



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE/
NASIONALE
SENIOR SERTIFIKAAT**

GRADE/GRAAD 11

MATHEMATICS P1/WISKUNDE V1

NOVEMBER 2017

MARKING GUIDELINES/NASIENRIGLYNE

MARKS/PUNTE: 150

**These marking guidelines consist of 16 pages.
Hierdie nasienriglyne bestaan uit 16 bladsye.**

NOTE:

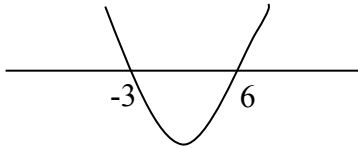
- If a candidate answered a question TWICE, mark only the FIRST attempt.
- If a candidate crossed out an answer and did not redo it, mark the crossed-out answer.
- Consistent accuracy applies to ALL aspects of the marking guidelines.
- Assuming values/answers in order to solve a problem is unacceptable.

LET WEL:

- As 'n kandidaat 'n vraag TWEE keer beantwoord het, sien slegs die EERSTE poging na.
- As 'n kandidaat 'n antwoord deurgehaal en nie oorgedoen het nie, sien die deurgehaalde antwoord na.
- Volgehoue akkuraatheid is op ALLE aspekte van die nasienriglyne van toepassing.
- Dit is onaanvaarbaar om waardes/antwoorde te veronderstel om 'n probleem op te los.

QUESTION/VRAAG 1

1.1.1	$(2x - 3)(x + 7) = 0$ $x = \frac{3}{2} \quad \text{or} \quad x = -7$	$\checkmark x = \frac{3}{2}$ $\checkmark x = -7$	(2)
1.1.2	$7x^2 + 3x - 2 = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $= \frac{-(3) \pm \sqrt{(3)^2 - 4(7)(-2)}}{2(7)}$ $= \frac{-3 \pm \sqrt{65}}{14}$ $x = -0,79 \quad \text{or} \quad x = 0,36$	$\checkmark \text{substitution/vervanging}$ $\checkmark \text{answer/antwoord}$ $\checkmark \text{answer/antwoord}$	(3)
1.1.3	$\sqrt{x-1} + 3 = x$ $\sqrt{x-1} = x - 3$ $(\sqrt{x-1})^2 = (x-3)^2$ $x-1 = x^2 - 6x + 9$ $x^2 - 7x + 10 = 0$ $(x-2)(x-5) = 0$ $x \neq 2 \quad \text{or/of} \quad x = 5$	$\checkmark \text{isolate/soleer } \sqrt{\text{ sign/teken}}$ $\checkmark \text{squaring/kwadr both sides/ beide kante}$ $\checkmark \text{std form/stand vorm}$ $\checkmark \text{factors/fakt}$ $\checkmark x = 5$ $\checkmark x \neq 2$	(6)

1.1.4	$x^2 > 3(x + 6)$ $x^2 - 3x - 18 > 0$ $(x - 6)(x + 3) > 0$  $x < -3 \text{ or } x > 6 \text{ OR/OF } x \in (-\infty ; -3) \cup (6 ; \infty)$	<ul style="list-style-type: none"> ✓ std form/vorm ✓ factors/fakt ✓ $x < -3$ OR/OF $(-\infty ; -3)$ ✓ $x > 6$ OR/OF $(6 ; \infty)$ <p style="text-align: right;">(4)</p>
1.2	$x = 1 - 2y$ $(1 - 2y)^2 + y^2 + 3y(1 - 2y) + y = 0$ $1 - 4y + 4y^2 + y^2 + 3y - 6y^2 + y = 0$ $1 - y^2 = 0$ $(1 - y)(1 + y) = 0$ $y = 1 \text{ or } y = -1$ $x = -1 \text{ or } x = 3$ <p>OR/OF</p> $y = \frac{1 - x}{2}$ $x^2 + \left(\frac{1 - x}{2}\right)^2 + 3x\left(\frac{1 - x}{2}\right) + \frac{1 - x}{2} = 0$ $x^2 + \frac{1 - 2x + x^2}{4} + \frac{3x - 3x^2}{2} + \frac{1 - x}{2} = 0$ $4x^2 + 1 - 2x + x^2 + 6x - 6x^2 + 2 - 2x = 0$ $-x^2 + 2x + 3 = 0$ $x^2 - 2x - 3 = 0$ $(x - 3)(x + 1) = 0$ $x = 3 \text{ or } x = -1$ $y = -1 \text{ or } y = 1$	<ul style="list-style-type: none"> ✓ $x = 1 - 2y$ ✓ substitution/verv ✓ std form/stand vorm ✓ factors/fakt ✓ y-values/wrdes ✓ x-values/wrdes ✓ $y = \frac{1 - x}{2}$ ✓ substitution/verv ✓ std form/stand vorm ✓ factors/fakt ✓ x-values/wrdes ✓ y-values/wrdes <p style="text-align: right;">(6)</p>
1.3	$3 - 12k^2 = 0$ $1 - 4k^2 = 0$ $k^2 = \frac{1}{4}$ $k = \pm \frac{1}{2}$	<ul style="list-style-type: none"> ✓ $3 - 12k^2 = 0$ ✓ $k^2 = \frac{1}{4}$ ✓ $k = \pm \frac{1}{2}$ <p style="text-align: right;">(3) [24]</p>

