm rounded off is _____



3. Round off to the nearest m.

Example: a. **400** rounded off is **0**, **800** rounded off is **1**



a. 6 400 mm rounded off is _____ 6 600 mm rounded off is _____

b. 8 100 mm rounded off is _____ 8 600 mm rounded off is _____

c. 5 400 mm rounded off is _____ 6 900 mm rounded off is _____

4. Round off to the nearest km.

Example:
Round off to km. To round off 1 km and 750 m using your knowledge of rounding off to thousand. 2 km and 650 km ≈ 3 km.

a. 3 km and 230 m _____ b. 6 km and 520 m _____

c. 7 km and 150 m _____ d. 9 km and 610 m _____

e. 2 km and 470 m _____ f. 4 km and 460 m _____

g. 3 km and 380 m _____ h. 8 km and 740 m _____

i. 5 km and 890 m _____

Rounding off is easy

Why is it easier to work of with a rounded quantity? Give an example.

Sign:

Date:

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

Measurement problem solving

Look at the fraction board and add...

1 whole			
$\frac{1}{2}$	$\frac{1}{2}$		
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$	
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

- $\frac{1}{2}$ and $\frac{1}{2}$ = 1 whole
- $\frac{1}{4}$ and $\frac{1}{4}$ = $\frac{1}{2}$
- $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$ = 1 whole

We are going to add, subtract, multiply and divide with length.

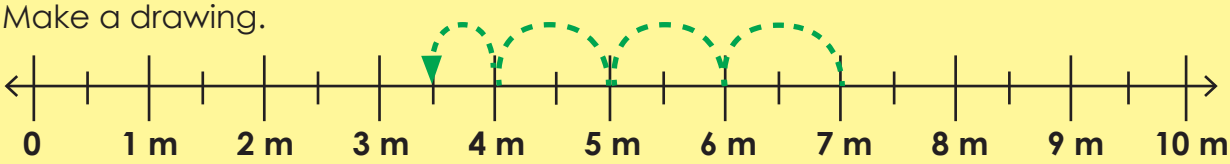
1. First work through these examples and then solve the problems

Example 1:
I bought 4 200 mm and then 3 300 mm of string. How much string did I buy? Write down your answer in mm and cm and then in m.

4 200 mm + 3 300 mm
= 4 000 mm + 3 000 mm + 200 mm + 300 mm
= 7 000 mm + 500 mm
= 7 500 mm

m and cm : 7 m 500 mm
Metres: $7\frac{1}{2}$ m

Example 2:
I bought $7\frac{1}{2}$ m of ribbon. I used $3\frac{1}{2}$ m. How much ribbon do I have left?
Make a drawing.



$3\frac{1}{2}$ metres of ribbon are left.

Example 3:
We travelled 530 km 500 m on the first day. Our holiday destination is 1 000 km from home. How far should we still travel?

1 000 km – (530 km 500m)
= 470 km – 500 m
= 469 km 500 m or 469,5 km

a. I bought 4 600 mm of string and then 2 800 mm more. How much string did I buy? Write down your answer in mm and cm, and then in m.

b. I bought 9 m of ribbon. I used $3\frac{1}{2}$ m. How much ribbon do I have left? Write your answer in m.

c. My father's desk is 3 300 mm long and mine measures 6 200 mm How much longer is my desk than my father's desk? Write down your answer in m and cm, and then in m.

d. I bought 90 m of wool. I used $19\frac{1}{2}$ m. How much wool do I have left? Write your answer in m.

e. Sandra and Sipho travelled 1 520 km. Sandra drove 579 km. How far did Sipho drive?

f. My car has to go for a service in 2 871 km. I drove 1 264 km during the month. How many kilometres before I have to take my car for the service?

Sign:

Date:

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

What is a kilometre?

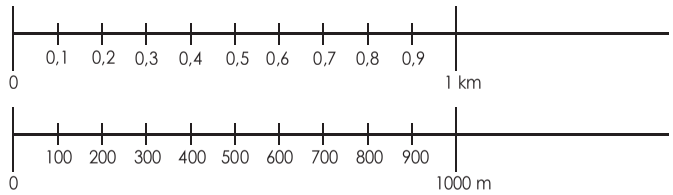
Find out what a kilometre is.

How many times should you go around a soccer field to make one kilometre?

About how many big adult steps will make a kilometre?

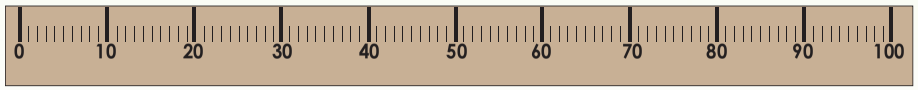
How many times should you go around a netball court to make one kilometre?

1. Extend the number lines below. What do you notice?



2. Complete the table below by estimating and measuring.

	Estimate	Measure
Length of the classroom		
Distance from your home to school		
Distance from your classroom to Grade 1 classroom		



3. Convert the following:

a. 3 000 m = _____ km

b. 200 m = _____ km

c. 4 500 m = _____ km

d. 350 m = _____ km

e. 2 876 m = _____ km

f. 420 m = _____ km

4. What unit will you use when measuring each of the following? mm, cm, m or km

a. Pencil _____

b. Book _____

c. Length of netball court _____

d. Distance form Durban to Johannesburg _____

e. Eraser _____

f. Desk _____

Sign:

Date:

More on kilometres

Revise: What is a kilometre?

1. How far do you think it is from:

a. Johannesburg to Cape Town? _____

b. Pretoria to Johannesburg? _____

c. Your town or city to Johannesburg? _____

d. Your town or city to Durban? _____

e. Your town or city to Cape Town? _____

2. Look at the distance chart below to complete the table on the next page:

Beaufort West																	
535	**Bloemfontein**																
463	998	**Cape Town**															
316	219	779	**Colesburg**														
1225	667	1660	881	**Durban**													
597	575	1042	518	667	**East London**												
237	764	436	545	1240	630	**George - Garden Route**											
951	417	1405	623	598	992	1168	**Johannesburg**										
497	175	960	284	842	750	734	467	**Kimberley**									
1386	854	1886	1058	774	1308	1603	465	939	**Komatipoort**								
273	808	392	608	1306	696	66	1234	770	1669	**Mossel Bay**							
1293	771	1770	964	689	1214	1509	358	832	87	1575	**Nelspruit - Southern Kruger gate**						
179	714	422	495	1244	689	63	1130	676	1565	94	1472	**Oudtshoorn**					
1486	952	1940	1158	910	1391	1686	535	1009	308	1726	221	1391	**Phalaborwa - Northern Kruger Gate**				
405	635	756	454	927	300	330	1062	752	1484	396	1373	358	1524	**Port Elizabeth**			
1009	475	1463	681	656	1050	1226	58	532	429	1292	342	1188	477	1120	**Pretoria**		
1402	880	1888	1073	809	1334	1616	478	952	105	1695	120	1561	222	1480	462	**Skukuza - Kruger Park**	
440	975	49	756	1594	1070	392	1391	937	1826	363	1733	399	1866	739	1449	1842	**Stellenbosch**
1656	1890	1469	1772	2557	2280	1761	2189	1715	2545	1797	2458	1703	2617	2077	2116	2578	1462 **Windhoek**

How far is:	km	m
a. Beaufort West is from Johannesburg?	951 km	951 000 m
b. Durban from Johannesburg?		
c. Kimberley from Cape Town?		
d. Mossel Bay from Pretoria?		
e. East London from Cape Town?		
f. Komatipoort from Oudtshoorn?		
g. Phalaborwa from Johannesburg?		
h. Stellenbosch from Pretoria?		
i. Stellenbosch from Cape Town?		
j. Nelspruit from Pretoria?		
k. Windhoek from Johannesburg?		

Kilometre outing

Your teacher will take you on a kilometre outing.

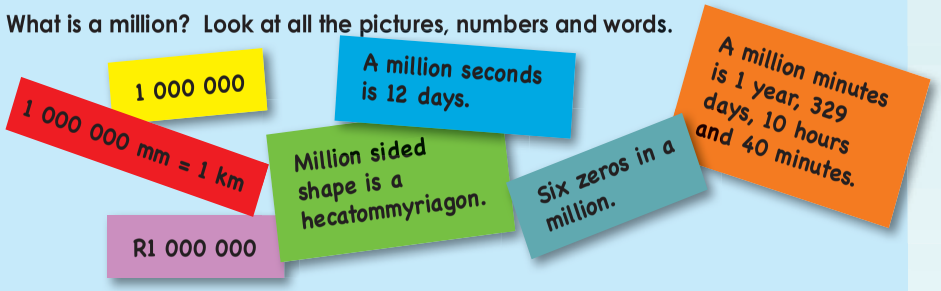
You will be divided into 5 groups.

Each group will guess what (place, landmark, etc.) is about 1 km from the school.

The group whose guess is the closest is the winning group.

Numbers 0 – 1 000 000

What is a million? Look at all the pictures, numbers and words.



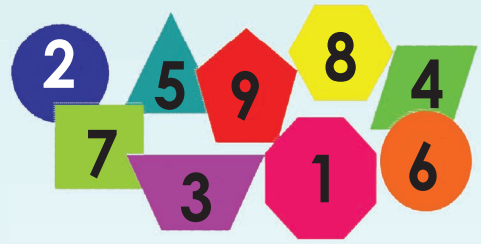
1. **Say if the following is true or false:**
   a. There are 1 000 000 millimetres in 1 kilometre. _____
   b. There are 1 000 000 metres in 1 kilometre. _____
   c. There are 1 000 000 grams in 1 ton. _____
   d. There are 1 000 000 millilitres in 1 litre. _____
   e. There are 1 000 000 mililitres in 1 000 litres. _____

2. **Complete the following:**
   a. 1 000 000 + 500 000 + 70 000 + 8 000 + 400 + 90 + 6 = _____
   b. 1 000 000 + 300 000 + 40 000 + 9 000 + 500 + 1 = _____
   c. 1 000 000 000 + 900 000 + 50 = _____
   d. 1 000 000 + 3 = _____
   e. 300 + 800 000 + 9 + 50 000 + 1 000 000 + 40 + 2 000 = _____

3. **What is the place value of the underlined digits in each number?**
   a. 1 <u>3</u>89 532 = _____
   b. 1 7<u>6</u>3 949 = _____
   c. <u>1</u>0 902 48<u>9</u> = _____
   d. <u>1</u>00 002 005 = _____
   e. 1 999 <u>9</u>99 999 = _____

4. **Circle the number that is:**
   a. 200 000 more than 1 547 893: 1 567 893, 1 547 895, 1 747 893, 1 569 893
   b. 50 000 more than 2 732 410: 2 732 415, 2 782 425, 2 787 425, 2 782 410
   c. 4 000 more than 35 185 432: 35 189 432, 35 185 932, 35 185 437, 35 185 932
   d. 300 000 more than 231 365 464: 231 365 764, 231 368 464, 231 665 464
   e. 1 000 000 more than 2 786 453: 2 886 453, 3 786 453, 2 886 453, 1 796 453

5. **Use any digits to make five different 9-digit numbers smaller than 999 999 999 but bigger than 500 000 000.**
   a. _____
   _____
   _____
   _____
   _____



6. **Answer <, > or =**
   a. 1 893 349 _____ 1 983 349
   b. 2 454 390 _____ 2 450 309
   c. 3 300 900 _____ 3 003 900
   d. 99 999 909 _____ 99 999 009
   e. 6 404 080 _____ 6 040 808

7. **Write the following in numbers:**
   a. One million six hundred and thirty two thousand five hundred and eighty one.
   _____
   b. Two hundred and twenty five thousand four hundred and eleven.
   _____

8. **Write the following in words:**
   a. 1 568 700 _____
   b. 2 701 298 _____
   c. 17 876 305 _____
   d. 34 984 534 _____

Sign:
Date:

9. Answer the following questions:

a. What is a prime number? _____

b. Give 5 prime numbers bigger than 10 but smaller than 100?

_____

c. What is a composite number?

_____

d. Give 5 composite numbers bigger than 10 but smaller than 100?

_____

10. Round the numbers off to the nearest 10:

a. 18 _____

b. 21 _____

c. 376 _____

d. 1 282 _____

e. 45 693 _____

f. 187 008 _____

g. 2 345 999 _____

h. 68 483 704 _____

11. What number do you see to round off to the nearest 5?

_____

		ten	hundred	thousand
a.	92			
b.	348			
c.	2 871			
d.	5 908			
e.	47 610			
f.	989 898			
g.	1 707 078			
h.	29 999 999			

13. A production manager needs to have an estimate of how many items his factory produces per week. He normally rounds off the tallies and then adds them. The tallies are as follows: 4 232 145 ; 5 468 099 ; 8 000 892.

a. Round off these tallies to the nearest 10 and then add them.

_____

b. Round off these tallies to the nearest 100 and then add them.

_____

c. Round off these tallies to the nearest 1 000 and then add them.

_____

d. Which of the above answers is the most accurate? Give a reason for your answer.

_____

Really big numbers

Is this the same in South Africa?

Million: 1 000 000
Billion: 1 000 000 000
Trillion: 1 000 000 000 000
Quintillion: 1 000 000 000 000 000 000
Sextillion: 1 000 000 000 000 000 000 000
Nonillion: 1 000 000 000 000 000 000 000 000 000
Centillion: 1 followed by 303 zeros

106a Multiplication: more 3-digit by 3-digit

What number comes next?

2	6	18	54	?
20	60	180	540	?
200	600	1 800	5 400	?
2 000	6 000	18 000	54 000	?

Try this!

2	5	25	125	?
10	50	250	1250	?
100	500	2 500	12 500	?
1 000	5 000	25 000	12 5000	?

1. Complete the table below.

Number	x 100	x 200	x 300	x 400	x 500	x 600	x 700	x 800	x 900
100									
150									
200									
250									
350									

2. Use both methods to do the sums below.

Examples:

Example 1:

	5 4 3	
x	7 9 8	
	2 4	(3 x 8)
	2 7 0	(3 x 90)
	2 1 0 0	(3 x 700)
	3 2 0	(40 x 8)
	3 6 0 0	(40 x 90)
	2 8 0 0 0	(40 x 700)
	4 0 0 0	(500 x 8)
	4 5 0 0 0	(500 x 90)
+	3 5 0 0 0 0	(500 x 700)
	4 3 3 3 1 4	

Example 2:

	5 4 3
x	7 9 8
	4 3 4 4
	4 8 8 7 0
+	3 8 0 1 0 0
	4 3 3 3 1 4

Check your answer using a calculator

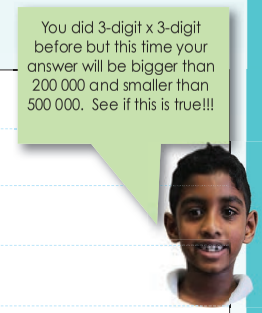
a. 678 x 324 =

b. 795 x 382 =

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

c. 849 x 473 =

d. 699 x 399 =



Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

e. 938 x 525 =

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

continued

106b Multiplication: more 3-digit by 3-digit
continued

3. Solve the problems.

a. A leaking tap drips 5 ml every minute. How many litres of water will be wasted in a week?

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

b. This morning, at O.R. Tambo airport, 34 aeroplanes landed with 327 people in each plane. How many people landed at the airport this morning?

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

c. On a apple farm there are 999 apple trees. If there are 73 apples in each tree, how many apples will there be?

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

Using all the digits

The following multiplication sum uses every digit from 0 to 9 once (not counting the intermediate steps).

Fill in the missing numbers.

7			x	4		=					

Sign:

Date:

Describe what you see?

2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50

When you list the multiples of two (or more) numbers, and find the same number in both, then that is a **common multiple** of those numbers.

1. Write down the multiples for the following numbers, and circle the common multiples for the two numbers.

a. 2 _____

6 _____

b. 3 _____

9 _____

c. 4 _____

7 _____

d. 5 _____

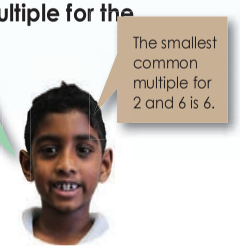
8 _____

e. 10 _____

12 _____

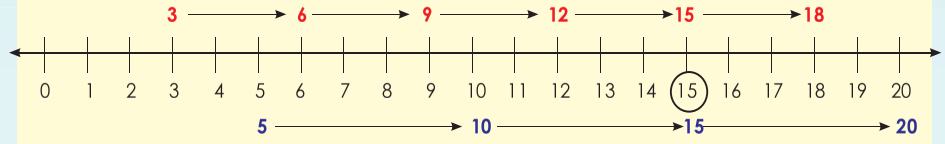
2. Look at the examples above. What is the smallest common multiple for the following?

2 and 6	
3 and 9	
4 and 7	
5 and 8	
10 and 12	



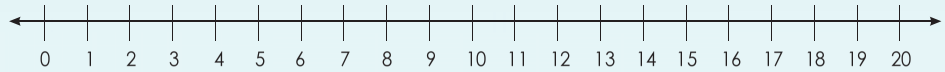
3. Use the example to complete the number lines below.

Multiples of 3

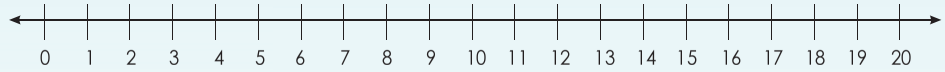


Multiples of 5

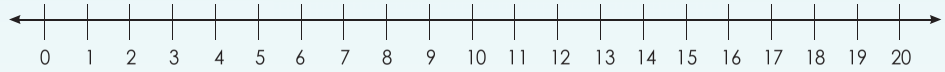
a. Multiples of 2 and 4.



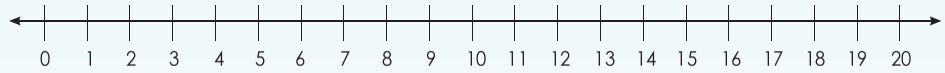
b. Multiples of 3 and 6.



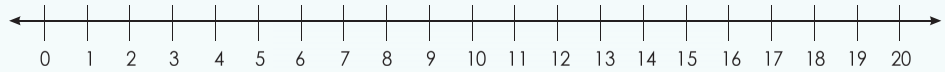
c. Multiples of 2 and 8.



d. Multiples of 3 and 4.

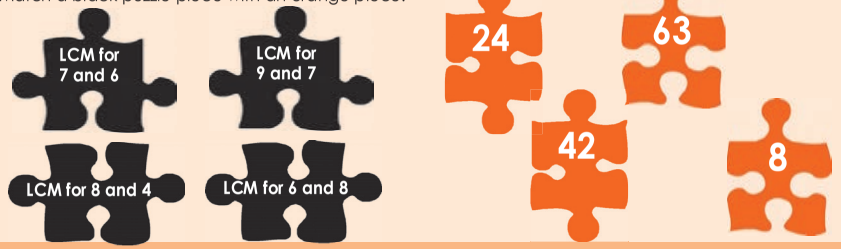


e. Multiples of 2 and 7.



Match the puzzle

Match a black puzzle piece with an orange piece.



Multiplication: 4-digit by 3-digit

What number comes next? **Try this!**

5	25	125	625	?
10	100	1 000	10 000	?
1	4	16	64	?
7 000	21 000	63 000	189 000	?

1. Complete the table below:

Number	x 1 000	x 2 000	x 3 000	x 4 000	x 5 000
600					
650					
700					
750					
800					

3. Calculate the following:

a. 456 x 78 =

b. 785 x 364 =

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

c. 8 375 x 66 =

d. 7 923 x 567 =

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

3. Solve the problems.

a. 39 aeroplanes were chartered to bring tourists from Europe to South Africa. Each plane can carry 345 passengers. How many people in total can be carried by 39 aeroplanes? Show all your calculations.

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

b. Green Point Football Stadium is divided into 124 stands. Each stand can seat 544 people. How many people can be seated in total? Show all your calculations.

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

c. On the chicken farm, 2 391 eggs are laid every day of the year. How many eggs are laid in a year?

Check your answer using a calculator. Mark your answer. Continue on an extra sheet of paper

Using all the digits

Fill in the missing numbers.
Use the numbers 1 to 9 to complete the sums.
Each number is only used once.
Each row is a math sum.
Each column is a math sum.
Remember that multiplication and division are performed before addition and subtraction.

