



**NATIONAL  
SENIOR CERTIFICATE /  
NASIONALE  
SENIORSERTIFIKAAT**

**GRADE/GRAAD 11**

**NOVEMBER 2023**

**TECHNICAL MATHEMATICS P1  
MARKING GUIDELINE/  
TEGNIESE WISKUNDE V1  
NASIENRIGLYN**

**MARKS /  
PUNTE**      **150**

<b>Marking codes in CAPS / Nasienkodes in KABV</b>	
<b>A</b>	<b>Accuracy / Akkuraatheid</b>
<b>CA</b>	<b>Consistent Accuracy / Deurlopend Akkuraatheid</b>
<b>M</b>	<b>Method / Metode</b>
<b>R</b>	<b>Rounding / Afronding</b>
<b>NPR</b>	<b>No Penalty for Rounding / Geen penalisering vir afronding</b>
<b>NPU</b>	<b>No Penalty for Units omitted / Geen penalisering vir geen eenhede</b>
<b>S</b>	<b>Simplification / Vereenvoudiging</b>
<b>SF</b>	<b>Substitution in the correct Formula / Vervanging in die korrekte formule</b>
<b>AO</b>	<b>Answer Only / Slegs antwoord</b>

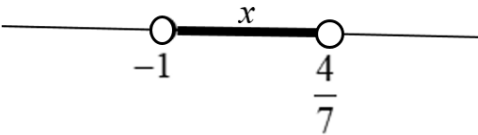
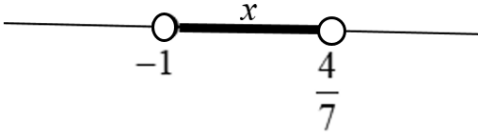
This marking guideline consists of 12 pages /  
Hierdie nasienriglyn bestaan uit 12 bladsy

QUESTION / VRAAG 1				
1.1				
1.1.1	$(5\sqrt[3]{3} - x^5)^0 = 1$	✓ 1	A	(1)
1.1.2	$x^{\frac{1}{2}}(3-x)$ $= 3 \cdot x^{\frac{1}{2}} - x^{1+\frac{1}{2}}$ $= 3x^{\frac{1}{2}} - x^{\frac{3}{2}}$	✓ $3x^{\frac{1}{2}}$ ✓ $-x^{\frac{3}{2}}$	A A	(2)
1.1.3	$(\sqrt{3}-3)(\sqrt{3}+3)$ $= (\sqrt{3})^2 - (3)^2$ $= 3 - 9$ $= -6$	✓ 3 ✓ -9  ✓ -6	A A CA	(3)
1.1.4	$\frac{\log_2 32^{\frac{1}{5}} + \log_2 27^{\frac{1}{3}}}{\log_2 6 + \log_7 x^0}$  $= \frac{\log_2 (2^5)^{\frac{1}{5}} + \log_2 (3^3)^{\frac{1}{3}}}{\log_2 6 + \log_7 1}$  $= \frac{\log_2 2 + \log_2 3}{\log_2 6 + 0}$ $= \frac{\log_2 (2 \times 3)}{\log_2 6}$ $= \frac{\log_2 6}{\log_2 6}$ $= 1$	✓ Prime factors / <i>priemfaktore</i> ✓ $\log_7 1$  ✓ Simplification / <i>vereenvoudiging</i> ✓ Log property / <i>eienskap</i> ✓ Log property / <i>eienskap</i>  ✓ 1	A A CA CA CA CA	(6)