QUESTION/VRAAG 2

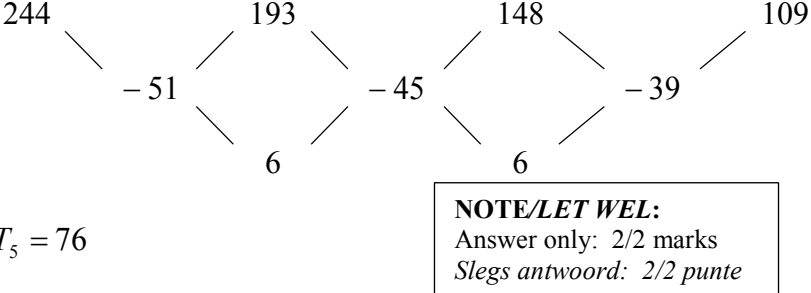
<p>2.1</p>	$\frac{3^{m+4} - 6.3^{m+1}}{7.3^{m+2}}$ $= \frac{3^{m+1}(3^3 - 6)}{7.3^{m+1}.3}$ $= \frac{3^3 - 6}{7.3}$ $= \frac{21}{21}$ $= 1$ <p>OR/OF</p> $\frac{3^{m+4} - 6.3^{m+1}}{7.3^{m+2}}$ $= \frac{3^m(3^4 - 6.3)}{3^m(7.3^2)}$ $= \frac{3^m.63}{3^m.63}$ $= 1$	<p>✓ common factor/<i>gemene fakt</i> ✓ $3^3 - 6$</p> <p>✓ simplification/<i>vereenv.</i></p> <p>✓ answer/<i>antw.</i></p> <p>✓ common factor /<i>gemene fakt</i> ✓ $(3^4 - 6.3)$</p> <p>✓ simplification/<i>vereenv.</i> ✓ answer/<i>antw.</i></p> <p style="text-align: right;">(4)</p>
<p>2.2.1</p>	$x^{\frac{-3}{4}} = 8$ $x = (2^3)^{\frac{4}{-3}}$ $x = 2^{-4}$ $x = \frac{1}{16}$ <p>OR/OF</p> $x^{\frac{3}{4}} = 8$ $\sqrt[4]{x^{-3}} = 2^3$ $x^{-3} = 2^{12} \quad (4096)$ $x^{-1} = 2^4 \quad (16)$ $x = 2^{-4}$ $x = \frac{1}{16}$	<p>✓ change to prime base/<i>verander na priembasis</i> ✓ rational exponent/<i>rasionele eksp</i> ✓ answer in any form/<i>antw. in enige vorm</i></p> <p style="text-align: right;">(3)</p> <p>✓ use of surds/<i>gebr van wortls</i> ✓ $x^{-1} = 2^4$</p> <p>✓ answer in any form/<i>antw. in enige vorm</i></p> <p style="text-align: right;">(3)</p>