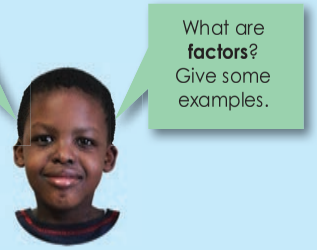
	x		+	9
-	■	x	■	+
	x		-	18
x	■	-	■	-
	x		+	41
-70		-1		8

Sign:
Date:

Term 4

Factors and multiples

Can your remember?



1. Say if the following is true or false:

a. 12 has 5 factors. _____

b. The multiples of 3 are: 3, 6, 9, 12, ... _____

c. 13 is a prime number. _____

d. 21 is a composite number. _____

e. The lowest common multiple for 3 and 5 is 5. _____

2. Choose and tick (✔) the correct answer:

a. The first five multiples for six are:
   i. 5, 10, 15, 20, 25, 30
   ii. 6, 12, 18, 24, 30
   iii. 5, 6, 7, 8, 9, 10

b. 15 has _____ factors :
   i. 2
   ii. 3
   iii. 4

c. 7 has _____ factors:
   i. 2
   ii. 3
   iii. 4

d. 4, 8, 12, 16, 20, ... are multiples of _____
   i. 4
   ii. 8
   iii. 20

e. The first four multiples for 100 000 are:
   i. 4, 8, 12, 16, 20, ...
   ii . 400 000, 800 000
   iii. 100 000, 200 000, 300 000, 400 000

f. The factors for 21 are:
   i. 1, 3, 7, 21
   ii. 3, 7
   iii. 3, 7, 21

g. The LCM for 2 and 7 is:
   i. 2
   ii. 7
   iii. 14

h. The factors for 63 are:
   i. 3, 7, 21, 63
   ii. 1, 3, 7, 21, 63
   iii. 3, 7, 21

i. The LCM for 3 and 8 is:
   i. 24
   ii. 12
   iii. 8

j. Multiples and factors are the same:
   i. True
   ii. False
   iii. Sometimes

3. Find the factors of 1 000 000. Remember that factors come in pairs, e.g.

1 2 ... 250 000 500 000

Show your workings below.

4. Write down the multiples for these numbers, but not bigger than 1 000 000.

a. 100 000 _____

b. 250 000 _____

c. 125 000 _____

d. 300 000 _____

e. 200 000 _____

Problem solving

Palesa has 126 books stacked in equal piles.
Name all the ways the books could be stacked.

Sign:

Date:

110a Multiplication and rounding off

Revise: What do you notice in each block?

Round the numbers off to the nearest 10.

- 7 ≈ 10
- 31 ≈ 30
- 617 ≈ 620
- 2 532 ≈ 2 530

Round the numbers off to the nearest 100.

- 83 ≈ 100
- 739 ≈ 700
- 421 ≈ 400
- 6 735 ≈ 6 700

Round the numbers off to the nearest 1 000.

- 476 ≈ 0
- 502 ≈ 1 000
- 3 509 ≈ 4 000
- 6 329 ≈ 6 000

1. Round the numbers off to the nearest 10, 100 and 1 000.

	Nearest 10	Nearest 100	Nearest 1 000
a. 3 879			
b. 9 304			
c. 4 673			
d. 2 214			
e. 2 387			

2. Multiply the numbers by rounding off the first number (multiplier) to the nearest 1 000 and the second number (multiplicand) to the nearest 100.

Example 1:
3 353 x 104
≈ 3 000 x 100
≈ 300 000

a. 9 317 x 687 =

Continue on an extra sheet of paper.

b. 2 863 x 239 =

Continue on an extra sheet of paper.

c. 5 794 x 314 =

Continue on an extra sheet of paper.

d. 6 485 x 524 =

Continue on an extra sheet of paper.

3. Multiply the numbers by rounding off the first number (multiplier) to the nearest 100.

Example 1:
3 353 x 104
≈ 4 000 x 104
≈ (4 000 x 100) + (4 000 x 4)
≈ 300 000 + 16 000
≈ 316 000

a. 9 517 x 535 =

Continue on an extra sheet of paper.

b. 6 485 x 187 =

Continue on an extra sheet of paper.

c. 7 204 x 684 =

Continue on an extra sheet of paper.

d. 8 396 x 579 =

Continue on an extra sheet of paper.

continued

Multiplication and rounding off continued

4. Multiply the numbers by rounding off the second number (multiplicand) to the nearest 100.

Example:
3 353 x 104
≈ 3 353 x 100
≈ 335 300

a. 6 572 x 209 =

Continue on an extra sheet of paper.

b. 7 436 x 689 =

Continue on an extra sheet of paper.

c. 9 365 x 545 =

Continue on an extra sheet of paper.

d. 8 274 x 374 =

Continue on an extra sheet of paper.

5. Multiplying the numbers by rounding off the first number (multiplier) and the second number (multiplicand) to the nearest 100.

Example:
3 353 x 104
≈ 3 400 x 100
≈ 340 000

a. 7 697 x 863 =

Continue on an extra sheet of paper.

b. 6 427 x 478 =

Continue on an extra sheet of paper.

c. 5 853 x 822 =

Continue on an extra sheet of paper.

d. 4 634 x 246 =

Continue on an extra sheet of paper.

6. Go back to question 2-5. Check to see how close your answer were by multiplying the numbers with a calculator.

7. Estimate what the answers will be. Calculate and then check your calculation against your estimation.

a. 35 421 + 42 365 =

b. 4 235 x 76 =

Birthday money

My mother sells birthday hampers. In each hamper is chocolate worth R25, candy worth R22 and toffees worth R18. The box for the sweets costs R5. My mother adds another R20 for making it and for her delivery cost. She sold R2 320 worth of hampers last year. What was the total amount of money my mother received?

Sign:

Date:

111 Multiplication and the distributive property

Revise the distributive property.

$6 \times (5 + 3) = (6 \times 5) + (6 \times 3)$
$6 \times 8 = 30 + 18$
$48 = 48$

Method 1:
$(4 + 6) \times (5 + 7)$
$= (4 \times 5) + (4 \times 7) + (6 \times 5) + (6 \times 7)$
$= 20 + 28 + 30 + 42$
$= 120$

OR

Method 2:

x	5	7
4	20	28
6	30	42

$20 + 28 + 30 + 42$
$= 120$

1. Calculate the following using both methods above.

a. $(9 + 5) \times (2 + 9)$

Method 1

Method 2

b. $(7 + 3) \times (8 + 2)$

Method 1

Method 2

2. Calculate the following using the example to guide you.

Example:
$2\,643 \times 45$
$= (2\,000 + 600 + 40 + 3) \times (40 + 5)$
$= (80\,000 + 10\,000 + 24\,000 + 3\,000 + 1\,600 + 200 + 120 + 15$
$= 80\,000 + 10\,000 + 20\,000 + 4\,000 + 3\,000 + 1\,000 + 600 + 200 + 100 + 20 + 10 + 5$
$= 110\,000 + 8\,000 + 900 + 30 + 5$
$= 100\,000 + 10\,000 + 8\,000 + 900 + 30 + 5 = 118\,935$

x	40	5	
2 000	80 000	10 000	90 000
600	24 000	3 000	27 000
40	1 600	200	1 800
3	120	15	135
			11 8935

a. $2\,367 \times 858$

Method 1

Method 2

b. $3\,485 \times 476$

Method 1

Method 2

3. Calculate the following using the example to guide you.

Example:
$2\,643 \times (50 - 5)$
$= (2\,000 + 600 + 40 + 3) \times (50 - 5)$
$= (10\,000 - 10\,000) + (30\,000 - 3\,000) + (2\,000 - 200) + (150 - 15)$
$= 90\,000 + 27\,000 + 1\,800 + 135$
$= 90\,000 + 20\,000 + 7\,000 + 1\,000 + 800 + 100 + 30 + 5$
$= 110\,000 + 8\,000 + 900 + 30 + 5$
$= 100\,000 + 10\,000 + 8\,000 + 900 + 30 + 5$
$= 118\,935$

a. $2\,593 \times (200 - 44)$

b. $3\,415 \times (400 - 66)$

Boots and all

a. This year a company gave 6 273 boxes of soccer balls to children. Each box had 45 soccer balls. How many soccer balls did the company give away?
b. A company bought 556 new laptops for R6 750,00 each. How much did they pay in total?

Sign:
Date:

Multiplication and the vertical method

Revise

Expanded notation:

- 456 = 400 + 50 + 6
- 908 = 900 + 0 + 8 or 900 + 8
- 2 215 = 2 000 + 200 + 10 + 5
- 4 086 = 4 000 + 80 + 6

1. Write the following in expanded notation.

Example: 456 = 400 + 50 + 6

a. 678 _____ b. 937 _____

c. 1735 _____ d. 1 753 _____

e. 2 583 _____ f. 4 987 _____

g. 5 383 _____ h. 9 364 _____

2. Calculate the following.

Example:
5 x 2 847
= 5 x (2 000 + 800 + 40 + 7)
= 10 000 + 4 000 + 200 + 35
= 14 235

a. 8 x 284

b. 7 x 9 873

3. Calculate the following.

Example:

```
  2 163
x    14
 8 652   → 4 x 2 163
           = 4 x (2 000 + 100 + 60 + 3)
           = 8 000 + 400 + 240 + 12
           = 8 652
+ 21 630   → 10 x 2 163
           = 21 630
 30 282
```

a. 937 x 32

b. 7 843 x 96

4. Calculate the following.

Example: 3 432 x 26

```
  3 432
x   26
 20 592   → 6 x 3 432
            = 6 x (3 000 + 400 + 30 + 2)
            = 18 000 + 2 400 + 180 + 12
            = 20 592
+ 68 640   → 20 x 3 432
            = 20 x (3 000 + 400 + 30 + 2)
            = 60 000 + 8 000 + 600 + 40
            = 68 640
 89 232
```

a. 7 382 x 39

b. 6 928 x 72

continued

Sign:

Date:

Multiplication and the vertical method

continued

5. Write the following in expanded notation.

Example: 1 638 = 1 000 + 600 + 30 + 8

a. 6 642

b. 3 545 _____

c. 5 971 _____

d. 1 253 _____

e. 4 822 _____

f. 6 987 _____

6. Calculate the following.

Example:
5 x 5 963
= 5 x (5 000 + 900 + 60 + 3)
= 25 000 + 4 500 + 300 + 15
= 29 815

a. 7 x 1 748

b. 9 x 8 115

7. Calculate the following.

Example:

```
   5 963
x    104
 23 852   → 4 x 5 963
            = 4 x (5 000 + 900 + 60 + 3)
            = 20 000 + 3 600 + 240 + 12
            = 23 852
+596 300  → 100 x 5 963
            = 596 300
 620 152
```

a. 5 158 x 270

b. 8 772 x 409

8. Calculate the following.

Example: 6 439 x 158

```
   6 439
x    158
 51 512   → 8 x 6 439
            = 8 x (6 000 + 400 + 30 + 9)
            = 48 000 + 3 200 + 240 + 72
            = 51 512
+321 950  → 50 x 6 439
            = 50 x (6 000 + 400 + 30 + 9)
            = 300 000 + 20 000 + 1 500 + 450
            = 321 950
+643 900  → 100 x 6 439
1 017 026
```

a. 5 158 x 270

b. 8 772 x 409

Apples and students

- A farmer planted 3 650 apple trees in a row. He planted 135 rows. How many trees did he plant?
- 3 758 students enrolled in a college. They had to pay R450 for admission fees. How much money did the students pay altogether?

Sight:

Date:

Term 4

113 Ratio

Let us revise!

A ratio shows the relative sizes of two or more values. Ratios can be shown in different ways. Using the ":" to separate example values, or as a single number by dividing one value by the total. We can have "part-to-part" and "part-to-whole" ratios.

Example:

Part to part:

Here are six numbers, some odd and some even.

5 678 5 676 5 675 5 671 5 677 5 673

The ratio of **even numbers** to **odd numbers** is 2:4 or $\frac{2}{4}$

Remember that $\frac{2}{4}$ in its simplest form will be $\frac{1}{2}$

The ratio of **odd numbers** to **even numbers** is 4:2 or $\frac{4}{2}$

Remember that $\frac{4}{2}$ in its simplest form will be $\frac{2}{1}$ or 2

Part to whole:

The ratio of even numbers to all the numbers is 2:6 or $\frac{2}{6}$

Remember that $\frac{2}{6}$ in its simplest form will be $\frac{1}{3}$

The ratio of odd numbers to all the numbers is 6:2 or $\frac{6}{2}$

Remember that $\frac{2}{6}$ in its simplest form will be $\frac{1}{3}$

1. Write four ratios for each statement. We have done the first one for you.

a. There are 8 puppies, 6 are male, and 2 are female.

i. 6 male to 2 female (6:2) part to part

ii. 2 female to 6 male (2:6) part to part

iii. 6 male to all (6:8) part to whole

iv. 2 female to all (2:8) part to whole

b. A recipe for pancakes uses 3 cups of flour and 2 cups of milk.

i. ii.

iii. iv.

c. You need to make pancakes for 4 times the quantity above. Write down four new ratios.

i. ii.

iii. iv.

2. Read the following and discuss. Take a 4-digit number with no repeating digit. 1234. It has 24 possible combinations using each digit only once.

1234, 1243, 1324, 1342, 1423, 1432, 2134, 2143, 2314, 2341, 2413, 2431, 3124, 3142, 3214, 3241, 3412, 3421, 4123, 4132, 4213, 4231, 4312, 4321

a. How many of these **combinations** are prime numbers. Check the number sentences with a calculator. We gave you five possible answers.

a. 1234 = 2 x 617
b. 2134 _____
c. 1243 = 11 x 113
d. 2143 _____
e. 1324 = 2 x 2 x 331
f. 2314 _____
g. 1342 = 2 x 11 x 61
h. 2341 _____
i. 1423 is a prime number
j. 2413 _____
k. 1432 _____
l. 2431 _____
m. 3124 _____
n. 4123 _____
o. 3142 _____
p. 4132 _____
q. 3214 _____
r. 4213 _____
s. 3241 _____
t. 4231 _____
u. 3412 _____
v. 4312 _____
w. 3421 _____
x. 4321 _____

3. How many of these 24 combinations in question 2 can be divided by 2 and 4? Work out a set of ratios as shown below.

Example: All the numbers ending with an even number is divisible by 2. There are 12 numbers divisible by	**Divisible by 2 (12 numbers)**	**Divisible by 4**
a. What is the ratio of the numbers **not divisible by 2 (or 4)** to **all the numbers divisible by 2 (or 4)**? [part to part]	12:12	
b. What is the ratio of the numbers **divisible by 2 (or 4)** to **all the numbers not divisible by 2 (or 4)**? [part to part]	12:12	
c. What is the ratio of numbers **not divisible by 2 (or 4) to all the numbers**? [part to whole] • Write it as a fraction? • Write it as a percentage?	12:24 $\frac{12}{24}$ or $\frac{1}{2}$ 50 %	
d. What is the ratio of numbers **divisible by ____ to all the numbers**? [part to whole] • Write it as a fraction? • Write it as a percentage?	12:24 $\frac{12}{24}$ or $\frac{1}{2}$ 50 %	

Problem solving

Use the 5-digit number 12 345 and show which numbers have a ratio of $\frac{1}{4}$ to the total of all numbers?

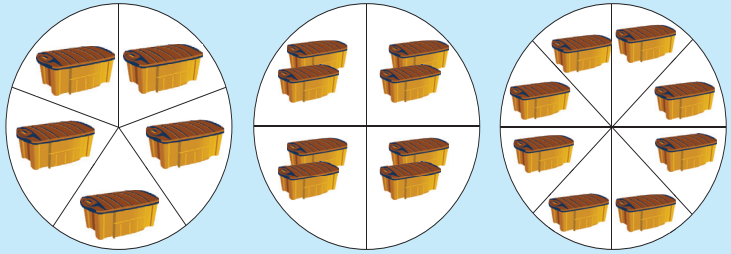
Sign:

Date:

Proportional sharing

There are 1 000 tennis balls in each container. How many tennis balls are in each circle?

= 1 000 tennis balls



1. Look at the fraction circles above and answer the questions.

a. What is $\frac{1}{5}$ of 5 000? _____

b. What is $\frac{2}{5}$ of 5 000? _____

c. What is $\frac{3}{5}$ of 5 000? _____

d. What is $\frac{4}{5}$ of 5 000? _____

e. What is $\frac{1}{4}$ of 8 000? _____

f. What is $\frac{2}{4}$ of 8 000? _____

g. What is $\frac{3}{4}$ of 8 000? _____

h. What is $\frac{1}{8}$ of 8 000? _____

i. What is $\frac{2}{8}$ of 8 000? _____

j. What is $\frac{3}{8}$ of 8 000? _____

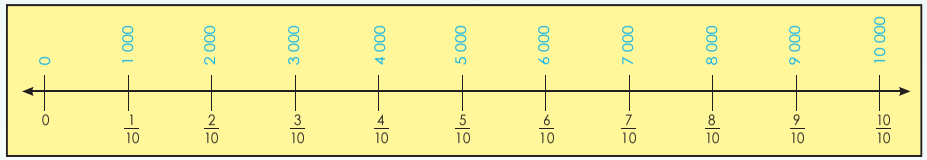
k. What is $\frac{4}{8}$ of 8 000? _____

l. What is $\frac{5}{8}$ of 8 000? _____

m. What is $\frac{6}{8}$ of 8 000? _____

n. What is $\frac{7}{8}$ of 8 000? _____

2. Look at the number line and answer the questions below.

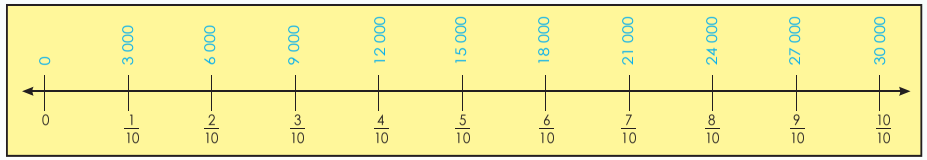


a. What is $\frac{2}{10}$ of 10 000? _____

b. What is $\frac{7}{10}$ of 10 000? _____

c. What is $\frac{9}{10}$ of 10 000? _____

d. What is $\frac{5}{10}$ of 10 000? _____



e. What is $\frac{2}{10}$ of 30 000? _____

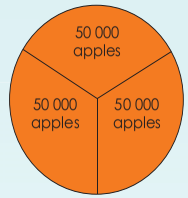
f. What is $\frac{6}{10}$ of 30 000? _____

g. What is $\frac{8}{10}$ of 30 000? _____

h. What is $\frac{5}{10}$ of 30 000? _____

3. Use the fraction circles to answer the following:

a. Total apples transported to the market in 3 months.

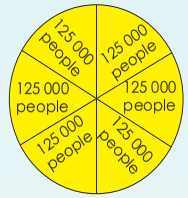


i. How many apples were transported to the market? _____

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

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

b. Total of people visiting an exhibition for 6 days.



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

ii. What is $\frac{1}{6}$ of the people? _____

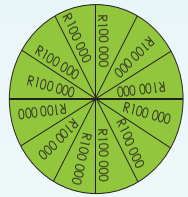
iii. What is $\frac{2}{6}$ of the people? _____

iv. What is $\frac{3}{6}$ of the people? _____

v. What is $\frac{4}{6}$ of the people? _____

vi. What is $\frac{5}{6}$ of the people? _____

c. The total amount of goods they sold in one year.



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

ii. What is $\frac{2}{12}$ of the total amount? _____

iii. What is $\frac{6}{12}$ of the total amount? _____

iv. What is $\frac{9}{12}$ of the total amount? _____

v. What is $\frac{11}{12}$ of the total amount? _____

4. If I buy R200 worth of goods and they say I got less than $\frac{3}{4}$ of the price .

How much did I pay for the goods? _____

Advertisement

Go through a newspaper.

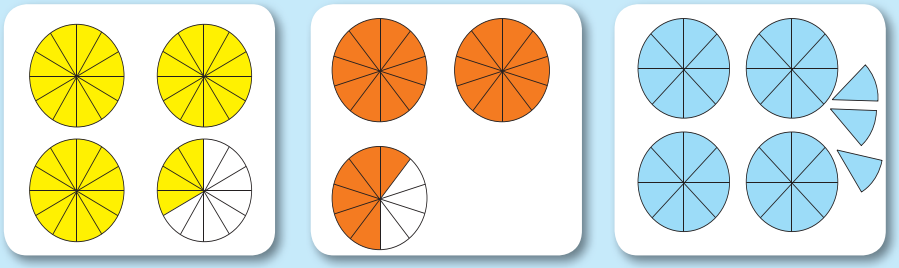
Find any article, advertisement, etc. where they mention fractions.