<p>1.2.1</p>	$y = \sqrt[x]{\frac{3^{x-1} - 7 \cdot 3^{x+1}}{6 \cdot 9^x}}$ $y = \sqrt[x]{\frac{3^x \cdot 3^{-1} - 7 \cdot 3^x \cdot 3}{6(3^2)^x}}$ $y = \sqrt[x]{\frac{3^x(3^{-1} - 7 \cdot 3)}{6 \cdot 3^{2x}}}$ $y = \sqrt[x]{\frac{\left(\frac{1}{3} - 21\right)}{6 \cdot 3^x}}$ $y = \sqrt[x]{\frac{-62}{6 \cdot 3^x}}$ $y = \left(-\frac{62}{18 \cdot 3^x}\right)^{\frac{1}{x}}$ $y = \frac{1}{3} \cdot \left(-\frac{31}{9}\right)^{\frac{1}{x}}$	<p>✓ Exponential property / <i>eksponensiele eienskap</i></p> <p>✓ Prime factors / <i>priemfaktore</i></p> <p>✓ Common factor / <i>gemene faktor</i></p> <p>✓ Simplification / <i>vereenvoudiging</i></p> <p>✓ Simplification / <i>vereenvoudiging</i></p>	<p>A</p> <p>A</p> <p>CA</p> <p>CA</p> <p>CA</p>	<p>(5)</p>
<p>1.2.2</p>	<p>Even root of a negative number is imaginary and so <math>x</math> must be odd. <i>Ewe wortel van 'n negatiewe getal is imaginêr so <math>x</math> moet onewe wees</i></p>	<p>✓ Imaginary or non-real / <i>imaginêr of nie-reël</i></p>	<p>A</p>	<p>(1)</p>
<p>1.3</p>				
<p>1.3.1</p>	<p><math>X = 100\ 000_2 = 32</math> <math>Y = 111_2 = 7</math></p>	<p>✓ <math>X = 32</math> ✓ <math>Y = 7</math></p>	<p>A A</p>	<p>(2)</p>
<p>1.3.2</p>	<p><math>X - Y</math></p> $\begin{array}{r} 100\ 000_2 \\ \underline{111_2} \\ 110\ 01_2 \end{array}$ <p><b>OR / OF</b></p> <p><math>X - Y = 32 - 7 = 25</math> <math>25 = 11001_2</math></p>	<p>✓ Method / <i>metode</i></p> <p>✓ <math>11001_2</math></p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>Base Omitted / Basis weggelaat: 2/2</b></p> </div>	<p>A A</p>	<p>(2)</p>
<p>1.4</p>				
<p>1.4.1</p>	<p><math>\frac{1}{12}</math> cm <math>= \frac{1}{12} \times 10</math> mm <math>= 0,8\dot{3}</math> mm</p>	<p>✓ Conversion factor / <i>herleidingsfaktor</i></p> <p>✓ <math>0,8\dot{3}</math></p>	<p>A</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>NPU</b></p> </div> <p>CA</p>	<p>(2)</p>