2.2.2	$2^{2x} - 2^x = 2$ $2^{2x} - 2^x - 2 = 0$ $(2^x + 1)(2^x - 2) = 0$ $2^x \neq -1 \quad \text{or} \quad 2^x = 2$ $x = 1$	<p>NOTE/ LET WEL: If answer only of $x = 1$: award 1/4 marks <i>Slegs antwoord van $x = 1$: gee 1/4 punte</i></p> <p>If the learner writes $2x - x = 1$ Breakdown: 0/4 marks <i>As die leerder $2x - x = 1$ skryf</i> <i>Ontleding: 0/4 punte</i></p>	<p>✓std vorm/stand vorm ✓factors/fakt</p> <p>✓$x = 1$ ✓$2^x \neq -1$</p> <p style="text-align: right;">(4)</p>
2.3	$(x + y)^2 = \left(\frac{3 - \sqrt{a}}{\sqrt{2}} + \frac{4 + \sqrt{a}}{\sqrt{2}} \right)^2$ $= \left(\frac{7}{\sqrt{2}} \right)^2$ $= \frac{49}{2}$ $= 24\frac{1}{2}$ <p>OR/OF</p> $(x + y)^2 = x^2 + 2xy + y^2$ $= \left(\frac{3 - \sqrt{a}}{\sqrt{2}} \right)^2 + 2 \left(\frac{3 - \sqrt{a}}{\sqrt{2}} \right) \left(\frac{4 + \sqrt{a}}{\sqrt{2}} \right) + \left(\frac{4 + \sqrt{a}}{\sqrt{2}} \right)^2$ $= \left(\frac{9 - 6\sqrt{a} + a}{2} \right) + 2 \left(\frac{12 - \sqrt{a} - a}{2} \right) + \left(\frac{16 + 8\sqrt{a} + a}{2} \right)$ $= \left(\frac{25 + 2\sqrt{a} + 2a}{2} \right) + (12 - \sqrt{a} - a)$ $= \frac{25}{2} + \sqrt{a} + a + 12 - \sqrt{a} - a$ $= 24\frac{1}{2}$	<p>✓substitution/verv.</p> <p>✓simplification/vereenv.</p> <p>✓answer/antw.</p> <p>✓substitution/verv.</p> <p>✓simplification/vereenv.</p> <p>✓answer/antw.</p> <p style="text-align: right;">(3)</p>	
2.4	$10^{\frac{1}{12}} \cdot \sqrt[6]{64 \cdot 10} \cdot \sqrt[4]{81 \cdot 10} \cdot \sqrt{4 \cdot 10}$ $= 10^{\frac{1}{12}} \cdot \sqrt[6]{2^6 \cdot 10} \cdot \sqrt[4]{3^4 \cdot 10} \cdot \sqrt{2^2 \cdot 10}$ $= 10^{\frac{1}{12}} \cdot 2^{\frac{6}{6}} \cdot 10^{\frac{1}{6}} \cdot 3^{\frac{4}{4}} \cdot 10^{\frac{1}{4}} \cdot 2^{\frac{2}{2}} \cdot 10^{\frac{1}{2}}$ $= 2 \times 3 \times 2 \times 10^{\frac{12}{12}}$ $= 120$	<p>✓split the surd/ <i>skei wortel</i></p> <p>✓rational exponents/ <i>rasionele eksp</i></p> <p>✓$10^{\frac{12}{12}}$ ✓simplification/vereenv.</p> <p style="text-align: right;">(4) [18]</p>	

QUESTION/VRAAG 3

<p>3.1.1</p>	<p style="text-align: center;"> $12 \quad \quad \quad 17 \quad \quad \quad 22$ $\quad \quad \quad \diagdown \quad \diagup \quad \diagdown \quad \diagup$ $\quad \quad \quad 5 \quad \quad \quad 5$ $T_n = 5n + 7$ </p>	<p>✓ $5n$ ✓ 7 (2)</p>
<p>3.1.2</p>	<p>$T_{12} = 5(12) + 7$ $= 67$</p>	<p>✓ subst/verv ✓ answer/antw (2)</p>
<p>3.1.3</p>	<p>$5n + 7 = 172$ $5n = 165$ $n = 33$</p>	<p>✓ $5n + 7 = 172$ ✓ answer/antw (2)</p>
<p>3.2</p>	<p style="text-align: center;"> $3 \quad \quad \quad x \quad \quad \quad y \quad \quad \quad 30$ $\quad \quad \quad \diagdown \quad \diagup \quad \diagdown \quad \diagup$ $\quad \quad \quad x-3 \quad \quad \quad y-x \quad \quad \quad y-30$ </p> <p> $x-3 = y-x$ $y = 2x-3$ </p> <p> $x-3 = 30-y$ $x-3 = 30-2x+3$ $3x = 36$ $x = 12$ $y = 21$ </p> <p style="text-align: center;">OR/OF</p> <p> $30-y = y-x$ $30+x = 2y$ $30+x = 2(2x-3)$ $36 = 3x$ $12 = x$ $y = 21$ </p>	<p>✓ $x-3 = y-x$</p> <p>✓ $30-y = y-x$</p> <p>✓ equating/verg.</p> <p>✓ $x = 12$ $y = 21$ (4) [10]</p>