Sign:

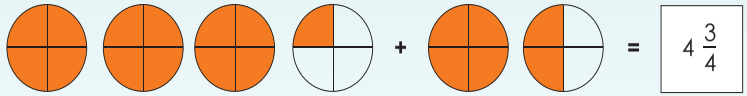
Date:

Fractions: mixed numbers

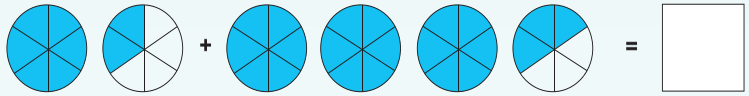
Look at the fractions circles. What do they mean?



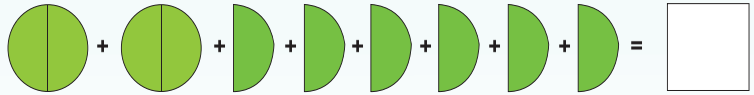
1. Add the following. Remember to write your answer in the simplest form.

a.  $= 4\frac{3}{4}$

b.  =

c.  =

d.  =

e.  =

2. Add the following fractions with the same denominators.

a. $2\frac{1}{4} + 5\frac{2}{4}$

$= 2 + 5 + \frac{1}{4} + \frac{2}{4}$

= _____

b. $7\frac{1}{8} + 3\frac{4}{8}$

= _____

= _____

c. $6\frac{3}{12} + 8\frac{7}{12}$

= _____

= _____

d. $6\frac{3}{4} + 2\frac{2}{4}$

$= 6 + 2 + \frac{3}{4} + \frac{2}{4}$

$= 8\frac{5}{4}$

$= 8 + 1 + \frac{1}{4}$

$= 9\frac{1}{4}$

e. $5\frac{3}{5} + 7\frac{4}{5}$

= _____

= _____

= _____

= _____

f. $3\frac{9}{12} + 11\frac{5}{12}$

= _____

= _____

= _____

= _____

3. Add the following fractions with different denominators.

Do the fractions have the same denominator? → **If not, rename with a common denominator.** → **Add the whole numbers and then the fractions.**

a. $5\frac{1}{3} + 1\frac{2}{4}$

$= 6 + \frac{1}{3} \times \frac{4}{4} + \frac{2}{4} \times \frac{3}{3}$

$= 6 + \frac{4}{12} + \frac{6}{12}$

$= 6\frac{10}{12} \div 2 \div 2$

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

b. $4\frac{3}{5} + 3\frac{4}{6}$

= _____

= _____

= _____

= _____

c. $1\frac{9}{12} + 12\frac{1}{4}$

= _____

= _____

= _____

= _____

4. My mother has been working for $4\frac{1}{2}$ days and then she rested for 2 days and then worked another $4\frac{1}{4}$ days. For how many days did she work?

_____

What is the magic fraction?

6	$2\frac{1}{2}$	5
$3\frac{1}{2}$	$4\frac{1}{2}$	$5\frac{1}{2}$
4	$6\frac{1}{2}$	3

Sign:

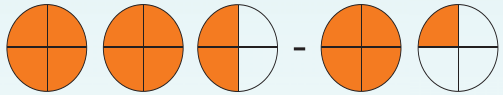
Date:

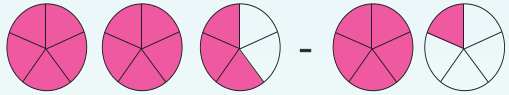
Fractions: more mixed numbers

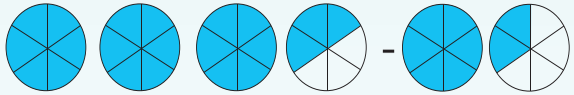
Sipho's recipe need $5\frac{1}{4}$ cups of flour. He has $1\frac{1}{2}$ cups. How much more flour does he need?



1. Subtract the following. Remember to write your answer in the simplest form.

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

b.  =

c.  =

d.  =

e.  =

2. Subtract the following fractions with the same denominators:

a. $8\frac{3}{4} - 3\frac{1}{4}$

$= (8 - 3) + (\frac{3}{4} - \frac{1}{4})$

= _____

b. $9\frac{4}{8} - 5\frac{3}{8}$ = _____

= _____

c. $7\frac{9}{12} + 4\frac{4}{12}$ = _____

= _____

d. $6\frac{1}{4} - 2\frac{2}{4}$

$= (5 + 1 + \frac{1}{4}) - (2 + \frac{2}{4})$

$= (5 + \frac{5}{4}) - (2 + \frac{2}{4})$

$= (5 - 2) + (\frac{5}{4} - \frac{2}{4})$

$= 3\frac{3}{4}$

e. $8\frac{3}{5} - 4\frac{4}{5}$ = _____

= _____

= _____

= _____

= _____

f. $12\frac{4}{12} + 11\frac{5}{12}$ = _____

= _____

= _____

= _____

= _____

3. Subtract the following fractions different denominators:

Do the fractions have the same denominator? → If not, rename with a common denominator. → Add the whole numbers and then the fractions.

a. $5\frac{1}{3} - 1\frac{1}{4}$

$= 4 + (\frac{1}{3} \times \frac{4}{4} - \frac{1}{4} \times \frac{3}{3})$

$= 4 + (\frac{4}{12} - \frac{3}{12})$

$= 4\frac{1}{12}$

b. $9\frac{4}{5} - 5\frac{2}{7}$ = _____

= _____

= _____

= _____

c. $12\frac{8}{9} - 11\frac{1}{6}$ = _____

= _____

= _____

= _____

4. At the start of summer, the tree was $4\frac{3}{8}$ metres tall. The farmer cut off $2\frac{3}{4}$ metres. During the summer, it grew another $1\frac{12}{16}$ metres. How tall was the tree by the end of summer?

_____

What is the magic fraction?

$4\frac{2}{3}$	$2\frac{1}{2}$	4
3	$3\frac{2}{3}$	$4\frac{1}{3}$
$3\frac{1}{3}$	5	$2\frac{2}{3}$

Sign:

Date:

Term 4

All about fractions

Make your own fractions sentences using the words below. Try to use as many words you can in one sentence.

one quarter | one half | 500 ml | one tenth | 250 g | 200 mm | 125 mm | 10 cm | one fifth | one eighth

1. Say if the following is true or false:

a. $\frac{1}{10}$ of a 1 000 ml jug equals to 1 litre. _____

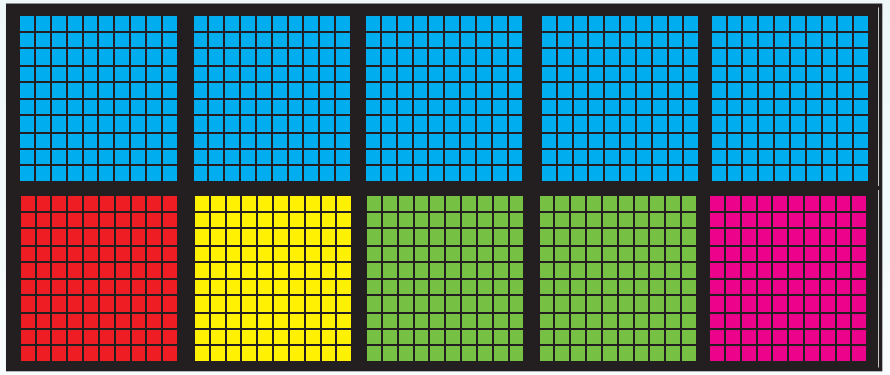
b. $\frac{1}{5}$ of a 100 equals to 20. _____

c. $\frac{1}{5}$ is bigger than $\frac{1}{4}$. _____

d. 200 g is a quarter of 1 kg. _____

e. 25 % of R20 is R5. _____

2. Look at the diagram and complete the table below:



Coloured in	Common Fraction	Decimal fraction	Percentage
Blue			**50 %**
Red			
Yellow		0,1	
Green			
Pink	$\frac{100}{1000}$		

3. Place a tick (✔) next to the correct answer:

a. One eighth of 1 m is:

i. 500 mm

ii. 125 mm

iii. 800 mm

b. Which fraction is bigger than $\frac{1}{8}$?

i. $\frac{1}{4}$

ii. $\frac{1}{9}$

iii. $\frac{1}{12}$

c. Which fraction is smaller than $\frac{1}{4}$?

i. $\frac{1}{3}$

ii. $\frac{1}{2}$

iii. $\frac{1}{5}$

d. One half of 60 kg is?

i. 120 kg

ii. 30 kg

iii. 60 kg

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

i. $\frac{1}{4}$

ii. $\frac{2}{4}$

iii. $\frac{2}{8}$

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

i. $\frac{11}{12}$

ii. $\frac{3}{7}$

iii. $\frac{3}{12}$

g. $\frac{2}{6} + \frac{4}{7} =$

i. $\frac{38}{42}$

ii. 1

iii. $\frac{6}{13}$

h. $1\frac{1}{2} + 2\frac{1}{3} =$

i. $3\frac{5}{6}$

ii. $3\frac{2}{5}$

iii. $3\frac{2}{6}$

i. 50 % of R10 is:

i. R500

ii. R50

iii. R5

What is the magic fraction?

118 Equivalent fractions

Which of the following fractions are equal?

$\frac{1}{5}$ $\frac{2}{8}$ 40% 0,9 0,45 18% $\frac{4}{16}$ 100%

- By just looking at these fractions, can you tell which are equal?
- Is there a way to work out if any of these fractions are equal?
- YES, we need the fractions to be in the same form to work out if they are equal.

1. Convert to common fractions (remember simplest form).

a. 80% b. 0,25 c. 0,5 d. 21%

$\frac{80}{100} = \frac{8}{10} = \frac{4}{5}$	$\frac{25}{100} = \frac{5}{20} = \frac{1}{4}$		

e. 58% f. 0,72 g. 0,81 h. 0,16

i. 67% j. 45% k. 63% l. 0,87

2. Convert to decimal fractions.

a. 32% b. $\frac{4}{10}$ c. $\frac{2}{5}$ d. 28%

$\frac{32}{100} = 0,32$		$\frac{2}{5} = \frac{40}{100} = 0,4$	

e. 49% f. $\frac{1}{4}$ g. $\frac{5}{25}$ h. $\frac{89}{100}$

i. 66% j. 25% k. 13% l. $\frac{14}{20}$

3. Convert to percentages.

a. $\frac{4}{10}$ b. 0,8 c. 0,5 d. $\frac{89}{100}$

$\frac{4}{10} = \frac{40}{100} = 40\%$	$\frac{8}{10} = \frac{80}{100} = 80\%$		

e. $\frac{56}{100}$ f. 0,42 g. 0,21 h. 0,96

i. $\frac{3}{20}$ j. $\frac{18}{25}$ k. $\frac{38}{50}$ l. 0,37

4. Fill in <, > or = .

a. 85% ☐ 85%
b. $\frac{4}{10}$ ☐ 0,4
c. $\frac{4}{10}$ ☐ 40%
d. 25% ☐ 0,25
e. 67% ☐ $\frac{17}{25}$
f. 0,98 ☐ $\frac{9}{20}$
g. 0,65 ☐ 0,6
h. 23% ☐ 0,23
i. $\frac{47}{100}$ ☐ 0,74
j. 55% ☐ $\frac{5}{100}$
k. 0,95 ☐ 100%
l. $\frac{1}{4}$ ☐ 25%
m. 10% ☐ $\frac{6}{25}$
n. 30% ☐ 0,35

Number line fractions

Draw a number line that starts at 0 and ends at 1. Place the following on the number line: $\frac{3}{10}$, 20%, $\frac{2}{3}$ and 0,5.

Sign:

Date:

119 Addition and subtraction of common fractions

Work through these two examples and then answer the questions.

Example 1:

$\frac{4}{10} + \frac{4}{10} = \frac{8}{10}$ $\quad\quad$ $\frac{8}{10} - \frac{4}{10} = \frac{4}{10}$

Don't forget that the denominator stays the same and only the numerator is added or subtracted.

Example 2:

$\frac{1}{2} + \frac{2}{8} = \square$

$\frac{1}{2} + \frac{2}{8}$

$= \frac{1}{2} \times \frac{4}{4} + \frac{2}{8}$

$= \frac{4}{8} + \frac{2}{8}$

$= \frac{6}{8}$

$\frac{1}{2} - \frac{2}{8} = \square$

$\frac{1}{2} - \frac{2}{8}$

$= \frac{1}{2} \times \frac{4}{4} - \frac{2}{8}$

$= \frac{4}{8} - \frac{2}{8}$

$= \frac{2}{8}$

The first thing we need to do is make sure that the denominators are the same. They are not, so now we need to find multiples of both the denominators.

Remember when we change the denominator, we change the numerator as well, because **what we do to the bottom, we have to do to the top.**

1. Add the following.

a. $\frac{3}{6} + \frac{2}{6} =$

b. $\frac{3}{10} + \frac{5}{10} =$

c. $\frac{6}{9} + \frac{2}{9} =$

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

e. $\frac{5}{7} + \frac{4}{14} =$

f. $\frac{2}{8} + \frac{5}{6} =$

2. Subtract the following.

a. $\frac{6}{9} - \frac{2}{9} =$

b. $\frac{8}{10} - \frac{6}{10} =$

c. $\frac{8}{12} - \frac{5}{12} =$

d. $\frac{2}{3} - \frac{4}{12} =$

e. $\frac{3}{4} - \frac{4}{16} =$

f. $\frac{8}{9} - \frac{1}{2} =$

3. Fill in the missing information.

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

b. $\square \frac{1}{5} = \frac{3}{5}$

c. $\frac{4}{7} + \square = \frac{15}{21}$

d. $\frac{1}{4} + \square = \frac{6}{8}$

e. $\frac{2}{4} + \square = \frac{4}{4}$

f. $\frac{1}{8} + \frac{3}{16} = \square$

g. $\square + \frac{3}{6} = 1$

h. $\frac{1}{2} + \frac{5}{29} = \square$

i. $\frac{2}{4} + \square = \frac{15}{24}$

4. Story sum.

Maria cuts a cake into 20 pieces. She eats $\frac{1}{2}$ of the cake now and $\frac{1}{3}$ later. What fraction of the cake did she eat?

Pie problems

My father eats $\frac{8}{15}$ of a pie and later another $\frac{1}{3}$. What fraction of the pie did my father eat?

120a Fraction problem solving

Look at the example and discuss.

James saves R1 565 for a game. When he gets to the shop it is discounted by $\frac{2}{5}$. How much money does he save?

What is the question? How much money does he save?

What are the numbers or fractions? R1 565 and $\frac{2}{5}$

What is the key word? I am going to use sharing. ☐

What will the number sentence be? $\frac{2}{5}$ of R1 565 =

Possible drawing: I will first start to share R1 565 between 5.

I will then circle $\frac{2}{5}$ of the purses and add the money. R313 + R313 = R623
James saved R623.

1. Solve the following problems.

a. My aunt's food budget is R 3 500. She saves $\frac{1}{5}$ of her budget. How much money did she save?

b. A wall has 124 panels. A painter paints $\frac{4}{6}$ of these panels. How many panels are painted?

c. What is $\frac{2}{6}$ of 354 cup-cakes?

d. Bongi's father has 364 sweets. He gives $\frac{3}{7}$ of them to her mother for school lunch-boxes. How many sweets will she get?

Sign:
Date:

Fraction problem solving continued

e. Thandi uses one 50 ℓ container of paraffin for her stove. If she has used $\frac{3}{5}$ of the bottle already, how many litres are left?

f. Jack has worked on his homework for $\frac{3}{5}$ of 3 hours. How many minutes have passed?

g. Grandfather uses $\frac{2}{8}$ of his 800 ml of gel. How much gel has he used?

h. My friend's cat weighs 1 568 g and her kitten weighs $\frac{2}{6}$ of the cat's mass. What is the mass of the kitten?

i. A chocolate cake needs $\frac{3}{4}$ cup of flour. If my mother wants to bake 5 cakes, how much flour will she need?

Solve more word problems

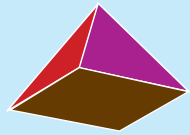
- Phulani has 1 452 stamps. If she gives $\frac{2}{6}$ of the stamps to her friend , how many stamps will they each have?
- Zama earns $\frac{2}{5}$ of what his father earns in a month. If his father earns R18 000, how much does Zama earn?

Sign:

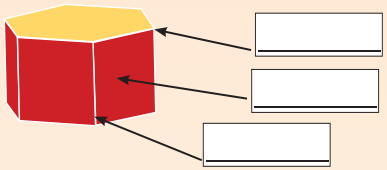
Date:

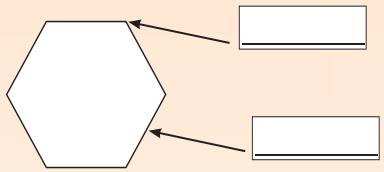
Faces, vertices and edges

Look at the picture. Which country is this? Match one of the objects on the right with the picture.

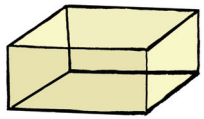


1. Label the parts of these diagrams.





2. Complete the following table:

Faces of the 3D object	3D object	Net	Number of faces	Number of vertices	Number of edges
2 triangles 3 rectangles	Triangular prism 				
	Rectangular prism 				
	Pentagonal prism 				
	Tetrahedron 				

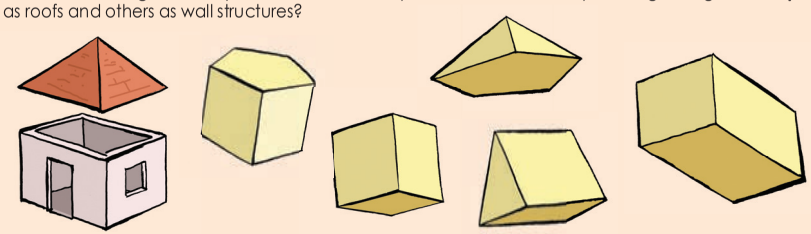
3. Describe these houses in terms of 2-D shapes and 3D objects. Use words such as:

3D objects | edges | 2-D shapes | faces | vertices

Continue on an extra sheet of paper

Designing a house

You need to design a variety of houses. How many different houses can you design using some objects as roofs and others as wall structures?



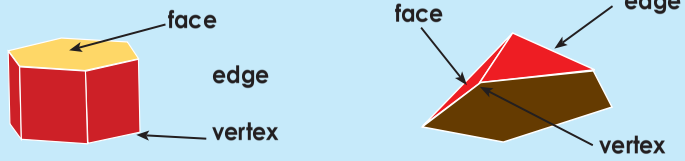
Sign:

Date:

Term 4

3-D objects

Revise vertices, edges and faces.



1. Identify and count the:

i. vertices ii. edges iii. faces

i. _____
ii. _____
iii. _____

i. _____
ii. _____
iii. _____

i. _____
ii. _____
iii. _____

i. _____
ii. _____
iii. _____

i. _____
ii. _____
iii. _____

i. _____
ii. _____
iii. _____

2. Find or draw pictures of objects with:

a. 8 vertices, 12 edges and 6 faces

b. 4 vertices, 6 edges and 4 faces

3. Can a 3-D object have equal numbers of vertices, edges and faces ?

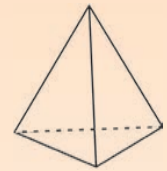
_____

_____

4. Match the skeleton with the 3-D object. Label and say how many of the following you count.

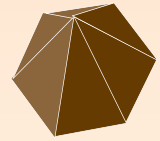
i. faces ii. edges iii. vertices

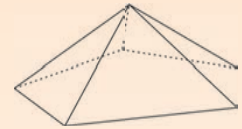
a. Pentagonal pyramid



i. _____
ii. _____
iii. _____

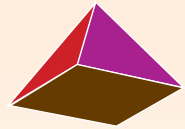
b. Hexagonal pyramid

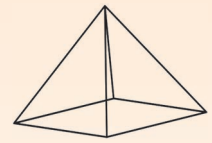




i. _____
ii. _____
iii. _____

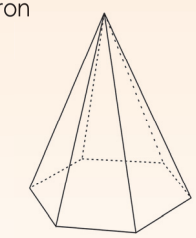
c. Square pyramid





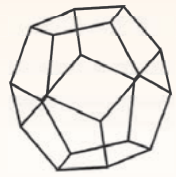
i. _____
ii. _____
iii. _____

d. Triangular pyramid (tetrahedron



i. _____
ii. _____
iii. _____

5. Count the:



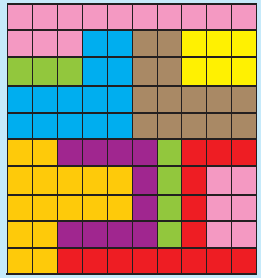
Faces
Edges _____
Vertices _____
_____

6. Compare the tetrahedron above with all the other pyramids.

What is it?