1.4.2	$= 0,83 \text{ mm} = 8,3 \times 10^{-1} \text{ mm}$	<ul style="list-style-type: none"> <li>✓ 8,3</li> <li>✓ <math>10^{-1}</math></li> </ul>	<b>NPU</b>	<b>CA</b> <b>CA</b>	(2)
					[26]
<b>QUESTION / VRAAG 2</b>					
2.1					
2.1.1	$z = 1$	✓ 1		<b>A</b>	(1)
2.1.2	$x + y - 2z$ $= \log 2 + \log 7 - 2 \log 10$ $= \log (2 \times 7) - \log 10^2$ $= \log 14 - \log 100$ $= \log \left( \frac{14}{100} \right)$ $= \log 0,14$	<ul style="list-style-type: none"> <li>✓ Substitution / <i>vervanging</i></li> <li>✓ Log property / <i>eienskap</i></li> <li>✓ Power rule / <i>magreël</i></li> <li>✓ <b>S</b></li> </ul> <ul style="list-style-type: none"> <li>✓ Log Property / <i>eienskap</i></li> </ul>		<b>A</b> <b>A</b> <b>A</b> <b>CA</b>  <b>CA</b>	(5)
2.2					
2.2.1	$3^{x+1} \cdot 3^{x-3} = 1$ $3^{2x-2} = 3^0$ $2x - 2 = 0$ $x = 1$	<ul style="list-style-type: none"> <li>✓ Exponential prop. / <i>eksponensiele eienskap</i></li> <li>✓ <math>3^0</math></li> <li>✓ Exponential prop. / <i>eksponensiele eienskap</i></li> <li>✓ <b>S</b></li> </ul>		<b>A</b> <b>A</b> <b>CA</b>  <b>CA</b>	(4)
2.2.2	$\sqrt{48} - x^2 \sqrt{3} = \sqrt{27}$ $\sqrt{2^4 \times 3} - x^2 \sqrt{3} = \sqrt{3^3}$ $4\sqrt{3} - 3\sqrt{3} - x^2 \sqrt{3} = 0$ $\sqrt{3} - x^2 \sqrt{3} = 0$ $\sqrt{3}(1 - x^2) = 0$ $x = 1$ or/of $x = -1$	<ul style="list-style-type: none"> <li>✓ Prime factors / <i>priemfaktore</i></li> <li>✓ Standard form / <i>standaardvorm</i></li> <li>✓ <b>S</b></li> <li>✓ Factors / <i>faktore</i></li> <li>✓ <math>x = 1</math></li> <li>✓ <math>x = -1</math></li> </ul>		<b>A</b> <b>A</b> <b>CA</b> <b>CA</b>  <b>CA</b> <b>CA</b>	(6)
2.2.3	$10^x = 30$ $x = \log 30$ $x = \log(10 \times 3)$ $x = \log 10 + \log 3$ $x = 1 + 0,48$ $x = 1,48$	<ul style="list-style-type: none"> <li>✓ Logarithm / <i>logaritme</i></li> </ul> <ul style="list-style-type: none"> <li>✓ Log property / <i>eienskap</i></li> </ul> <ul style="list-style-type: none"> <li>✓ Substitution / <i>vervanging</i></li> <li>✓ 1,48</li> </ul>		<b>A</b>  <b>A</b>  <b>CA</b> <b>CA</b>	(4)

2.3	$\begin{aligned} \text{LHS/LK} &= 2^{2x} \cdot 7^{x-1} - 5 \cdot 28^x \\ &= 2^{2x} \cdot 7^x \cdot 7^{-1} - 5 \cdot (2^2 \cdot 7)^x \\ &= 2^{2x} \cdot 7^x \cdot 7^{-1} - 5 \cdot 2^{2x} \cdot 7^x \\ &= 2^{2x} \cdot 7^x (7^{-1} - 5) \\ &= 2^{2x} \cdot 7^x \left( \frac{-34}{7} \right) \\ &= -34 \cdot 2^{2x} \cdot 7^{x-1} \\ &= \text{RHS/RK} \end{aligned}$	<p>✓ Prime factors / <i>priemfaktore</i></p> <p>✓ Power rule / <i>magreël</i></p> <p>✓ Common factor / <i>gemene faktor</i></p> <p>✓ S</p> <p>✓ S</p>	<p>A</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p>	<p>(5)</p>
2.4				
2.4.1	$\begin{aligned} C &= \frac{5(F-32)}{9} \\ 9C &= 5(F-32) \\ \frac{9C}{5} + 32 &= F \end{aligned}$	<p>✓ 9C</p> <p>✓ F subject / <i>onderwerp</i></p>	<p>A</p> <p>CA</p>	<p>(2)</p>
2.4.2	$\begin{aligned} \frac{9C}{5} + 32 &= F \\ \frac{9(2)}{5} + 32 &= F \\ \therefore F &= 35,6^\circ\text{F} \end{aligned}$	<p>✓ Substitution / <i>vervanging</i></p> <p>✓ 35,6</p>	<p>CA</p> <p>CA</p>	<p>(2)</p>
				<p>[28]</p>