QUESTION/VRAAG 4

<p>4.1</p>	 <p>$T_5 = 76$</p>	<p>✓ calc. differences/berekn verskille</p> <p>✓ answer/antw. (2)</p>
<p>4.2</p>	<p>$2a = 6$ $a = 3$ $3a + b = -51$ $3(3) + b = -51$ $b = -60$ $a + b + c = 244$ $3 + -60 + c = 244$ $c = 301$ $T_n = 3n^2 - 60n + 301$</p>	<p>✓ $a = 3$</p> <p>✓ $b = -60$</p> <p>✓ $c = 301$</p> <p>✓ $T_n = 3n^2 - 60n + 301$ (4)</p>
<p>4.3</p>	<p>$3n^2 - 60n + 301 = 508$ $3n^2 - 60n - 207 = 0$ $n^2 - 20n - 69 = 0$ $(n + 3)(n - 23) = 0$ $n = 23$ or $n \neq -3$</p>	<p>✓ equating/verg.</p> <p>✓ std form/stand vorm</p> <p>✓ factorisation/fakt.</p> <p>✓ $n = 23$ (4)</p>
<p>4.4</p>	<p>$T_n = a + (n - 1)d$ $453 = -51 + (n - 1)6$ $453 = -57 + 6n$ $510 = 6n$ $n = 85$ between T_{85} and T_{86} tussen T_{85} en T_{86}</p> <p>OR/OF $T_{n+1} - T_n = 453$ $3(n + 1)^2 - 60(n + 1) + 301 - (3n^2 - 60n + 301) = 453$ $3n^2 + 6n + 3 - 60n - 60 - 3n^2 + 60n = 453$ $6n = 510$ $n = 85$ between T_{85} and T_{86} tussen T_{85} en T_{86}</p>	<p>✓ $453 = -57 + 6n$</p> <p>✓ $n = 85$</p> <p>✓ between T_{85} and T_{86} tussen T_{85} en T_{86} (3)</p> <p>✓</p> <p>$3(n + 1)^2 - 60(n + 1) + 301 - (3n^2 - 60n + 301) = 453$</p> <p>✓ $n = 85$</p> <p>✓ between T_{85} and T_{86} tussen T_{85} en T_{86} (3)</p>

<p>4.5</p>	<p> $T_n = 3n^2 - 60n + 301$ $= 3(n - 10)^2 + 1$ $(n - 10)^2 \geq 0$ for/vir $n \in \mathbb{N}$ $3(n - 10)^2 \geq 0$ $3(n - 10)^2 + 1 > 0$ All terms in the pattern are positive/<i>al die terme in die patroon is positief</i> OR/OF $T_n = 3n^2 - 60n + 301$ $= 3(n - 10)^2 + 1$ T is a minimum valued function with minimum value 1 Range of T: $y \geq 1$ All terms in the pattern are positive. <i>T is funksie met minimum waarde van 1</i> <i>Waardeversameling van T; $y \geq 1$</i> <i>al die terme in die patroon is positief</i> </p>	<p> $\checkmark\checkmark T_n = 3(n - 10)^2 + 1$ $\checkmark\checkmark$ argument (4) $\checkmark\checkmark T_n = 3(n - 10)^2 + 1$ $\checkmark\checkmark$ argument (4) [17] </p>
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QUESTION/VRAAG 5