What 3-D object will have seven vertices and seven faces?

Square units and area

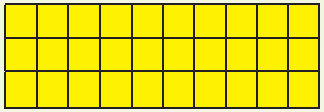


How many square units are:

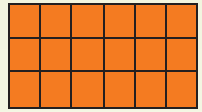
a. Pink
b. Green
c. Blue
d. Purple
e. Yellow
f. Orange
g. Brown
f. Red

1. Write a sum to work out the square units.

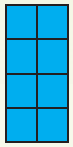
a.



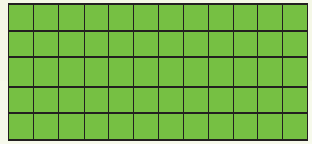
b.



c.

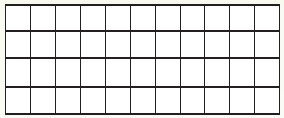


d.

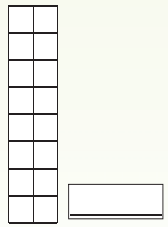


2. Label each side saying if it is the length or the width of the rectangle. Then write a sum for each rectangle

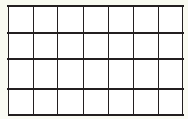
a.



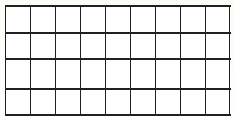
b.



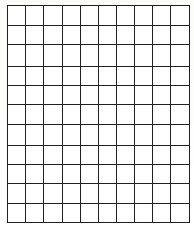
c.



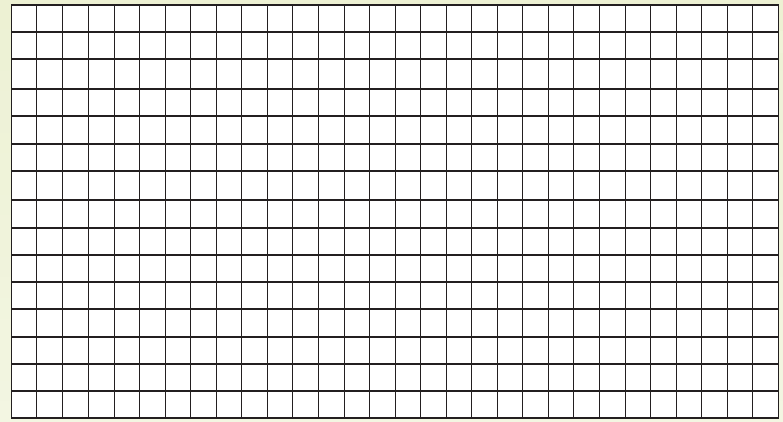
d.



e.

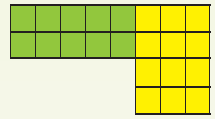


3. Draw 10 different rectangles. What is the area of each rectangle? Give your answer in square units.

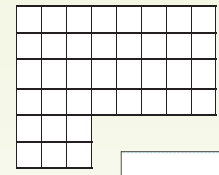


4. Work out the square units for each shape. Write down how you did it.

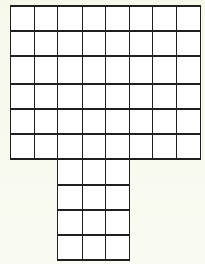
a.



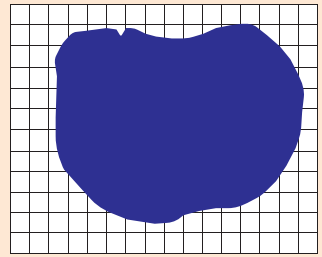
b.



c.



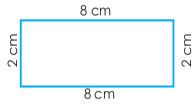
What is the size of the dam?



Area and perimeter

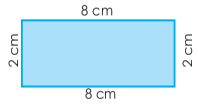
Read about perimeter and area below.

Perimeter is the distance around a 2-D shape.



The perimeter of this rectangle is
8 cm + 8 cm + 2 cm + 2 cm
= 20 cm

Area is the amount of space inside the perimeter.



The area covered by this shape is
2 cm x 8 cm
= 16 cm2

1. Calculate the perimeter and area of the following rectangles.

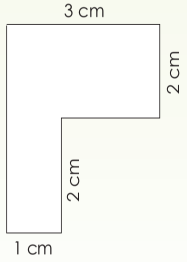
a.

Perimeter **Area**

b.

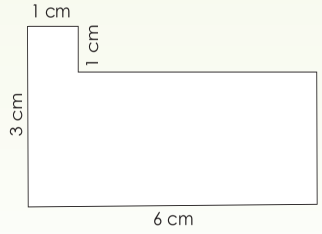
Perimeter **Area**

c.



Perimeter **Area**

d.



Perimeter **Area**

2. Calculate the perimeter and area of the following rectangles:

a. Length: 10 cm; Width: 8 cm

Perimeter **Area**

b. Length: 25 cm; Width: 20 cm

Perimeter **Area**

3. If you have a rectangle with the following area, what could its length and breadth (width) be? What is the perimeter?

a. Area = 72 square metres (m^2).

Length and breadth **Perimeter**

b. Area = 108 m^2

Length and breadth **Perimeter**

4. Themba has a small garden with a perimeter of 30 metres and an area of 30 square metres. He wants to double the dimensions of his garden next year. What will be the new perimeter and new area of his larger garden? Show the calculations.

Continue on a separate sheet of paper

5. Mpho and his father are building a deck because the old one is too small. The old deck was 2 m x 3 m. They are going to double the dimensions of the deck. They'll need to know how much railing and wood stain to purchase. What will be the perimeter and area of the new deck be? Show the calculations.

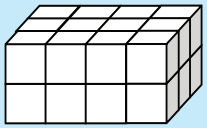
Continue on a separate sheet of paper

Investigate

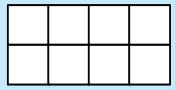
How many different ways can you draw a square and rectangles covering 36 square units?
Show them.
Do all of the above shapes have the same area?
Do they all have the same perimeter?

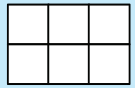
Sign:
Date:

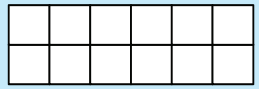
Discuss the following.



Area

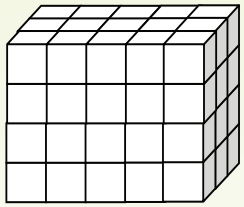
front view 

side view 

top view 

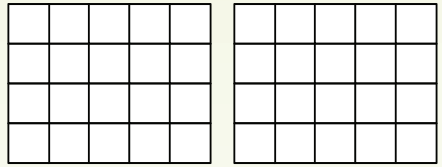
1. Calculate the cubic units.

Count the cube units



Draw all the faces and then calculate the square areas. We did the first two faces for you. Do the rest on an extra sheet of paper.

5 square units x 4 square units =
5 square units x 4 square units =



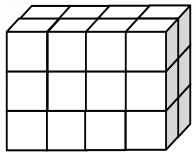
Write it down.

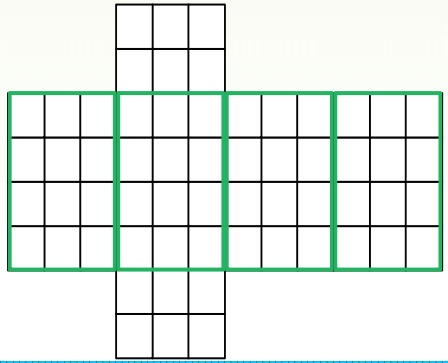
4 cubic units x 5 cubic units x 3 cubic units
=

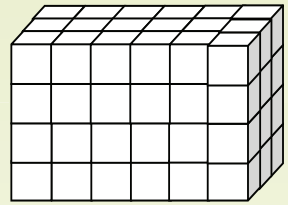
2 x (5 x 4) + 2 (3 x 4) + 2 (5 x 3)
=

2. Calculate the volume and then the area. We did the first drawings for you.

a.





b. 

c. You will need extra paper for c-f.3 cubic units x 3 cubic units x 4 cubic units.

d. 5 cubic units x 6 cubic units x 4 cubic units

e. 7 cubic units x 8 cubic units x 9 cubic units.

f. 4 cubic units x 8 cubic units x 12 cubic units.

Millimetre fun

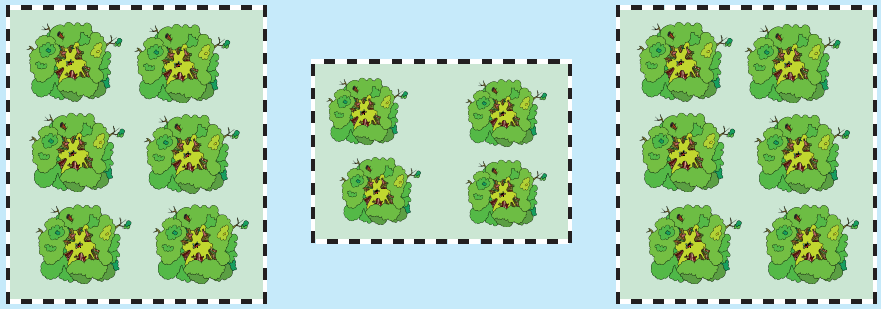
What will the surface area in square units be of a rectangular prism with 6 cubic units by 4 cubic by 3 units.

Sign:

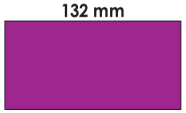
Date:

Perimeter, length and width

What is the distance around the parks? Use the fencing units to help you.



1. Complete the table:

Rectangle	Length	Width	Perimeter in:
30 mm  20 mm			mm: _____ cm: _____ m: _____
30 cm  10 cm			mm: _____ cm: _____ m: _____
150 cm  200 cm			mm: _____ cm: _____ m: _____
275 mm  233 mm			mm: _____ cm: _____ m: _____
132 mm  51 mm			mm: _____ cm: _____ m: _____

2. Draw the rectangles.

Length: 80 mm Width: 40 mm Perimeter in mm: ____ cm: ____ m: ____

Length: 76 mm Width: 42 mm Perimeter in mm: ____ cm: ____ m: ____

Length: 92 mm Width: 35 mm Perimeter in mm: ____ cm: ____ m: ____

Sign: Date:

continued

3. Calculate the following for each space:

a. The length is 54 cm and the width is 30 cm. What is the perimeter?

b. The length is 108 cm and the width is 76 cm. What is the perimeter?

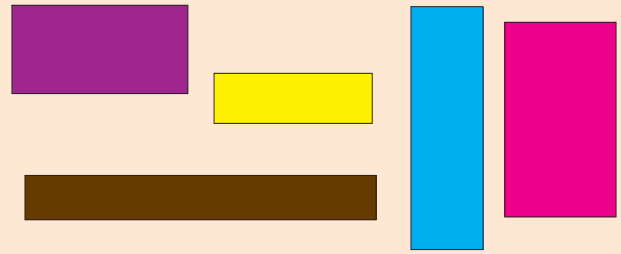
c. The perimeter is 100 cm. What can the length and width be?
Give 5 possible answers.

d. What is the width, if the perimeter is 90 cm, and one length is 30 cm?

e. What is the length, if the perimeter is 210 cm, and the width is 40 cm?

Perimeter search

How to play:
Play in pairs. Search for any 5 rectangular shapes in your classroom. First guess what the perimeter is and then measure it. The person that guesses the closest gets one point. The person with the most points is the winner.



Sign:

Date:

Calculate the following:

5 (3 + 4) = ☐	90 ÷ ☐ x 0 = 0	7 + 3 + 2 ÷ 2 = ☐	25 x ☐ ÷ 5 = 5
35 ÷ 5 x 1 = ☐	50 x ☐ ÷ 25 = 25	☐ ÷ 5 + 0 = 100	4 + 5 ÷ 3 = ☐
81 + ☐ ÷ 9 = 9	3 000 ÷ 1 000 + 0 = ☐	200 ÷ 5 + 0 = ☐	2 (7 + 4) = ☐
7 (24 ÷ 6) = ☐	490 ÷ 70 x 1 = ☐	6 (☐ x 2) = 30	

1. Estimate and then calculate the following:

a. 2 500 ÷ 40 = _____

b. 3 100 ÷ 80 = _____

c. 5 100 ÷ 10 = _____

d. 4 400 ÷ 7 = _____

e. 1 700 ÷ 40 = _____

f. 6 300 ÷ 10 = _____

g. 3 200 ÷ 50 = _____

h. 4 700 ÷ 40 = _____

2. Complete the multiplication board.

x	10	20	30	40	50	60	70	80	90	100
10										
20										
30										
40										
50										
60										
70										
80										
90										
100										

a. Colour the numbers that are divisible by 30 in blue.

b. Colour the numbers that are not divisible by 30 in red.

c. How did the multiplication board help you to work it out quickly?

_____

d. What are the first 10 multiples of 30?

_____

3. Colour the numbers that are divisible by 400 red and the numbers that are divisible by 500 blue.

x	100	200	300	400	500	600	700	800	900	1 000
10										
20										
30										
40										
50										
60										
70										
80										
90										
100										

a. What do you get when you mix red and blue? _____

b. Which numbers are coloured purple?

_____

c. What do you know about these numbers?

_____

d. Are the purple numbers divisible by 300?

_____

e. What are the first 10 multiples of 400 and 500?

_____

_____

f. What are the factors of 800?

_____

I have a number

In pairs play the following.

Say to your friend: "I have a 2 digit number. It is divisible by 2. Guess what my number is?"
Give your friend some clues until he or she gets it correct.
Take more turns using other numbers.

More division

Quick recall:

6 ÷ 2	28 ÷ 7	14 ÷ 2	12 ÷ 6	40 ÷ 4	16 ÷ 8
12 ÷ 2	40 ÷ 4	42 ÷ 7	18 ÷ 9	16 ÷ 2	24 ÷ 4
21 ÷ 3	6 ÷ 3	10 ÷ 5	30 ÷ 5	54 ÷ 6	90 ÷ 9
72 ÷ 8	45 ÷ 9	63 ÷ 9	40 ÷ 5	56 ÷ 7	27 ÷ 3
20 ÷ 5	56 ÷ 8	32 ÷ 4	24 ÷ 3	15 ÷ 3	8 ÷ 4

Example 1:

364 ÷ 50 = = (300 + 64) ÷ 50
= (300 ÷ 50) + (64 ÷ 50)
= 6 + 1 + remainder 14
= 7 remainder 14

Test the answer.

Example 2:

785 ÷ 70 = = (700 + 85) ÷ 70
= (700 ÷ 70) + (85 ÷ 70)
= 10 + 1 remainder 15
= 11 remainder 15

Test the answer.

1. Show your calculations.

a. 278 ÷ 50 =

b. 463 ÷ 50 =

c. 871 ÷ 50 =

d. 983 ÷ 50 =

e. 391 ÷ 50 =

Continue on an extra sheet of paper

2. Show your calculations.

a. 438 ÷ 70 =

b. 223 ÷ 70 =

c. 291 ÷ 70 =

d. 713 ÷ 70 =

e. 859 ÷ 70 =

Continue on an extra sheet of paper

Example 3:

674 ÷ 60 = = (600 + 74) ÷ 60
= (600 ÷ 60) + (74 ÷ 60)
= 10 + 1 remainder 14
= 11 remainder 12

Example 4:

894 ÷ 80 = = (800 + 94) ÷ 80
= (800 ÷ 80) + (94 ÷ 80)
= 10 + 1 remainder 14
= 11 remainder 14

3. Show your calculations.

a. 738 ÷ 60 =

b. 253 ÷ 60 =

c. 131 ÷ 60 =

d. 193 ÷ 60 =

e. 491 ÷ 60 =

Continue on an extra sheet of paper

4. Show your calculations.

a. 178 ÷ 80 =

b. 253 ÷ 80 =

c. 331 ÷ 80 =

d. 415 ÷ 80 =

e. 496 ÷ 80 =

Continue on an extra sheet of paper

continued

Sign:

Date:

More division continued

Example 5:

```
        2  6
2 5 | 6  5  0
  –   5  0  0     2 5 x 20
      1  5  0
  –   1  5  0     2 5 x 6
            0
```

Answer: 26

Example 6:

```
        2  6
2 5 | 6  5  4
  –   5  0  0     2 5 x 20
      1  5  4
  –   1  5  0     2 5 x 6
            4
```

Answer: 26 remainder 4

5. Say in each case whether there is a remainder or not, and if there is, then what it is. Show all your calculations.

478 ÷ 25 = 808 ÷ 15 = 911 ÷ 50 =

Continue on an extra sheet of paper

778 ÷ 15 = 763 ÷ 35 = 988 ÷ 12 =

Continue on an extra sheet of paper

823 ÷ 25 = 471 ÷ 32 = 383 ÷ 34 = 591 ÷ 20 =

Continue on an extra sheet of paper

881 ÷ 50 = 903 ÷ 60 = 899 ÷ 40 = 893 ÷ 36 =

Continue on an extra sheet of paper

271 ÷ 39 =298 ÷ 22 = 903 ÷ 45 = 511 ÷ 29 =

Continue on an extra sheet of paper

6. Test all your answers to Question 5. Show all your calculations on a separate piece of paper.

Example 7:

```
      2  5
x     2  6
      3  0      6 x 5
   1  2  0      6 x 20
   1  0  0      20 x 5
+  4  0  0      20 x 20
   6  5  0
```

Example 8:

```
      2  5
x     2  6
      3  0      6 x 5
   1  2  0      6 x 20
   1  0  0      20 x 5
+  4  0  0      20 x 20
   6  5  0
```

7. I invited 29 children to my birthday party. My budget is R1 500 for all of us. How much do I have per head to spend?

How fast are you?

Colour in the multiplication sums and answers that match. What do you notice?

7 x 30 | 70 x 30 | 2 x 50 | 20 x 50 | 1 x 80 | 10 x 80 | 6 x 90 | 60 x 90

5 400 | 100 | 800 | 210 | 80 | 2 100 | 1 000 | 540

Sign:

Date:

Division: 4-digit by 2-digit

Term 4

Remember BODMAS when you calculate.

Calculate the following:

48 ÷ 8 x ☐ = 6	72 ÷ ☐ x 1 = 8	25 (25 x 0) = ☐
3 + 4 x 2 ÷ 1 = ☐	121 ÷ ☐ x ☐ = 11	10 (4 x ☐) = 80
45 ÷ 9 x 2 x 0 = ☐	63 ÷ ☐ x 1 = 9	14 ÷ 2 x 2 + 0 = ☐
15 (1 + 0) = ☐	12 (3 + 2) = ☐	☐ = 8 (3 + 5)
100 (☐ x 3) = 1 200	☐ = 12 (2 + 2 + 1)	144 ÷ ☐ x ☐ = 0

Example 1:

8 480 ÷ 20 = (8 000 + 400 + 80) ÷ 20
= (8 000 ÷ 20) + (400 ÷ 20) + (80 ÷ 20)
= 400 + 20 + 4
= 424

Test the answer.

Example 2:

9 676 ÷ 60 = (9 000 + 600 + 70 + 6) ÷ 60
= (9 000 ÷ 60) + (600 ÷ 60) + (76 ÷ 60)
= 150 + 10 + 1 rem 16
= 161 rem 16

Test the answer.

1. Show your calculations on a separate piece of paper.

a. 4 350 ÷ 50 =
b. 5 500 ÷ 50 =
c. 6 962 ÷ 50 =
d. 7 492 ÷ 50 =
e. 8 855 ÷ 50 =

2. Show your calculations on a separate piece of paper.

a. 7 490 ÷ 70 =
b. 3 570 ÷ 70 =
c. 4 980 ÷ 70 =
d. 6 395 ÷ 70 =
e. 8 492 ÷ 70 =

3. Show your calculations on a separate piece of paper.

a. 3 600 ÷ 60 =
b. 2 460 ÷ 60 =
c. 3 065 ÷ 60 =
d. 4 282 ÷ 60 =
e. 7 295÷ 60 =

4. Show your calculations on a separate piece of paper.

a. 2 400 ÷ 80 =
b. 3 280 ÷ 80 =
c. 6 495 ÷ 80 =
d. 4 883 ÷ 80 =
e. 9 699 ÷ 80 =

5. Show your calculations on a separate piece of paper.

a. 2 700 ÷ 90 =
b. 3 690 ÷ 90 =
c. 4 597 ÷ 90 =
d. 8 192 ÷ 90 =
e. 9 999 ÷ 90 =

Use a calculator to check your answers to questions 1 to 5.

You have to go and practice some of these sums at home.

Example:

```
        3 9 4
2 5 | 9 8 5 0
    - 7 5 0 0      2 5 x 3 0 0
      2 3 5 0
    - 2 2 5 0      2 5 x 9 0
        1 0 0
        1 0 0      2 5 x 4
            0
```

6. Say in each case whether there is a remainder or not, and if there is, then what is it? Show all your calculations on extra sheets of paper.

a. 6 783 ÷ 23 =
b. 7 954 ÷ 28 =
c. 6 592 ÷ 32 =
d. 8 329 ÷ 48 =
e. 9 483 ÷ 57 =
f. 8 927 ÷ 63 =

7. Do the following problems on an extra sheet of paper.

a. The farmer has 18 432 eggs. He has to put them in boxes of 8 dozen to take to the supermarket. How many boxes does he need?

b. A class raised R4 286 for a maths dictionary for each child. There are 41 children in the class. A dictionary cost R120. How much money do they still need to raise?

c. The ratio of boys to girls in a school is 1 200: 960.
   i) What fraction of the children are girls?
   ii) What fraction are boys?

d. A salesman travelled 6 342km in 21 days at an average speed of 100 km per hour.
   i) How far did he travel per day?
   ii) How many hours did he travel per day?

Using all the digits

Fill in the missing numbers.
Use the numbers 1 to 9 to complete the sums.
Each number is only used once.
Each row is a math sum.
Each column is a math sum.
Remember that multiplication and division are performed before addition and subtraction.

	-		-		-4
-	■	-	■	x	
	-		÷		2
+	■	+	■	÷	
	-		+		5
5		11		6	

Sign:
Date:

129a Division: 4-digit by 2-digit numbers

Example 1:

$$\begin{array}{r} 202 \\ 17\overline{)3\,434} \\ -\,34\downarrow \\ \hline 3 \\ -\,0\downarrow \\ \hline 34 \\ 34 \\ \hline \end{array}$$

This block might help you with calculations.

D	Division
M	Multiplication
S	Subtraction
B	Bring down

Clue board
1 x 17 = 17
2 x 17 = 34
3 x 17 = 51
4 x 17 = 68
5 x 17 = 85
6 x 17 = 102
7 x 17 = 119
8 x 17 = 136
9 X 17 = 153

Example 2: 3 434 ÷ 17

We will write the number in multiples of 17.

= (3 400 ÷ 17) + (34 ÷ 17)

We first write 3 400 divided by 17 in brackets.
Then write the addition symbol.
Then write 34 divided by 17 in brackets.

= 200 + 2

= 202

200
plus 2
equals 202

- 3 400 divided by 17 is 200
- Plus
- 34 divided by 17 is 2

You do, not have to use both methods, but you should know how to use both.

1. Calculate and check your answers. The blocks might help you with your calculations.

a. 1 248 ÷ 16 = b. 1 872 ÷ 24 = c. 2 529 ÷ 56 =

1 x 16 = 16	10 x 16 = 160	1 x 24 = 24	10 x 24 = 240	1 x 56 = 56	10 x 56 = 560
2 x 16 = 32	20 x 16 = 320	2 x 24 = 48	20 x 24 = 480	2 x 56 = 112	20 x 56 = 1 120
3 x 16 = 48	30 x 16 = 480	3 x 24 = 72	30 x 24 = 720	3 x 56 = 168	30 x 56 = 1 680
4 x 16 = 64	40 x 16 = 640	4 x 24 =96	40 x 24 = 960	4 x 56 = 224	40 x 56 = 2 240
5 x 16 = 80	50 x 16 = 800	5 x 24 =120	50 x 24 = 1 200	5 x 56 = 280	50 x 56 = 2 800
6 x 16 = 96	60 x 16 = 960	6 x 24= 144	60 x 24 = 1 440	6 x 56 = 336	60 x 56 = 3 360
7 x 16 = 112	70 x 16 = 1 120	7 x 24 = 168	70 x 24 = 1 680	7 x 56 = 392	70 x 56 = 3 920
8 x 16 = 128	80 x 16 = 1 280	8 x 24 = 192	80 x 24 = 1 920	8 x 56 = 448	80 x 56 = 4 480
9 x 16 = 144	90 x 16 = 1 440	9 x 24 = 216	90 x 24 = 2 160	9 x 56 = 504	90 x 56 = 5 040

Example 1:

$$\begin{array}{r} 23 \\ 126\overline{)2\,898} \\ 2\,52\downarrow \\ \hline 378 \\ 378 \\ \hline \end{array}$$

This block might help you with calculations.

D	Division
M	Multiplication
S	Subtraction
B	Bring down

Clue board
1 x 126 = 126
2 x 126 = 252
3 x 126= 378
4 x 126 = 504
5 x 126 = 630
6 x 126 = 756
7 x 126 = 882
8 x 126 = 1 008
9 x 126 = 1 134

Example 2: 2 898 ÷ 126

We will write the number in multiples of 126.

= (2 520 ÷ 126) + (378 ÷ 126)

We first write 2 520 divided by 126 in brackets.
Then write the addition symbol.
Then write 378 divided by 126 in brackets.

= 20 + 3

= 23

20
plus 3
equals 23

- 2 520 divided by 126 is 20
- Plus
- 378 divided by 126 is 3

You do not have to use both methods; but you should know how to use both.

2. Complete the clue boards. Calculate a-c using the clue boards to help you.

a.2 772 ÷ 116 = b. 2 829 ÷ 123 =

1 x 116 =	10 x 116 =	1 x 123 =	10 x 123 =	1 x 352 =	10 x 352 =
2 x 116 =	20 x 116 =	2 x 123 =	20 x 123 =	2 x 352 =	20 x 352 =
3 x 116 =	30 x 116 =	3 x 123 =	30 x 123 =	3 x 352 =	30 x 352 =
4 x 116 =	40 x 116 =	4 x 123 =	40 x 123 =	4 x 352 =	40 x 352 =
5 x 116 =	50 x 116 =	5 x 123 =	50 x 123 =	5 x 352 =	50 x 352 =
6 x 116 =	60 x 116 =	6 x 123=	60 x 123 =	6 x 352 =	60 x 352 =
7 x 116 =	70 x 116 =	7 x 123 =	70 x 123 =	7 x 352 =	70 x 352 =
8 x 116 =	80 x 116 =	8 x 123 =	80 x 123 =	8 x 352 =	80 x 352 =
9 x 116 =	90 x 116 =	9 x 123 =	90 x 123 =	9 x 352 =	90 x 352 =

Story sums

- A farmer wants to plant 6 764 apple trees. He can only fit in 76 rows. How many apple trees must he plant in each row?
- A rich man gives boxes of toys to a school. Each box has 126 toys. If there are 5 292 toys, how many boxes are needed?

129b Division: 4-digit by 3-digit numbers with remainders

Example:

```
        16 rem 313
398 | 6 681
    - 3 98↓
      2 701
    - 2 388
      313
```

1. Complete the clue boards and calculate the sums. (Remember to check your answers.)

a. 2 391 ÷ 129 =

1 x 129 =	10 x 129 =	1 x 157 =	10 x 157 =	1 x 226 =	10 x 226 =
2 x 129 =	20 x 129 =	2 x 157 =	20 x 157 =	2 x 226 =	20 x 226 =
3 x 129 =	30 x 129 =	3 x 157 =	30 x 157 =	3 x 226 =	30 x 226 =
4 x 129 =	40 x 129 =	4 x 157 =	40 x 157 =	4 x 226 =	40 x 226 =
5 x 129 =	50 x 129 =	5 x 157 =	50 x 157 =	5 x 226 =	50 x 226 =
6 x 129 =	60 x 129 =	6 x 157=	60 x 157 =	6 x 226 =	60 x 226 =
7 x 129 =	70 x 129 =	7 x 157 =	70 x 157 =	7 x 226 =	70 x 226 =
8 x 129 =	80 x 129 =	8 x 157 =	80 x 157 =	8 x 226 =	80 x 226 =
9 x 129 =	90 x 129 =	9 x 157 =	90 x 157 =	9 x 226 =	90 x 226 =

b. 3 277 ÷ 157 =

c. 3 843 ÷ 226 =

d. 5 492 ÷ 286 =

e. 5 926 ÷ 326 =

f. 6 681 ÷ 398 =

1 x 286 =	10 x 286 =	1 x 326 =	10 x 326 =	1 x 398 =	10 x 398 =
2 x 286 =	20 x 286 =	2 x 326 =	20 x 326 =	2 x 398 =	20 x 398 =
3 x 286 =	30 x 286 =	3 x 326 =	30 x 326 =	3 x 398 =	30 x 398 =
4 x 286 =	40 x 286 =	4 x 326 =	40 x 326 =	4 x 398 =	40 x 398 =
5 x 286 =	50 x 286 =	5 x 326 =	50 x 326 =	5 x 398 =	50 x 398 =
6 x 286 =	60 x 286 =	6 x 326 =	60 x 326 =	6 x 398 =	60 x 398 =
7 x 286 =	70 x 286 =	7 x 326 =	70 x 326 =	7 x 398 =	70 x 398 =
8 x 286 =	80 x 286 =	8 x 326 =	80 x 326 =	8 x 398 =	80 x 398 =
9 x 286 =	90 x 286 =	9 x 326 =	90 x 326 =	9 x 398 =	90 x 398 =

g. 8 253 ÷ 412 =

h. 8 981 ÷ 422 =

i. 9 653 ÷ 452=

1 x 412 =	10 x 412 =	1 x 422 =	10 x 422 =	1 x 452 =	10 x 452 =
2 x 412 =	20 x 412 =	2 x 422 =	20 x 422 =	2 x 452 =	20 x 452 =
3 x 412 =	30 x 412 =	3 x 422 =	30 x 422 =	3 x 452 =	30 x 452 =
4 x 412 =	40 x 412 =	4 x 422 =	40 x 422 =	4 x 452 =	40 x 452 =
5 x 412 =	50 x 412 =	5 x 422 =	50 x 422 =	5 x 452 =	50 x 452 =
6 x 412 =	60 x 412 =	6 x 422 =	60 x 422 =	6 x 452 =	60 x 452 =
7 x 412 =	70 x 412 =	7 x 422 =	70 x 422 =	7 x 452 =	70 x 452 =
8 x 412 =	80 x 412 =	8 x 422 =	80 x 422 =	8 x 452 =	80 x 452 =
9 x 412 =	90 x 412 =	9 x 422 =	90 x 422 =	9 x 452 =	90 x 452 =

Sign:

Date:

Properties of numbers

What will happen:

If I subtract the same number from the number?

If I add or subtract 0 from a number?

If I multiply a number by 1?

1. Complete the following:

a. 4 - ____ = 0

b. ____ - 15 = ____

c. 100 000 - ____ = ____

d. ____ - 299 999 = 0

e. ____ - ____ = ____

2. Replace:

■ = 5 ■ = 25 ⬟ = $\frac{1}{4}$

⬢ = 0,5 ● = 500 000

a. ● - ● = 0 ____

b. ■ - ■ = 0 ____

c. ⬢ - ⬢ = 0 ____

d. ⬟ - ⬟ = 0 ____

e. ■ - ■ = 0 ____

3. Complete the flow diagrams.

a.

5	Subtract the same number from the given number.	
46		
201 005		
$\frac{1}{4}$		
0,75		

b.

8	Add zero to the number.	
		99
387 342		
$\frac{1}{8}$		
		1,5

c.

15	Subtract zero from the number.	15
2010		
499 000		
$\frac{3}{5}$		$\frac{3}{5}$
2,3		

d.

36	Multiply by 1.	
153		
		201 005
$\frac{1}{100}$		
1,9		

4. What is the value of ✘ :

a. ✘ + 19 = 19 + 5 ✘ = ____

b. 8 × 25 = ✘ × 8 ✘ = ____

c. (12 + ✘) + 14 = 12 + (15 + 14) ✘ = ____

d. (10 × 0,5) × 1 = 10 × (✘ × 0,5) ✘ = ____

e. (90 + 10) × 0,2 = 90 × ✘ + 10 × ✘ = ____

f. 478 321 + 0 = ✘ ✘ = ____

g. 327 321 x 1 = ✘ ✘ = ____

h. 289 471 - ✘ = 0 ✘ = ____

i. 2,5 + ✘ = 2,5 ✘ = ____

j. 7,9 x ✘ = 7,9 ✘ = ____

5. If, a = 10, b = 200, and c = 3 000, then complete and calculate the sums.

a. $a + b = b + a$ ____

b. $a \times b = b \times a$ ____

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

d. $(a \times b) \times c = a \times (b \times c)$ ____

e. $(a + b) \times c = a \times c + b \times c$ ____

f. $a - a =$ ____

g. c x 1 = ____

h. $b + 0 =$ ____

Sudoku fun

Solve the Sudoku puzzle.

Each blocks of 9 squares must have all the numbers 1 to 9.

Each horizontal row must have all the numbers 1 to 9.

Each vertical column must have all the numbers 1 to 9.

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

Sign:

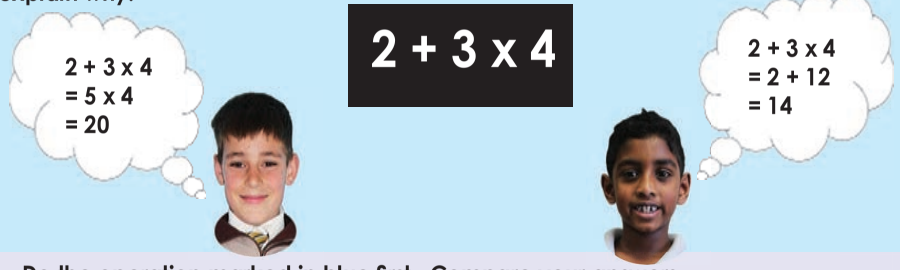
Date:

Term 4

Order of operations

Who has the correct answer? Tick the answer that is correct and explain why.

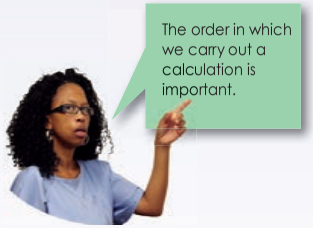
2 + 3 x 4



1. Do the operation marked in blue first. Compare your answers.

22 + 43 – 15 =	15 x 8 + 6 =
22 + 43 – 15 =	15 x 8 + 6 =
24 – 12 ÷ 6 =	2 x 80 ÷ 4 =
24 – 12 ÷ 6 =	2 x 80 ÷ 4 =

2. Follow the BODMAS order of operation to calculate each of the following:



	Stands for:
B	Brackets
O	Orders (powers and square roots)
D	Division and
M	Multiplication (left-to-right)
A	Addition and
S	Subtraction (left-to-right)

a. 7 – 3 + 6 = ____ b. 16 + 29 – 87 = ____ c. 38 – 12 – 15 = ____

d. (20 ÷ 10) + 3 = ____ e. 13 + (7 x 6) = ____ f. (56 ÷ 28) x 5 + 12 = ____

g. 18 – (12 ÷ 3) + 6 = ____ h. (96 ÷ 16) x 2 = ____ i. 27 – (16 ÷ 8) x 11 = ____

j. 49 ÷ (56 ÷ 8) – 4 = ____ k. 18 x (13 – 11) ÷ 6 = ____ l. 35 ÷ 5 + (18 – 16) = ____

m. 29 – 6 x (8 – 7) = ____ n. (30 ÷ 15) + (3 x 7) = ____ o. (17 – 9) ÷ 2 – 3 = ____

p. 34 – (16 x 2) + 7 = ____ q. 14 ÷ (36 – 29) + 11= ____ r. 56 ÷ 2 ÷ (2 x 4) = ____

3. Organize the operations so that each equation is correct. Use each symbol only once.

- ÷ x ( )

a. 18 ☐ 6 ☐ 3 ☐ 5 = 30 b. 24 ☐ 3 ☐ 9 ☐ 2 = 1

c. 15 ☐ 3 ☐ 2 ☐ 4 = 6 d. 21 ☐ 3 ☐ 8 ☐ 1 = 2

4. Organise the numbers so that each equation is correct. Use each number only once per equation.

20 4 5 10

a. (____ - ____) x ____ ÷ ____ = 2 b. (____ - ____) x ____ ÷ ____ = 25

c. (____ - ____) x ____ ÷ ____ = 6 d. (____ - ____) x ____ ÷ ____ = 8

5. Organise the numbers and operations so that each equation is correct. Use each number only once per equation.

6 12 18 36 - + ( ) ÷

a. _____ 15

b. _____ 22

c. _____ 41

d. _____ 45

Sudoku fun

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

Sign:

Date:

Term 4

Basic operations

Quick recall:

900 000 + 1 =	800 000 – 10 000 =	600 000 – 10 =
200 x 1 000 =	8 000 x 100 =	800 000 ÷ 10 000 =
700 000 – 2 000 =	700 000 + 50 =	500 x 300 =
900 000 ÷ 100 000 =	600 000 ÷ 1 000 =	400 000 ÷ 10 =
500 000 + 1 000 =	300 x 3 000 =	800 000 + 900 =

1. Work these out in your head:

a. 18 plus 28 _____

b. 8 multiplied by 9 _____

c. The sum of 26 and 32 _____

d. Divide 890 by 10 _____

e. The product of 25 and 4 _____

f. What is the remainder if 87 is divided by 5? _____

g. What is 30 less than 5 time a thousand? _____

2. Circle the correct answer.

a. Another word for addition is:
i. subtraction
ii. product
iii. plus

b. Minus means the same as:
i. subtraction
ii. product
iii. divide

c. One million has _____ zeros.
i. 4
ii. 5
iii. 6

d. One million is a _____ digit number.
i. 5
ii. 6
iii. 7

e. The product of 20 and 200 is:
i. 220
ii. 4 000
iii. 180

f. When adding or subtracting, if a number ends with a 9 round it off to the next 10, and then take away or add _____.
i. 10
ii. 9
iii. 1

g. 62 r 3. The r stands for:
i. remainder
ii. number
iii. revision

h. Share 900 000 between 2:
i. 900
ii. 450 000
iii. 700 000

3. Say if the following is true or false:

a. All whole numbers that end in 0 or 5 are divisible by 10. _____

b. All even numbers are divisible by 2. _____

c. All odd numbers will have a remainder of 1 when divided by 2. _____

d. All whole numbers that end with 0 or 3 are exactly divisibly by 5. _____

e. All whole numbers are divisible by 1. _____

4. Match column A with column B.

A	B
a. Addition	i. Share
b. Subtraction	ii. Product
c. Multiplication	iii. Increase by
d. Division	iv. Decrease by

5. Identify what the person did wrong, when she or he tried to calculate the following?

a. 489 + 375
= 400 + 300 + 80 + 70 + 9 + 5
= 700 + 150 + 14
= 754.

b. 45 x 36
= (40 + 5) x (30 + 6)
= (40 x 30) + (5 x 6)
= 1 200 + 30
= 1 530

c. 2 840 ÷ 40
= (28 ÷ 4) + (40 ÷ 40)
= 7 + 1
= 8

6. A greengrocer had 410 oranges. He put some of them into 15 boxes containing 12 oranges each. He then put the rest into 15 boxes, each containing the same number of oranges.

a. How many oranges were in each of the 15 boxes? _____

b. How many oranges were left? _____

c. Write a number sentence for the word sum. _____

Number block

Try to fill in the missing numbers.
The missing numbers are integers between 0 and 9.
The numbers in each row add up to totals to the right.
The numbers in each column add up to the totals along the bottom.
The diagonal lines also add up the totals to the right.

			5	18
3	7			16
	2		3	14
		7		22
19	15	17	19	70

More properties of numbers

Quick recall. How fast can you answer the following.