<p>5.1</p>	<p> $f(-3) = \frac{-3}{-3+2} + 1$ $= 4$ </p>	<p> \checkmark answer/antw. (1) </p>
<p>5.2</p>	<p> $4 = 2^{-x} - 4$ $8 = 2^{-x}$ $2^3 = 2^{-x}$ $x = -3$ </p>	<p> $\checkmark 4 = 2^{-x} - 4$ \checkmark answer /antw. (2) </p>
<p>5.3</p>	<p> $x = -2$ $y = 1$ </p>	<p> $\checkmark x = -2$ $\checkmark y = 1$ (2) </p>
<p>5.4</p>	<p> $y > -4$ OR/OF $y \in (-4 ; \infty)$ </p>	<p> \checkmark answer/antw. (1) \checkmark answer/antw. (1) </p>

5.5	<p><i>y</i>-intercept/<i>afsnit</i>:</p> $y = \frac{-3}{0+2} + 1$ $= \frac{-1}{2}$ <p><i>y</i>-intercept/<i>afsnit</i> is $\left(0 ; -\frac{1}{2}\right)$</p> <p><i>x</i>-intercept/<i>afsnit</i>:</p> $0 = \frac{-3}{x+2} + 1$ $-1 = \frac{-3}{x+2}$ $-x - 2 = -3$ $-x = -1$ $x = 1$ <p><i>x</i>-intercept/<i>afsnit</i> is $(1 ; 0)$</p>	<p>✓ subst/<i>verv</i> $x = 0$</p> <p>✓ $y = -\frac{1}{2}$</p> <p>✓ subst/<i>verv</i> $y = 0$</p> <p>✓ simplification/<i>vereenv.</i></p> <p>✓ $x = 1$</p> <p>(5)</p>
5.6	<p>$y = -x + c$</p> <p>$1 = -(-2) + c$</p> <p>$-1 = c$</p> <p>$y = -x - 1$</p> <p>OR/OF</p> <p>$y - 1 = -(x - (-2))$</p> <p>$y = -x - 2 + 1$</p> <p>$y = -x - 1$</p>	<p>✓ subst/<i>verv</i></p> <p>✓ answer/<i>antw.</i></p> <p>(2)</p> <p>✓ subst/<i>verv</i></p> <p>✓ answer/<i>antw.</i></p> <p>(2)</p>

<p>5.7</p>		<p><i>f</i></p> <ul style="list-style-type: none"> ✓ asympt/asimpt ✓ both pieces of / beide stukke van <i>f</i> ✓ <i>x</i> and/en <i>y</i> intercepts / afsnitte <p><i>g</i></p> <ul style="list-style-type: none"> ✓ asymptote/asimpt ✓ <i>x</i>-intercept/afsnit (-2 ; 0) ✓ <i>y</i>-intercept/afsnit (0 ; -3) <p>(6)</p>
<p>5.8</p>	<p>$x \leq -3$ or $-2 < x \leq -1$</p> <p>OR/OF</p> <p>$x \in (-\infty ; -3) \cup (-2 ; -1]$</p>	<ul style="list-style-type: none"> ✓ $x \leq -3$ ✓ $-2 < x \leq -1$ <p>(2)</p> <ul style="list-style-type: none"> ✓ $(-\infty ; -3)$ ✓ $(-2 ; -1]$ <p>(2)</p> <p>[21]</p>

QUESTION/VRAAG 6

6.1	$0 = -x^2 - x + 6$ $x^2 + x - 6 = 0$ $(x + 3)(x - 2) = 0$ $x = -3 \text{ or / of } x = 2$ $B(-3 ; 0) \text{ and } C(2 ; 0)$	$\checkmark y = 0$ \checkmark standard form/vorm \checkmark factors/faktore \checkmark both answers/beide antw (4)
6.2	$x = \frac{-b}{2a}$ $x = \frac{-(-1)}{2(-1)}$ $= -\frac{1}{2}$ <p>OR/ OF</p> $x = \frac{x_1 + x_2}{2}$ $= \frac{(-3) + (2)}{2}$ $= -\frac{1}{2}$	\checkmark method/metode \checkmark answer/antw. (2) \checkmark method/metode \checkmark answer/antw (2)
6.3	$f\left(-\frac{1}{2}\right)$ $= -\left(\frac{1}{2}\right)^2 - \left(\frac{1}{2}\right) + 6$ $= 6\frac{1}{4}$ $\text{TP/ DP } \left(-\frac{1}{2}; 6\frac{1}{4}\right)$ $\text{Range/waardeversameling } y \in \left(-\infty ; 6\frac{1}{4}\right]$ $\text{OR/OF } y \leq 6\frac{1}{4}$	\checkmark y value of TP/ waarde van DP $\checkmark\checkmark$ Answer/antw. (3)
6.4	$D(0 ; 6)$ $m_{AD} = \frac{6 - 4}{0 - (-2)}$ $= 1$ $\text{Equation of/vergelyking van } g: \quad y = x + 6$	\checkmark coordinates/koördinate D \checkmark gradient. \checkmark answer/antw (3)