6 x 9 =	5 x 8 =	4 x 6 =	2 x 6 =	8 x 6 =	6 x 7 =
5 x 7 =	2 x 7 =	2 x 8 =	2 x 9 =	8 x 9 =	4 x 9 =
3 x 9 =	7 x 7 =	9 x 8 =	8 x 7 =	9 x 7 =	9 x 6 =
3 x 6 =	5 x 6 =	3 x 7 =	7 x 9 =	4 x 8 =	3 x 8 =
6 x 8 =	5 x 9 =	9 x 9 =	7 x 6 =	4 x 7 =	6 x 6 =

1. Determine if the following expressions are equivalent to each other. Insert an = if they are the same and ≠ if they are not.

a. (2 + 5) x 3 ____ (2 x 3) + (5 x 3)

b. 4 – 2 ____ 2 – 4

c. 2 + 5 x 3 ____ 2 x 3 + 5 x 3

d. 9 x 8 ____ 9 ÷ 8

e. (10 + 2) x 4 ____ 10 + (2 x 4)

f. 8 ÷ 2 + 1 ____ (8 ÷ 2) + 1

g. (8 x 1) + 2 ____ (8 + 1) x 2

h. 5 + 4 x 3 ____ 5 + (4 x 3)

i. 5 x (2 + 4) ____ (5 x 2) + (5 x 4)

j. 72 ÷ 3 x 3 ____ 72 ÷ 1 (3 x 3)

2. Complete the following:

a. 100 x (30 + 50) = (100 x 30) + (100 x 50)

b. 120 x (80 + 20) = _____

c. 150 x (30 + 10) = _____

d. 20 x (60 + 30) = _____

e. 100 x (70 + 60) = _____

f. Make up your own sum like this:

_____

3. Complete the following:

a. (1 000 x 2) + (1 000 x 3) = 1 000 x (2 + 3)

b. 150 x 10 + 150 x 50 = _____

d. 200 x 40 + 200 x 5 = _____

e. 17 x 200 + 17 x 100 = _____

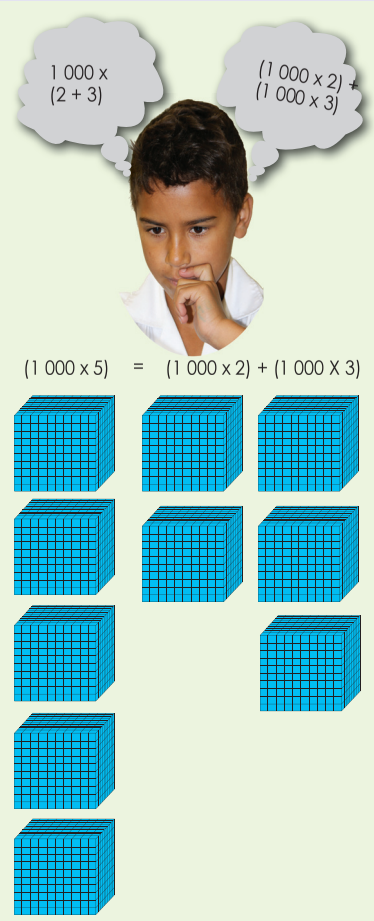
f. 25 x 40 + 25 x 300 = _____

g. Make up more of your own sums like this:

_____

_____

_____



More properties of numbers continued

4. Complete the following:

a. 5 x (12 + 18) = (5 x 12) + (5 x 18)

5 x (30) = 60 + _____

150 = _____

b. 30 x (40 + 50) = (30 x 40) + (30 x 50)

_____ = _____

_____ = _____

c. 70 x (20 + 10) = _____

_____ = _____

_____ = _____

d. (25 + 5) x 4 = _____

_____ = _____

_____ = _____

e. (125 + 25) x 8 = _____

_____ = _____

_____ = _____

5. Identify the rule in each case.

a. 225, 250, 275 _____

b. 950, 900, 850 _____

c. 875, 750, 625 _____

d. 14, 39, 64 _____

6. Look at the patterns on the boards. Describe each one in your own words. Write a number sentence for each pattern.

a.

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

b.

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

c.

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

Solve this Sudoko puzzle

- Each blocks of 9 squares must have all the numbers 1 to 9.
- Each horizontal row must have all the numbers 1 to 9.
- Each vertical column must have all the numbers 1 to 9.

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

Even more properties of numbers

Quick recall. How fast can you answer the following:

6 x 90 = ☐	50 x 80 = ☐	400 x 6 = ☐	20 x 6 = ☐	80 x 60 = ☐	600 x 7 = ☐
500 x 7 = ☐	2 x 700 = ☐	20 x 80 = ☐	20 x 9 = ☐	8 x 900 = ☐	40 x 90 = ☐
30 x 9 = ☐	7 x 70 = ☐	9 x 800 = ☐	8 x 70 = ☐	900 x 7 = ☐	900 x 6 = ☐
3 x 60 = ☐	50 x 60 = ☐	300 x 7 = ☐	7 x 900 = ☐	40 x 80 = ☐	3 x 800 = ☐
60 x 80 = ☐	500 x 9 = ☐	90 x 90 = ☐	700 x 6 = ☐	4 x 700 = ☐	60 x 60 = ☐

1. What is the value of ☐ ?

a. 400 + 500 = ☐ + 400

b. ☐ + 300 = 300 + 200

c. 200 × ☐ = 300 × 200

d. 500 × 600 = ☐ × 600

e. (1 000 + 500) + 2 = 1 000 + (500 + ☐)

f. 3 (400 + 500) = 3 × ☐ + 3 × 500

g. (500 × 10) × 20 = 500 × (10 × ☐)

h. 7 (☐ 600) = 7 × 200 + 7 × 600

i. (300 + 50) × 2 = 300 × ☐ + 50 × 2

2. What is the value of 🍎 ?

a. 🍎 + 2 000 = 2 000 + 8 000 — 🍎 =

b. 10 000 × 8 = 8 × 🍎 — 🍎 =

c. (250 + 750) + 500 = 🍎 + (250 + 750) — 🍎 =

d. (150 × 3) × 10 = 150 × (🍎 × 10) — 🍎 =

e. (740 + 10) × 20 = 740 × 🍎 + 10 × 🍎 — 🍎 =

3. What is the value of a ?

a. a + 725 = 725 + 567 — a =

b. 825 × 100 = 100 × a — a =

c. (350 + 250) + 10 000 = 350 + (250 + a) — a =

d. (10 × 1 200) × 400 = a × (1 200 × 400) — a =

e. (1 250 + 750) × 10 = 1 250 × a + 750 × a — a =

continued

Even more properties of numbers
continued

3. Calculate the following: $a = 1\,000$

a. $a + 50\,000 = 50\,000 + a$

= _____

b. $a \times 20 = 20 \times a$

= _____

c. $(a + 40\,000) + 500 = a + (40\,000 + 500)$

= _____

= _____

d. $(a \times 50) \times 2 = a \times (50 \times 2)$

= _____

= _____

e. $(a + 25) \times 3 = (a \times 3) + (25 \times 3)$

= _____

= _____

f. $a \times 0 = 0 \times a$

= _____

_____

4. Calculate the following: $a = 50$ $b = 100$ $c = 2$

a. $a + b = b + a$

= _____

b. $a \times b = b \times a$

= _____

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

= _____

= _____

d. $(a \times b) \times c = a \times (b \times c)$

= _____

= _____

e. $(a + b) \times c = a \times c + b \times c$

= _____

= _____

f. $a \times b \times c = c \times b \times a$

= _____

= _____

6. Five patterns (each a different colour) are shown in this 10 x table number board. Write a number sentence for each pattern.

	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

Solve this Sudoko puzzle

- Each blocks of 9 squares must have all the numbers 1 to 9.
- Each horizontal row must have all the numbers 1 to 9.
- Each vertical column must have all the numbers 1 to 9.

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

Sign:

Date:

Properties of numbers again

Quick recall. How fast can you answer the following:

40 x 50 =		400 x 90 =		5 000 x 6 =		70 x 60 =		900 x 60 =	
600 x 80 =		11 x 400 =		200 x 90 =		20 x 30 =		80 x 500 =	
20 x 120 =		80 x 60 =		40 x 800 =		80 x 110 =		800 x 70 =	
90 x 80 =		700 x 120 =		2 000 x 7 =		80 x 900 =		400 x 40 =	
50 x 700 =		400 x 80 =		900 x 120 =		500 x 60 =		70 x 700 =	

1. What is the value of ✗ ?

a. 8 000 + 3 000 = ✗ + 8 000 → ✗ =

b. 4 000 × ✗ = 9 00 × 4 000 → ✗ =

c. (1 000 + 7 000) + 50 = 1 000 + (7 000 + ✗) → ✗ =

d. (4 000 × 200) × 100 = 4 000 × (200 × ✗) → ✗ =

e. (9 000 + 500) × 10 = 9 000 × ✗ + 500 × ✗ → ✗ =

2. Calculate the following: a = 2000

a. a + 100 000 = 100 000 + a

=

b. a × 50 = 50 × a

=

c. (a + 90 000) + 100 000 = a + (90 000 + 100 000)

=

=

d. (a × 60) × 3 = a × (60 × 3)

=

=

e. (a + 40) × 5 = (a × 5) + (40 × 5)

=

=

3. Calculate the following: a = 500 b = 300 c = 20

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)

=

=

=

4. Calculate the following: x = 700 y = 100 z = 40

a. x + y = y + x

=

=

=

b. y × z = z × y

=

=

=

c. (x + y) + z = x + (y + z)

=

=

=

d. (x × y) × z = x × (y × z)

=

=

=

e. (x + y) × z = (x × z) + (y × z)

=

=

=

Solve the Sudoko puzzle

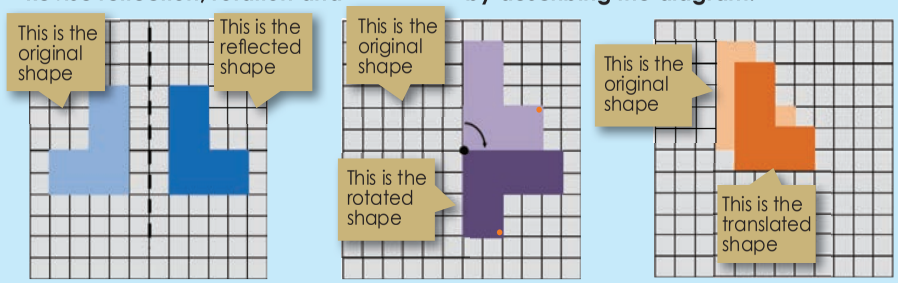
5	4		2		9			1
			5					4
		7				9		
8				3			6	7
			6		5			
9	3			1				2
		1				6		
2					6			
3			1		7		4	9

Sign:

Date:

Transformations: reflection, rotation and translation

Revise reflection, rotation and translation by describing the diagram.

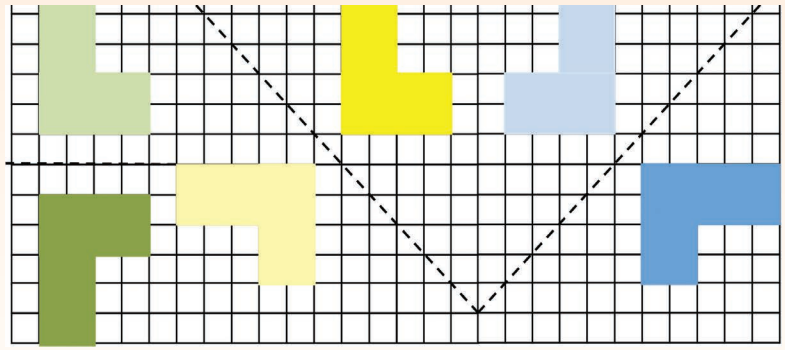


Words that might help you to describe the transformations.

mirror, shape, original shape, line of reflection, and vertical	rotated or turned, clockwise, anti-clockwise, point of rotation, and distance	shape, slide, one place to another, no turning, left, right, up, down,

1. In the first example above, the shape is reflected over a vertical line of reflection. Describe the lines of reflection in the following diagram.

a. b. c.



a. _____

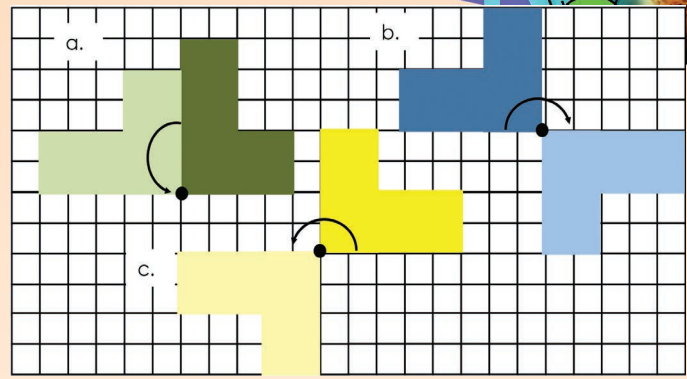
b. _____

c. _____

d. Describe the **reflection** between the dark yellow and the light blue shape. Draw the line of reflection.

_____

2. The blue shape in second example in the introduction was rotated 90 ° clockwise. Describe the following rotations:



a. _____

b. _____

c. _____

3. The orange shape in the third example in the introduction is translated one block to the left and one block up. Look at the diagram in question 2 and describe the translation of the following:

a. The dark blue shape to the light green shape.

_____

b. Translate the light blue shape 4 blocks down and 3 blocks to the left. Make a drawing.

4. Look at the diagram in question 2 and describe the following:

a. The light green shape was reflected and translated to the dark yellow shape.

_____

b. The dark yellow shape was reflected and translated to the light blue shape.

_____

Pentominoes and other shapes

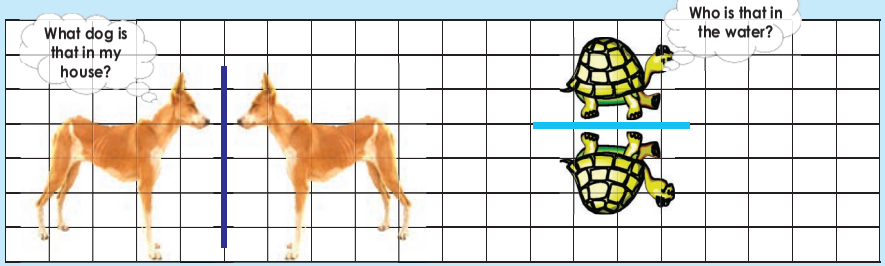
a. Can you work out why the set of twelve shapes are called called pentominoes.
b. Why can I not use the diagram on the right to describe translation, reflection and rotation?

Sight:

Date:

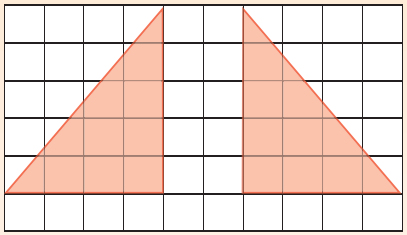
Reflection: flip, turn and slide

What can you tell about these animals? Make up a short story.

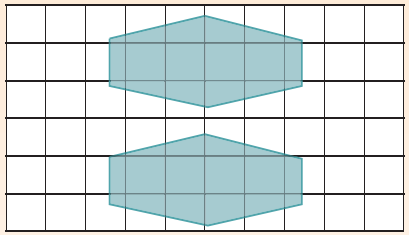


1. Draw the reflection line for each pair.

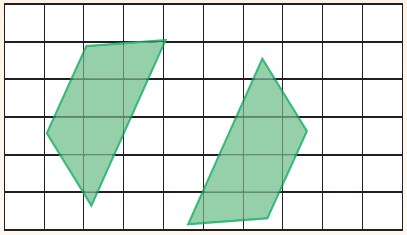
a.



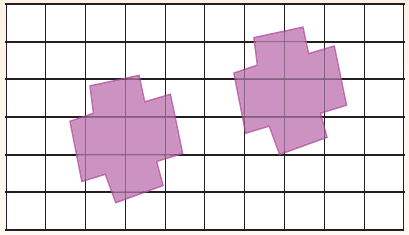
b.



c.

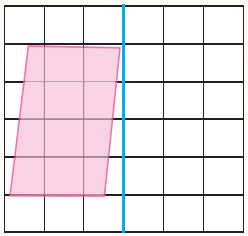


d.

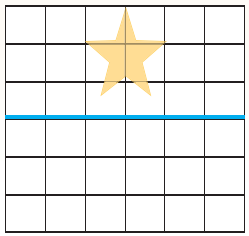


2. Draw the reflection image for each.

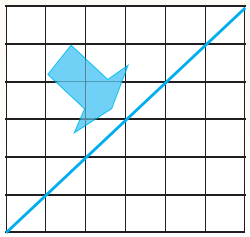
a.



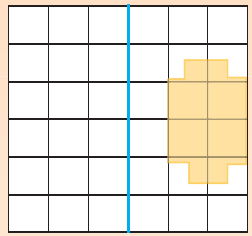
b.



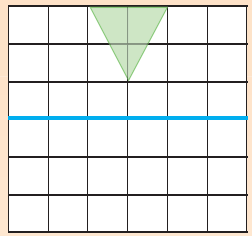
c.



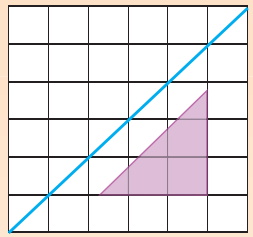
d.



e.

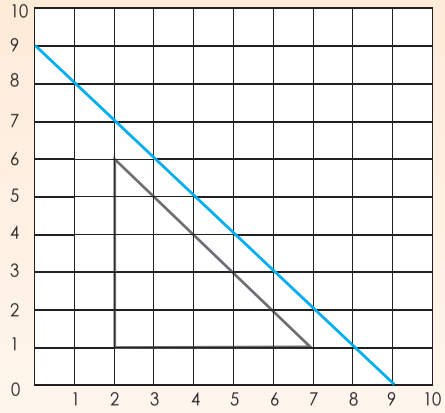


f.

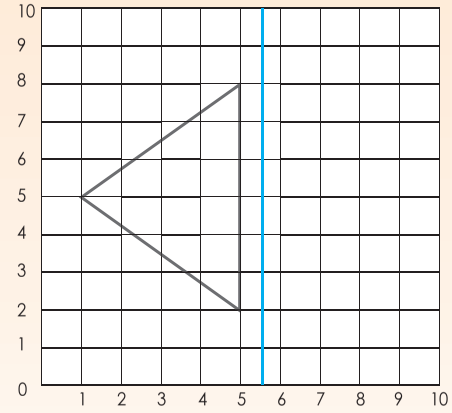


3. Draw the reflection of each figure, then write the coordinate of each new figure.

a. Triangle: (2,6); (2,1); (7,1)

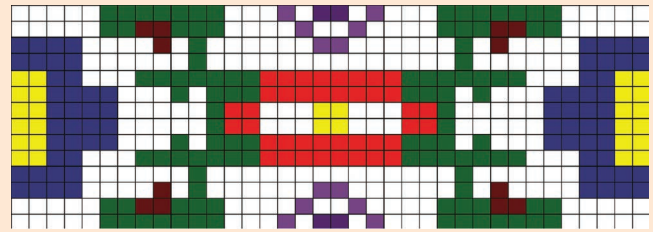


b. Triangle: (5,8); (1,5); (5,2)



An art pattern

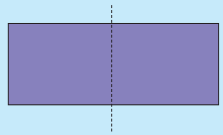
Identify the reflections in this pattern.



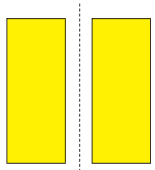
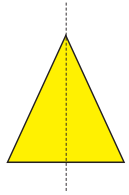
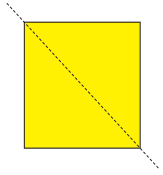
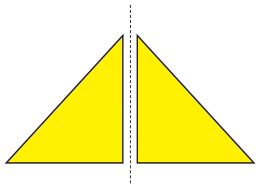
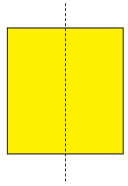
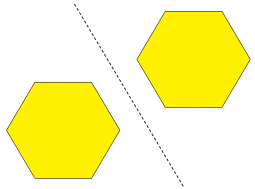
Term 4

Reflection

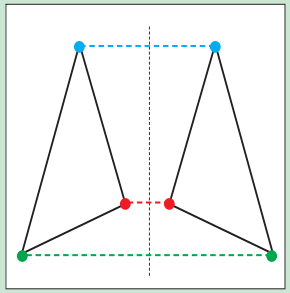
Why do we say the line of reflection is like looking in a mirror?