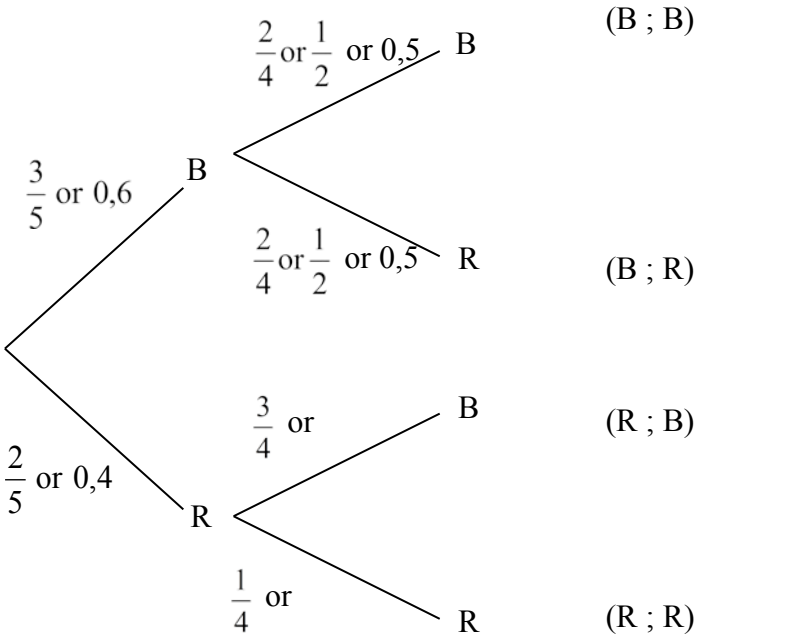
6.5	Average/ <i>Gemid.</i> gradient = gradient of/ <i>van</i> g = 1	✓ answer/ <i>antw.</i> (1)
6.6	$f(x) = -\left(x + \frac{1}{2}\right)^2 + \frac{25}{4}$ $h(x) = \left(x + \frac{1}{2} - 3\right)^2 - \frac{25}{4}$ $h(x) = \left(x - \frac{5}{2}\right)^2 - \frac{25}{4}$ <p>OR/OF</p> $f(x) = -x^2 - x + 6$ $h(x) = (x - 3)^2 + (x - 3) - 6$ $h(x) = x^2 - 5x$ $h(x) = \left(x - \frac{5}{2}\right)^2 - \frac{25}{4}$	$\checkmark f(x) = -\left(x + \frac{1}{2}\right)^2 + \frac{25}{4}$ $\checkmark \left(x - \frac{5}{2}\right)^2$ $\checkmark -\frac{25}{4}$ $\checkmark h(x) = (x - 3)^2 + (x - 3) - 6$ $\checkmark \left(x - \frac{5}{2}\right)^2$ $\checkmark -\frac{25}{4}$ (3)
6.7	$-3 < x < 2$ <p>OR/OF</p> $x \in (-3 ; 2)$	$\checkmark\checkmark$ answer/ <i>antw.</i> (2) $\checkmark\checkmark$ answer/ <i>antw.</i> (2)
6.8	$r = -2$ By symmetry/ <i>deur simmetrie</i> $p = 1$ $p - r = 3$ <p>OR/OF</p> $-x^2 - x + 6 = 4$ $-x^2 - x + 2 = 0$ $x^2 + x - 2 = 0$ $(x + 2)(x - 1) = 0$ $x = -2$ or / <i>of</i> $x = 1$ $r = -2$ $p = 1$ $p - r = 3$	$\checkmark r = -2$ $\checkmark\checkmark p = 1$ \checkmark answer/ <i>antw.</i> (4) $\checkmark r = -2$ $\checkmark\checkmark p = 1$ \checkmark answer/ <i>antw.</i> (4)