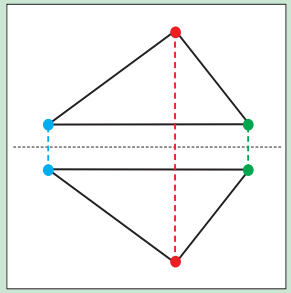
1. Look at these images. Label the "line of reflection" or the "line of symmetry".

a. 	b. 	c. 
d. 	e. 	f. 

2. We can have a horizontal reflection or a vertical reflection. Look at the examples and then answer the questions.

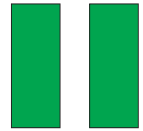
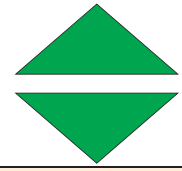
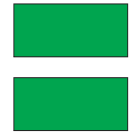


Horizontal reflection
(flips across)



Vertical reflection
(flips up/down)

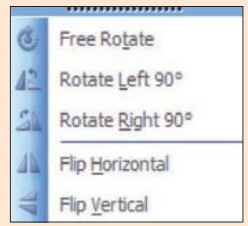
i. Draw the line of reflection.
ii. Say if the refection is horizontal or vertical.

a. _____ 	b. _____ 	c. _____ 
d. _____ 	e. _____ 	f. _____ 

3. Draw four figures, two showinag horizontal reflection and two showing vertical reflection.

a.	b.
d.	e.

My computer and flip



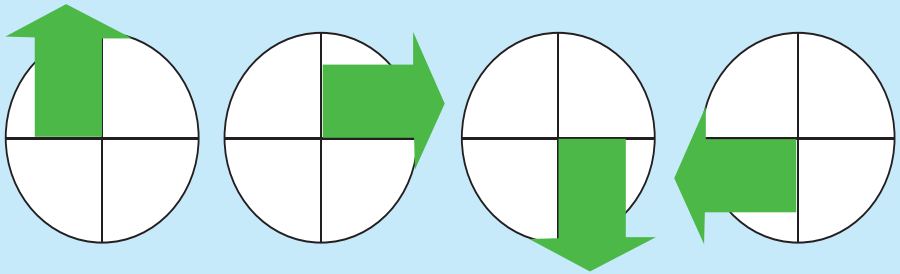
You are busy drawing a picture with a computer.
You want to make a mirror image of your picture.
You look at this menu on the computer.
Explain what the bottom two instructions mean.
You can make a drawing while you explain it.

Sign:
Date:

Term 4

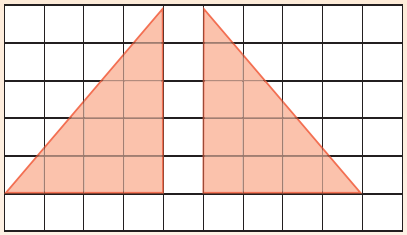
138a Rotation: turn

What happens to the arrow? Make use of fractions to explain your answer.

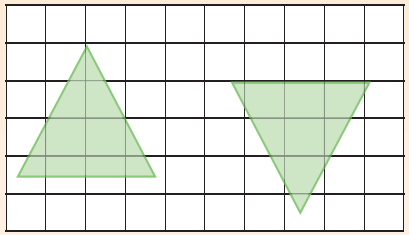


1. Say if it is a half or quarter turn of each image.

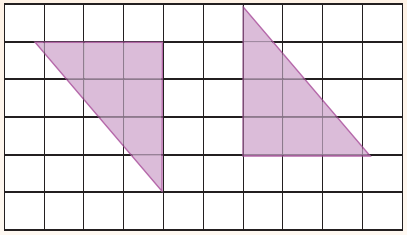
a.



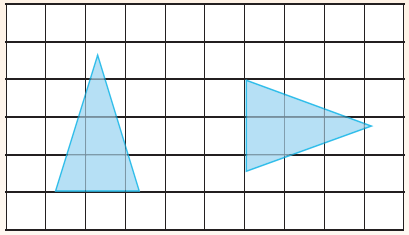
b.



c.

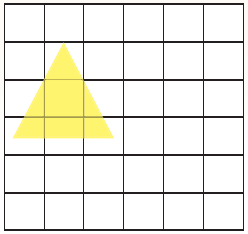


d.

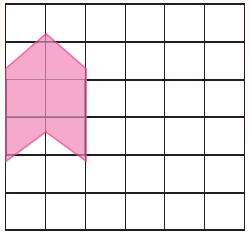


2. Draw a $\frac{1}{2}$ turn for each image.

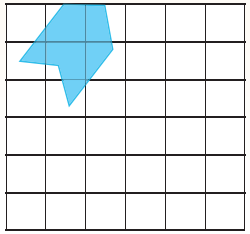
a.



b.

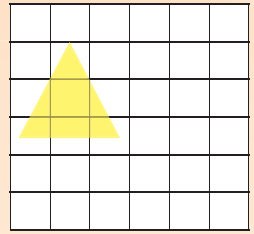


c.

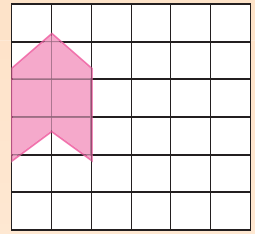


3. Draw a $\frac{1}{4}$ turn for each image.

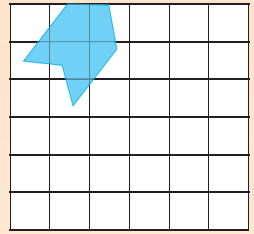
a.



b.

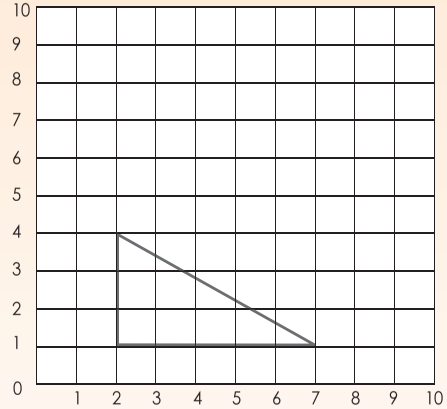


c.



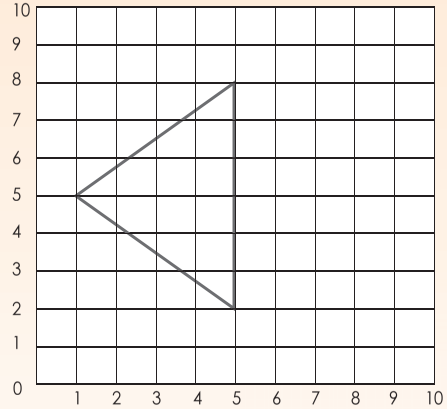
4a. Draw a $\frac{1}{2}$ turn image of the figure:
Triangle: (2,6); (2,1); (7,1)

4b. Write down the new coordinates.



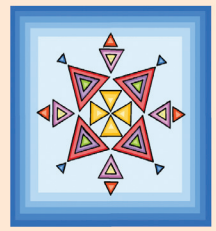
4c. Draw a $\frac{1}{4}$ turn of the figure:
Triangle: (5,8); (1,5); (5,2)

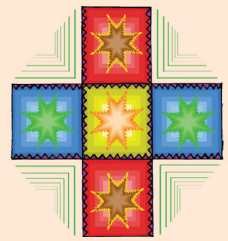
4d. Write down the new coordinates.



Geometric patterns

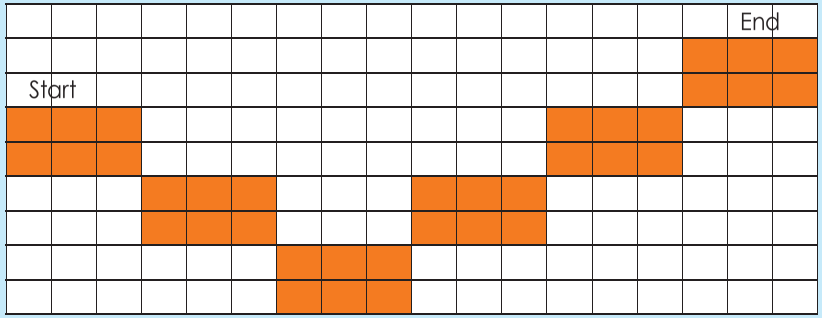
Describe each rotation.



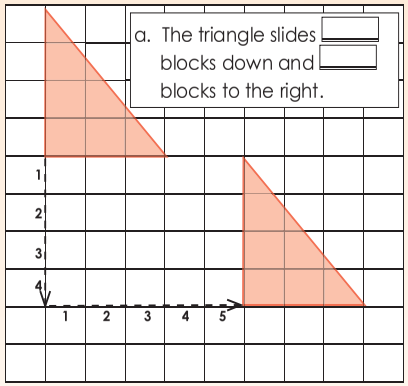


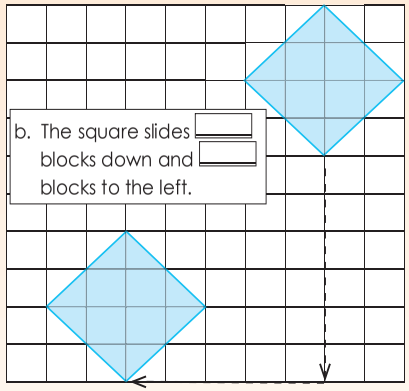
Translation: slide

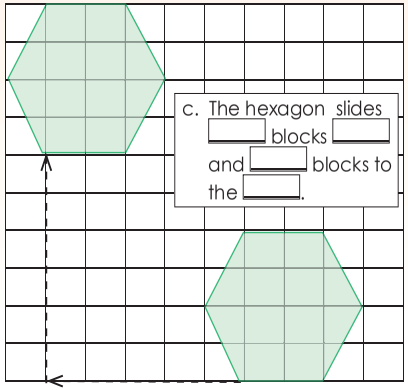
Describe what the rectangle does on this grid.

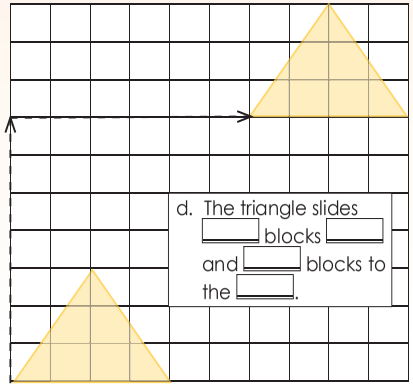


1. Complete the sentences.



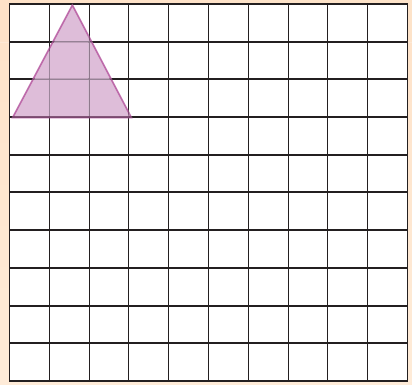




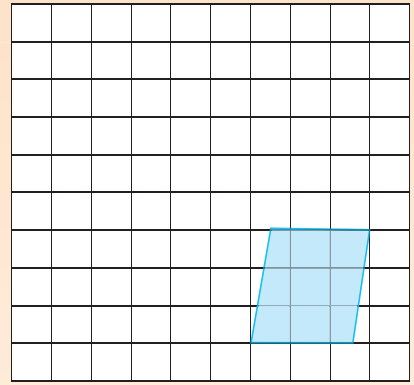


2. Draw the slide image of each figure.

a. 2 down, 4 right

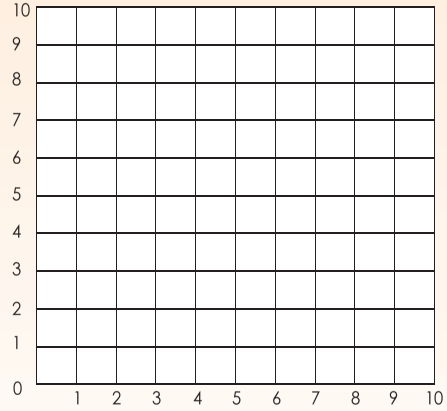


b. 5 left, 2 up

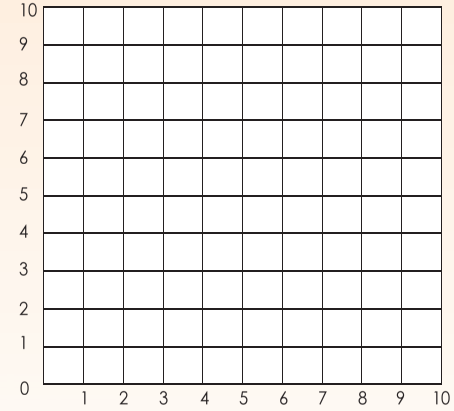


3. Plot the given points, then connect the points in order. Draw each slide, then give the coordinates of the slide image.

a. (2,4); (2,2); (4,2)
Slide 4 right, 4 up



b. (9,9); (6,8); (6,5); (9,5)
Slide 3 down and 2 left

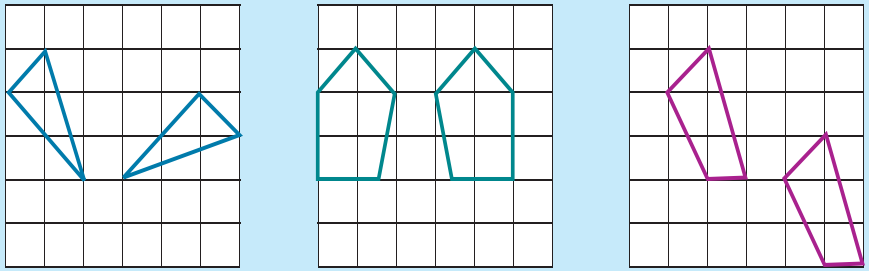


Sign:

Date:

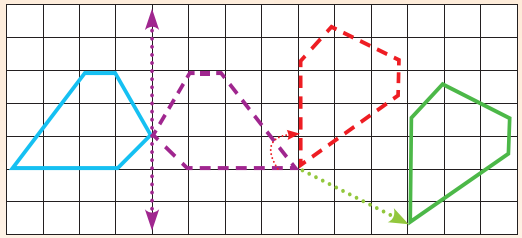
Flip, turn and slide

Say if the shape has been flipped, turned or slid.



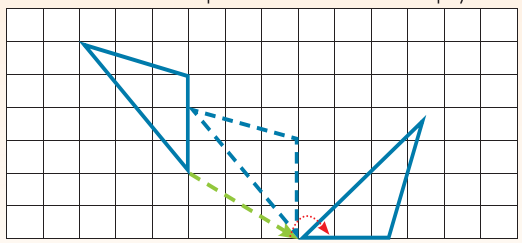
1. Here is a combination of motions. Describe it.

a. Use the dotted shapes, arrows and colours to help you.

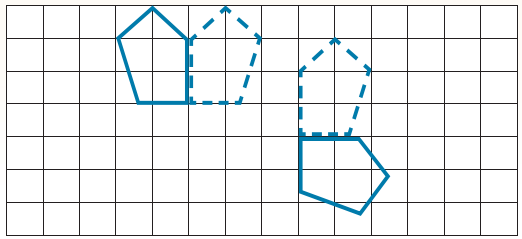


The first move is a _____,
then it is a _____,
and lastly it is a _____

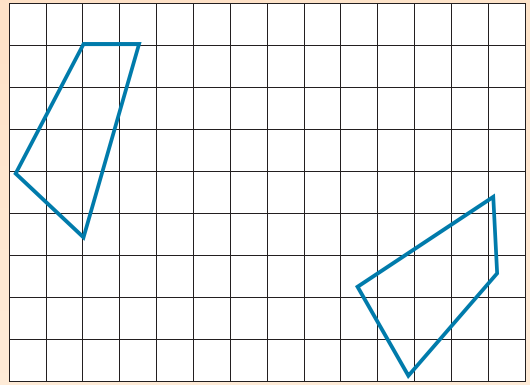
b. Use the dotted shapes and arrows to help you.



c. Use the dotted shapes to help you. Draw your own arrows to show the motion.

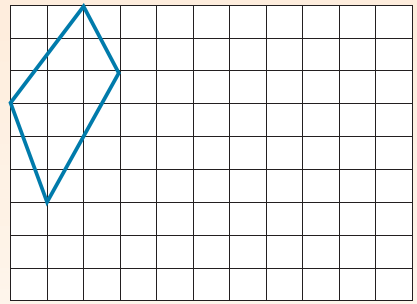


d. Draw your own dotted shapes and arrows to help you to describe the motion.

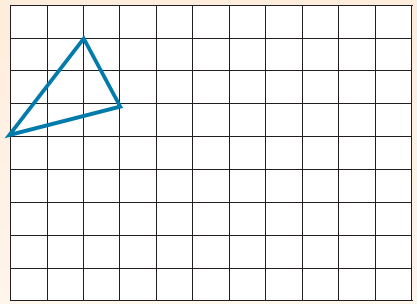


2. Flip, slide and turn the shapes.

a.

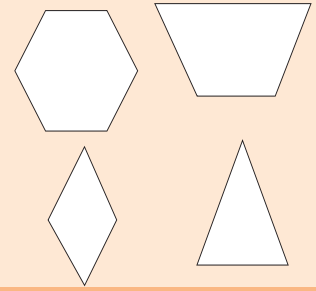


b.



I am an architect.

Trace these blocks on cardboard and cut them out.



Play in pairs.

Each player chooses a shape and traces around it.

Player 2 turns away, and then player 1 flips, slides or turns his or her shape and traces it again.

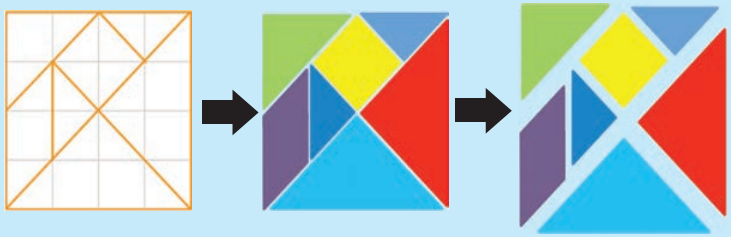
Player 2 now tries to identify the movement of the traced shape.

If she or he identifies the movement correctly he or she gets 1 point.

Repeat with player 1 turning away.

The first person to get 5 points is the winner.

Design your own tangram.



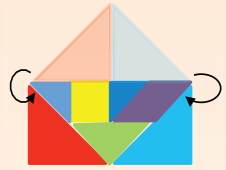
The three types of transformation we will use in this worksheet are: Translation, Reflection, and rotation

1. Before your answer the questions do it practically with your tangram pieces.

a. Describe the **transformations** used to create a rectangle from a square.

Step 1

Step 2



b. Describe the **transformations** used to create a parallelogram from a trapezium.

Step 1

Step 2

Step 3

c. Describe the **transformations** used to create a trapezium from a triangle

Step 1

Step 2

Step 3

d. Describe the **transformations** used to create a triangle from a square.

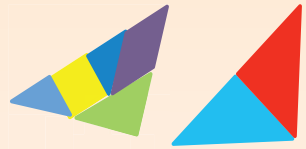
Step 1

Step 2

Step 3

e. Describe the **transformation** used to create a square using a triangle.

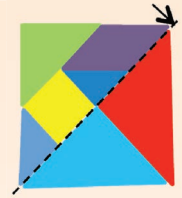
Step 1



Step 2

Step 3

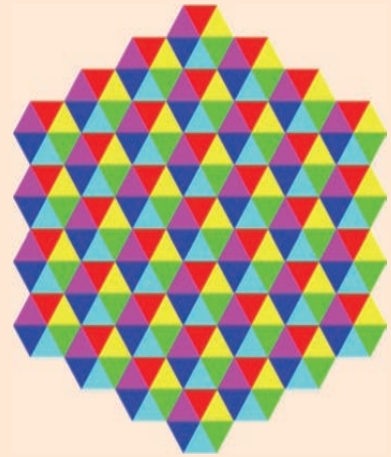
Line of reflection



f. Compare the trapezium in b. with the trapezium in c.

Pentominoes and other shapes

Describe this pattern using transformations below. Draw a picture to illustrate each transformation.



Rotation
Translations
Reflection

Sign:

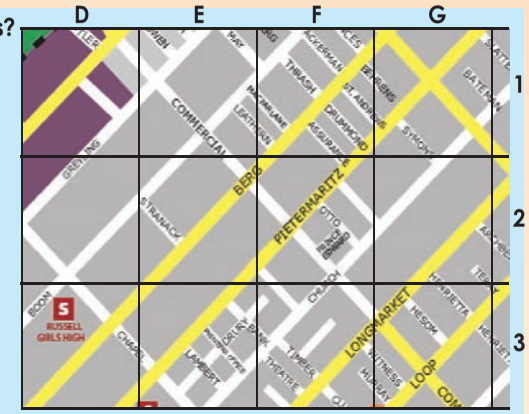
Date:

140 Position on a map grid

Did you ever see something like this?

What is it?

How do you use it?



1. How quick can you do this? Colour in the coordinates. What does it spell?

	A	B	C	D	E	F	G	H	I	J	K
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

a. A1, A2, A3, A4, B1, C1, C2, C3, C4, D1, E1, E2, E3 and E4.

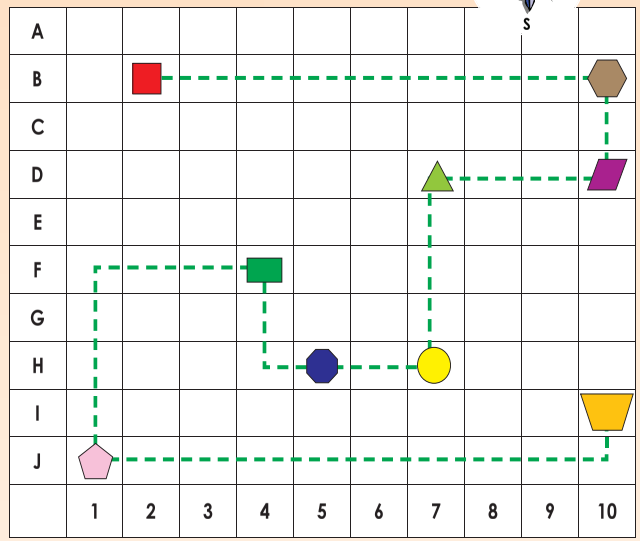
b. H1, H2, H3, H4, I1, J1, K1, K2, K3, K4, I3 and J3.

c. A6, B6, C6, B7, B8, B9, and B10.

d. E6, E7, E8, E9, E10, F8, G6, G7, G8, G9, and G10.

e. I6, I7, I8, J6, K6, J8, K8, K9, I10, J10 en K10.

2. Where are the shapes?



a. square B2

b. rectangle ____

c. triangle ____

d. circle ____

e. pentagon ____

f. hexagon ____

g. octagon ____

h. trapezium ____

i. parallelogram ____

3. Describe the route above.

Start at the red square move 8 grid blocks east,

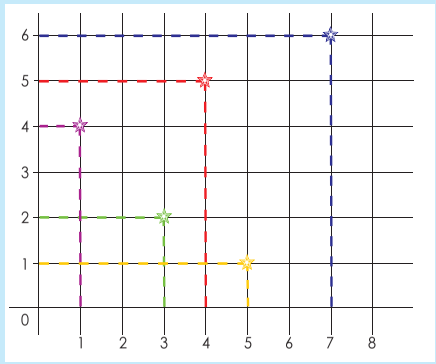
Play battleships ...

How to play using cut-out 7:

- First decide where to place your own fleet of ships within your grid. A fleet is made up of the ships shown to the right of the grid. Each ship is drawn vertically or horizontally (not diagonally). Your ships cannot occupy the same square (i.e. they cannot overlap).
- To place a ship, check how many boxes are covered by the ship (shown to the right of your grid) and then write the first letter of the name of the ship in the boxes it covers. For example, a Cruiser covers three boxes so you would pick any three adjacent boxes and put the letter C in each box. Keep your fleet location secret from your opponent! When each player has marked their fleet on their grid, begin play.
- Take turns to "shoot" at your opponents' fleet by calling out the number of a certain box by its grid location (e.g. "B4" or "D1"). Your opponent must say whether the shot is a "miss" or a "hit", and, if it is a "hit", what type of ship it is. If you hit your opponent's ship it is sunk. You can keep track of what you have shot on your lower grid, and the ships you have sunk by crossing off the ships at the bottom right of your card.
- Play continues until one player wins by successfully sinking the whole of the other player's fleet.

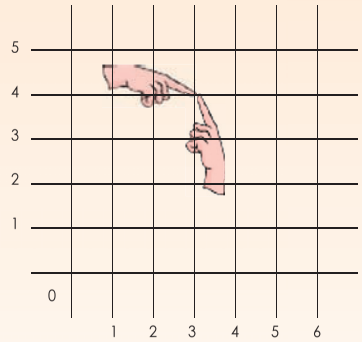
Dots and grids

Where is the star?

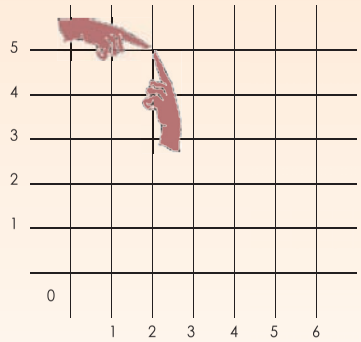


1. Make a dot on:

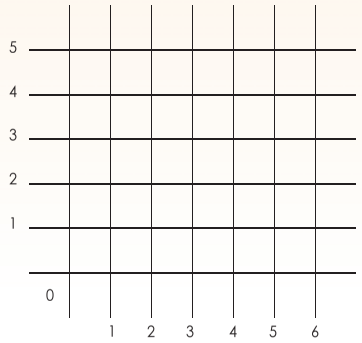
a. 3 and 4



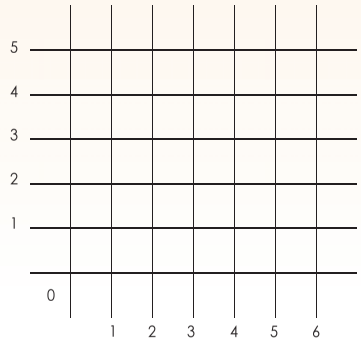
b. 2 and 5



c. 1 and 3

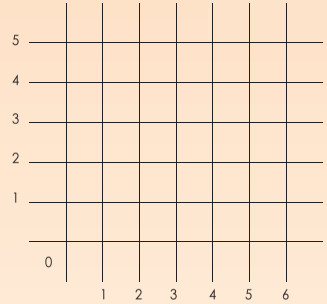


d. 4 and 2

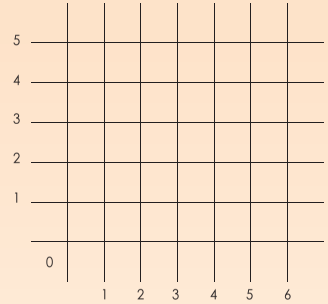


2. Make dots on:

a. 2 and 1, 4 and 3, 1 and 4



b. 1 and 2, 1 and 5, 5 and 2, 5 and 5



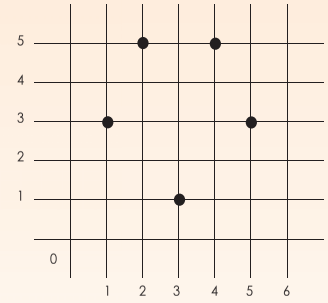
c. Combine the dots. What shape does it form?

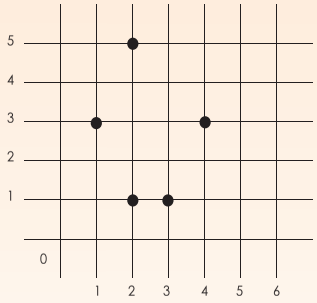
_____

d. Combine the dots. What shape does it form?

_____

3. Write down the co-ordinates for the shapes below and join the dots to form the shape.





3 and 1 or (3, 1)

_____ and _____ or (_____, _____)

_____ and _____ or (_____, _____)

_____ and _____ or (_____, _____)

_____ and _____ or (_____, _____)

_____ and _____ or (_____, _____)

_____ and _____ or (_____, _____)

_____ and _____ or (_____, _____)

_____ and _____ or (_____, _____)

_____ and _____ or (_____, _____)

_____ and _____ or (_____, _____)

Be an artist

Draw your own grid.

Make dots on it.

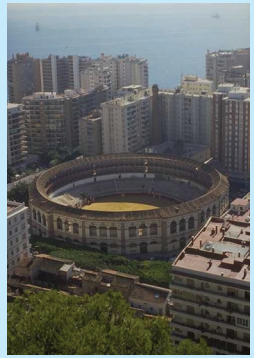
Join the dots to form a picture.

Write down the co-ordinates.

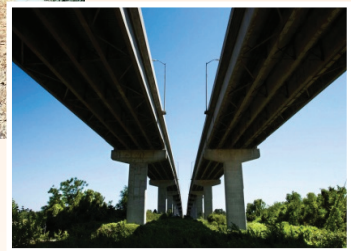
Sign:

Date:

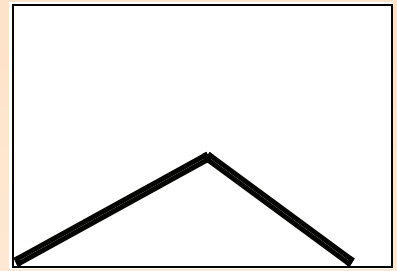
From where we are you looking at these buildings.



1. What do you notice when you look at these pictures?



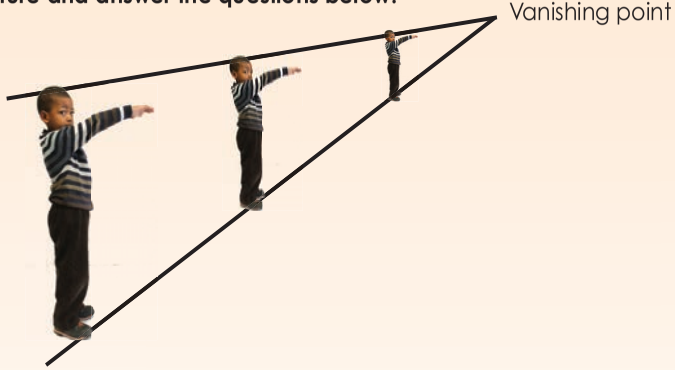
2. What do you notice when you look at the photograph and the drawing?



3. Find more photographs in magazines like the ones in question 2.

4. Put the pictures in the correct order, from furthest to closest.

5. Look at the picture and answer the questions below.



a. What happens to your view of the boy?

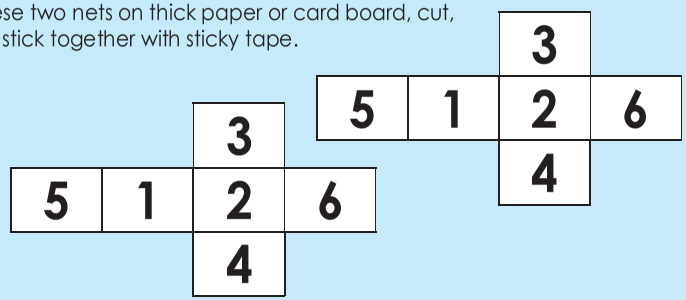
b. What do you think vanishing point means?

6. Use Cut-out 8. Cut out the dogs.
Draw perspective lines and put the dogs between the lines as they would look if they were getting further away.

Outcomes of two dice

Draw and make.

Draw these two nets on thick paper or card board, cut, fold and stick together with sticky tape.



1. **Roll one die 100 times. Make use of tallies to record your answers.**

Number on the die	Times landed on the number.
1	
2	
3	
4	
5	
6	

2. **Compare your answers with those of your friend. Are they the same? Why?**

3. **Rolling a 3 on a die has a probability of 1 out of 6. We can write it as $\frac{1}{6}$.**
   a. What is the probability of rolling a 1? _____
   b. What is the probability of rolling a 2? _____
   c. What is the probability of rolling a 4? _____
   d. What is the probability of rolling a 5? _____
   e. What is the probability of rolling a 6? _____

4. **Roll two dice 100 times. Make use of tallies to record your answers.**

Number on the dice	Times landed on the number.
1	
2	
3	
4	
5	
6	

5. **What will happen if you use 3 dice? What is the probability of rolling a:**

   1? _____, 2? _____, 3? _____, 4? _____, 5? _____, 6? _____

6. a. If you use a dice like this and all the numbers are multiples of 100, what will the other numbers be?

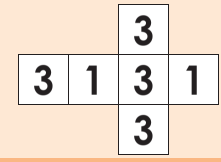
   _____

   b. What would the probability be to land on each number?

   _____

Dice fun

If you a dice like this what is the probability of rolling a 1 or a 3?



Sign:

Date:

Outcomes of two cards

You need to prepare.
You need to make a set of 10 cards using card board or paper. Each card should be 4 cm by 4 cm.

You need an empty bag.

1	2	3	4	5
6	7	8	9	10

Cut out the ten cards and place it in the bag or box.

1. Draw a card from the bag and record it below. Place the card back into the bag. Do this 100 times.

Number on the card	Times the number was drawn
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

2. Compare your answers with those of your friend. Are they the same? Why?

3. Drawing a number 5 card from the bag has a probability of 1 out of 10. We can write it as $\frac{1}{10}$.

What is the probability drawing card 1? _____, card 2? _____, card 3? _____, card 4? _____, card 6? _____, card 7? _____, card 8? _____, card 9? _____ and card 10? _____

4. Draw two cards from the bag and record it below. Place the cards back into the bag. Do this 100 times.

Number on the card	Times the number was drawn
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

What is the probability drawing card 1? _____, card 2? _____, card 3? _____, card 4? _____, card 5? _____, card 6? _____, card 7? _____, card 8? _____, card 9? _____ and card 10? _____

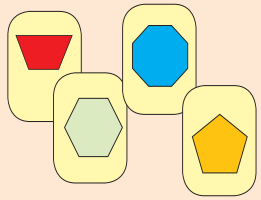
5. What will happen if I draw 3 cards at a time? What is the probability of drawing:

1? _____, 2? _____, 3? _____,

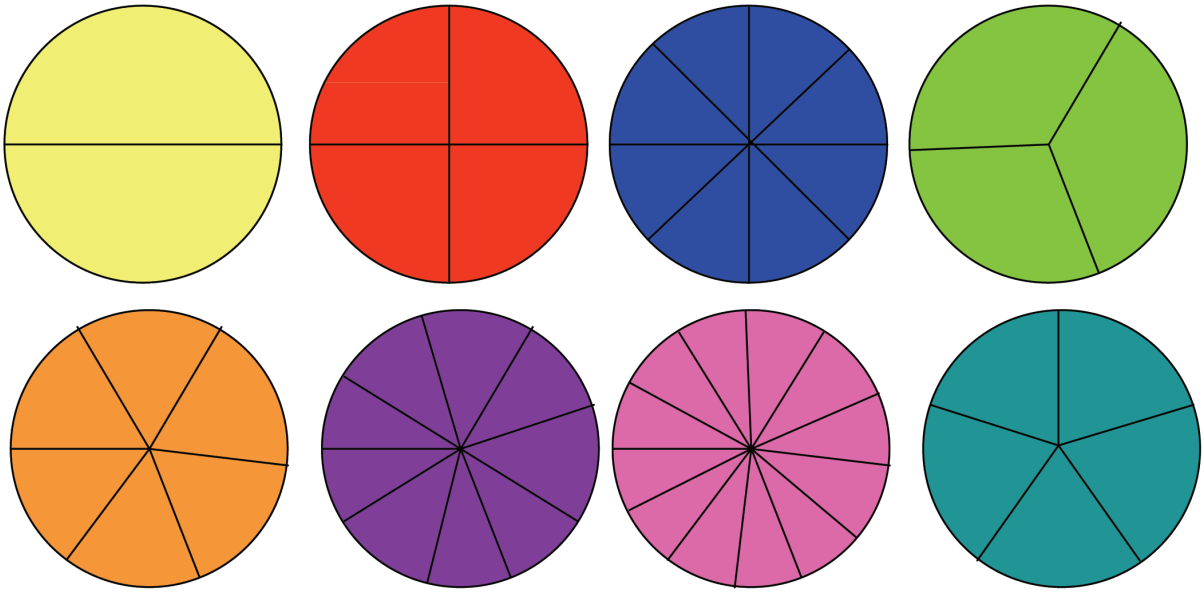
4? _____, 5? _____, 6? _____

Card fun

Do a similar activity but use the following cards.



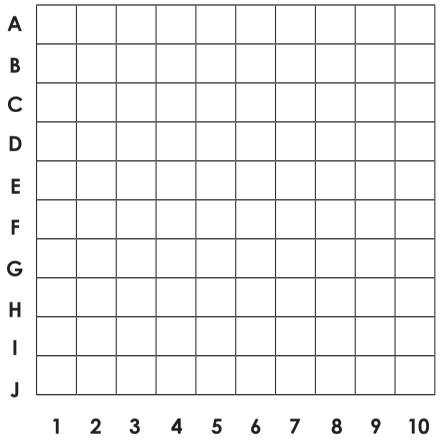
Term 4



Operation Snap

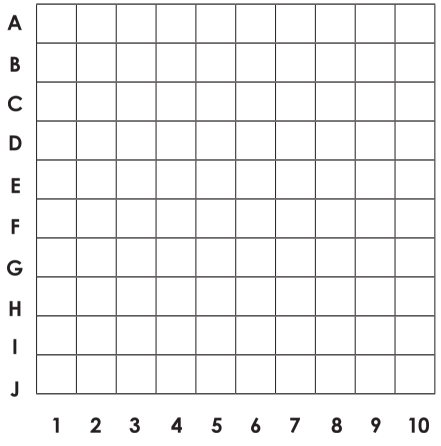
increase + - x ÷	subtract + - x ÷	multiply + - x ÷	minus + - x ÷	sum + - x ÷
times + - x ÷	add + - x ÷	divided by + - x ÷	decrease + - x ÷	product + - x ÷
share equally + - x ÷	take away + - x ÷	and + - x ÷	groups of + - x ÷	plus + - x ÷
total + - x ÷	divide + - x ÷	lots of + - x ÷	difference between + - x ÷	divisible by + - x ÷

My Ships

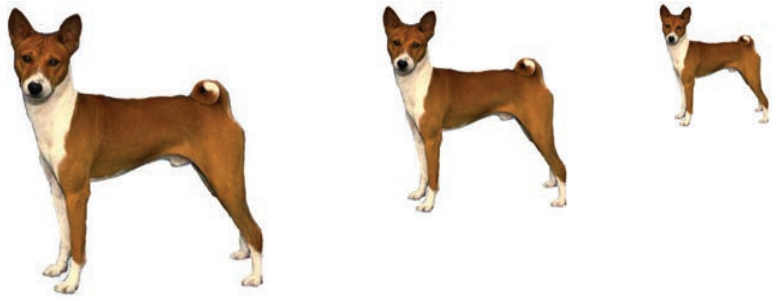


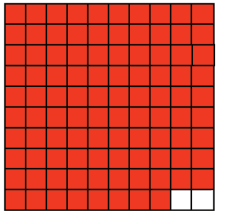
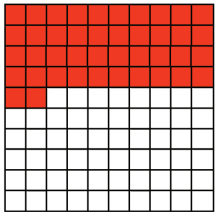
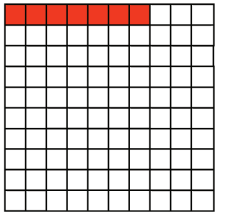
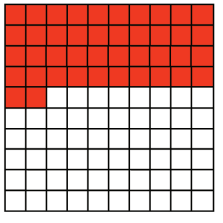
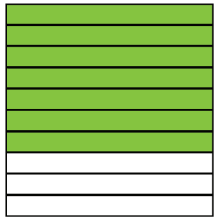
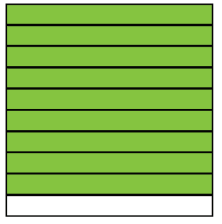
A A A A A	Aircraft Carrier (1)
B B B B	Battleship (1)
C C C	Cruiser (1)
D D D D	Destroyers (2)
S S	Submarines (2)

Their Ships



A A A A A	Aircraft Carrier (1)
B B B B	Battleship (1)
C C C	Cruiser (1)
D D D D	Destroyers (2)
S S	Submarines (2)



	0,98		0,42
	0,07		0,42
	0,7		0,9
	0,1		0,5