QUESTION/VRAAG 7

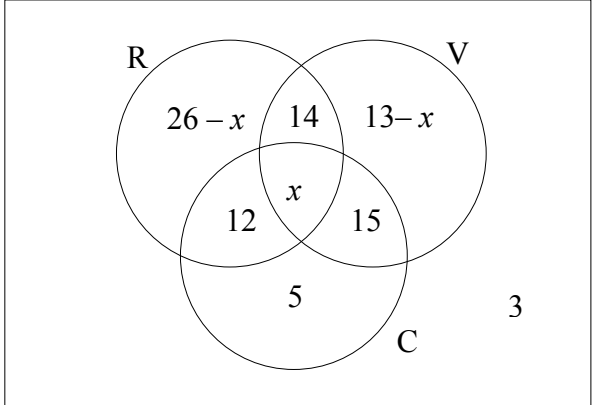
7.1	$A = P(1-i)^n$ $20000 = 80000(1-i)^5$ $0,25 = (1-i)^5$ $\sqrt[5]{0,25} = 1-i$ $i = 1 - \sqrt[5]{0,25}$ $i = 0,24214417$ $i = 24,21\%$	<p>✓ substitution into correct formula/ <i>verv.in korrekte vorm</i></p> <p>✓ simplification/<i>vereenv</i></p> <p>✓ answer/<i>antw.</i></p> <p>(3)</p>
7.2	$1 + i_{eff} = \left(1 + \frac{i_{nom}}{m}\right)^m$ $1 + i_{eff} = \left(1 + \frac{0,05}{4}\right)^4$ $i_{eff} = 0,050945336\dots$ <p>Effective rate = 5,09 % p.a.</p>	<p>✓ vorm/<i>vorm</i></p> <p>✓ subst/<i>verv</i></p> <p>✓ answer/<i>antw.</i></p> <p>(3)</p>
7.3	$A = P(1+i)^n$ $= 30\,000 \left(1 + \frac{0,12}{12}\right)^{2 \times 12} \left(1 + \frac{0,108}{2}\right)^{4 \times 2}$ $= R\,58\,017,51$	<p>subst/<i>verv</i> in form/<i>vorm</i></p> <p>✓ $\left(1 + \frac{0,12}{12}\right)^{2 \times 12}$</p> <p>✓ $\left(1 + \frac{0,108}{2}\right)^{4 \times 2}$</p> <p>✓ answer/<i>antw.</i></p> <p>(4)</p>
7.4	$A = 25000 \left(1 + \frac{0,18}{12}\right)^{5 \times 12} - 8000 \left(1 + \frac{0,18}{12}\right)^{3 \times 12} + 4000 \left(1 + \frac{0,18}{12}\right)^{1,5 \times 12}$ $= 25000 \left(1 + \frac{0,18}{12}\right)^{60} - 8000 \left(1 + \frac{0,18}{12}\right)^{36} + 4000 \left(1 + \frac{0,18}{12}\right)^{18}$ $= R\,52636,74$ <p>OR/OF</p>	<p>✓ $\frac{0,18}{12}$</p> <p>✓ $25000 \left(1 + \frac{0,18}{12}\right)^{5 \times 12}$</p> <p>✓ $-8000 \left(1 + \frac{0,18}{12}\right)^{3 \times 12}$</p> <p>✓ $+4000 \left(1 + \frac{0,18}{12}\right)^{18}$</p> <p>✓✓ answer/<i>antw.</i></p> <p>(6)</p>

	$A_1 = 25000 \left(1 + \frac{0,18}{12} \right)^{2 \times 12}$ $= R35737,57$ <p>Amount in the account after the withdrawal: / <i>Bedrag in rekening na onttrekking</i></p> $R35737,5703 - R8000$ $= R27737,5703$ <p>Amount in the account just before the deposit / <i>bedrag in rekening voor die deposito</i></p> $A_2 = R27737,5703 \left(1 + \frac{0,18}{12} \right)^{1,5 \times 12}$ $= R36262,45279$ <p>Amount in the account just after the deposit / <i>Bedrag in rekening na onttrekking</i></p> $R36262,45279 + R4000$ $= R40262,45279$ <p>Amount in the account at the end of 5 years / <i>Bedrag in rekening aan die einde van 5 jaar</i></p> $= 40262,45279 \left(1 + \frac{0,18}{12} \right)^{1,5 \times 12}$ $= R52636,74$	<p>✓ $\frac{0,18}{12}$</p> <p>✓ $25000 \left(1 + \frac{0,18}{12} \right)^{2 \times 12}$</p> <p>✓ 27737,57</p> <p>✓ $27737,5703 \left(1 + \frac{0,18}{12} \right)^{1,5 \times 12}$</p> <p>✓ 40262,45</p> <p>✓ answer/antw.</p>
		<p>(6)</p> <p>[16]</p>

QUESTION/VRAAG 8

<p>8.1.1</p>		<p>✓ branches/<i>takke</i></p> <p>✓ probabilities/<i>waarskynlikhede</i></p> <p>✓ outcomes/<i>uitkomst</i></p> <p>(3)</p>
<p>8.1.2</p>	$P(R, B) = \frac{2}{5} \times \frac{3}{4}$ $= \frac{3}{10}$	<p>✓ $\frac{2}{5} \times \frac{3}{4}$</p> <p>✓ answer/<i>antwoord</i></p> <p>(2)</p>
<p>8.2.1</p>	<p>$P(A) = 0,4$</p> <p>$P(B) = 0,3$</p> <p>$P(A \text{ or/ } B) = 0,58$</p> <p>$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$</p> <p>$0,58 = 0,4 + 0,3 - P(A \text{ and } B)$</p> <p>$P(A \text{ and } B) = 0,12 \neq 0$</p> <p>Events A and B are not mutually exclusive/<i>Gebeurtenis A en B is nie onderlinguitsluitend nie</i></p>	<p>✓ $0,58 = 0,4 + 0,3 - P(A \text{ and } B)$</p> <p>✓ $P(A \text{ and } B) = 0,12 \neq 0$</p> <p>✓ Not mutually exclusive/<i>nie onderling uitsluitend nie</i></p> <p>(3)</p>
<p>8.2.2</p>	<p>$P(A \text{ and } B) = 0,12$</p> <p>$P(A) \times P(B) = 0,4 \times 0,3$</p> <p>$= 0,12$</p> <p>$\therefore P(A \text{ and } B) = P(A) \times P(B)$</p> <p>A and B are independent events/<i>is onafhanklik</i></p>	<p>✓ $P(A) \times P(B) = 0,4 \times 0,3$</p> <p>✓ $P(A \text{ and } B) = P(A) \times P(B)$</p> <p>✓ A and B are independent/<i>is onafhanklik</i></p> <p>(3)</p>
		<p>[11]</p>

QUESTION/VRAAG 9

<p>9.1</p>		<p>✓ 14 or/of 12 or/of 15 ✓ 26 – x ✓ 13 – x ✓ 5 ✓ 3</p> <p style="text-align: right;">(5)</p>
<p>9.2</p>	$26 - x + 14 + x + 12 + 5 + 15 + 13 - x + 3 = 80$ $88 - 80 = x$ $x = 8$	<p>✓ $26 - x + 14 + x + 12 + 5 + 15 + 13 - x + 3$ ✓ equating to/gelyk aan 80</p> <p style="text-align: right;">(2)</p>
<p>9.3</p>	<p>Number who chose Rugby only/aantal wat net rugby kies $= 26 - 8$ $= 18$</p>	<p>✓ answer/antw.</p> <p style="text-align: right;">(1)</p>
<p>9.4</p>	<p>P(At least 2 types of sports /ten minste 2 sportsoorte)</p> $= \frac{12 + 14 + 15 + 8}{80}$ $= \frac{49}{80}$ <p>OR/OF</p> <p>P(at least 2 types of sport/ten minste 2 sportsoorte)</p> $= 1 - \frac{18 + 5 + 5 + 3}{80}$ $= 1 - \frac{31}{80}$ $= \frac{49}{80}$	<p>✓ numerator/Noemer ✓ denominator/Teller ✓ answer/antw.</p> <p>✓ $\frac{18 + 5 + 5 + 3}{80}$ ✓ method/metode</p> <p>✓ answer/antw.</p> <p style="text-align: right;">(3) [11]</p>

TOTAL/TOTAAL: 150