QUESTION / VRAAG 3				
3.1				
3.1.1	$x(x-2)=0$ $x=0$ or/of $x=2$	$\checkmark x=0$ $\checkmark x=2$	<b>A</b> <b>A</b>	(2)
3.1.2	$x^2 + x\left(3 - \frac{5}{x}\right) = 0$ $x^2 + 3x - 5 = 0$ $x = \frac{-(3) \pm \sqrt{(3)^2 - 4(1)(-5)}}{2(1)}$ $\therefore x = 1,2$ or/of $x = -4,2$	$\checkmark$ Standard form/ <i>standaardvorm</i> $\checkmark$ Substitution / <i>vervanging</i> $\checkmark x = 1,2$ $\checkmark x = -4,2$	<b>A</b> <b>CA</b> <b>CA</b> <b>CA</b>	(4)
			<b>R</b>	
3.1.3	$-7x^2 - 3x + 4 > 0$ $(-7x+4)(x+1) > 0$ <b>OR / OF</b> $x = \frac{3 \pm \sqrt{(-3)^2 - 4(-7)(4)}}{2(-7)}$ CVs/KWs: $-1$ and/en $\frac{4}{7}$ $x < -1$ and/en $x > \frac{4}{7}$ <b>OR / OF</b> $-1 < x < \frac{4}{7}$  <b>OR / OF</b> $7x^2 + 3x - 4 < 0$ $(7x-4)(x+1) < 0$ <b>OR / OF</b> $x = \frac{3 \pm \sqrt{(-3)^2 - 4(-7)(4)}}{2(-7)}$ CVs/KWs: $-1$ and/en $\frac{4}{7}$ $x < -1$ and/en $x > \frac{4}{7}$ <b>OR / OF</b> $-1 < x < \frac{4}{7}$ 	$\checkmark$ Substitution/ <i>Vervanging /</i> <i>Factors / Faktore</i> $\checkmark$ Critical values / <i>kritiese waardes</i> $\checkmark$ Correct notation / <i>korrekte notasie</i> $\checkmark$ Number line / <i>getallelyn</i> <b>OR / OF</b> $\checkmark$ Substitution/ <i>Vervanging /</i> <i>Factors / Faktore</i> $\checkmark$ Critical values / <i>kritiese waardes</i> $\checkmark$ Correct notation / <i>korrekte notasie</i> $\checkmark$ Number line / <i>getallelyn</i>	<b>A</b> <b>CA</b> <b>A</b> <b>A</b> <b>A</b> <b>CA</b> <b>A</b> <b>A</b>	(4)

3.2	$y - \frac{x}{2} - 1 = 0 \dots\dots\dots (1)$ $x^2 + 3y^2 = 2xy + 4 \dots\dots\dots (2)$ $y = \frac{x}{2} - 1 \dots\dots\dots (3)$ $x^2 + 3\left(\frac{x}{2} - 1\right)^2 = 2x\left(\frac{x}{2} - 1\right) + 4$ $x^2 + \frac{3x^2}{4} - 3x + 3 = x^2 - 2x + 4$ $\frac{3x^2}{4} - x - 1 = 0$ $x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4\left(\frac{3}{4}\right)(-1)}}{2\left(\frac{3}{4}\right)}$ $\therefore x = 2 \text{ or/of } x = -\frac{2}{3}$ $y = 0 \text{ or/of } y = -\frac{4}{3}$ <p style="text-align: center;"><b>OR / OF</b></p> $y - \frac{x}{2} - 1 = 0 \dots\dots\dots (1)$ $x^2 + 3y^2 = 2xy + 4 \dots\dots\dots (2)$ $x = 2y + 2 \dots\dots\dots (3)$ $(2y + 2)^2 + 3y^2 = 2(2y + 2)y + 4$ $4y^2 + 8y + 4 + 3y^2 = 4y^2 + 4y + 4$ $3y^2 + 4y = 0$ $y(3y + 4) = 0$ $\therefore y = 0 \text{ or/of } y = -\frac{4}{3}$ $x = 2 \text{ or/of } x = -\frac{2}{3}$	<p>✓ <i>y</i> subject / <i>onderwerp</i></p> <p>✓ Substitution / <i>vervanging</i></p> <p>✓ Standard form / <i>standaardvorm</i></p> <p>✓ Substitution/ <i>Vervanging</i> / Factors / <i>Faktore</i></p> <p>✓ Both <i>x</i> values / <i>Beide x-waardes</i></p> <p>✓ Both <i>y</i> values / <i>beide y-waardes</i></p> <p style="text-align: center;"><b>OR / OF</b></p> <p>✓ <i>x</i> subject / <i>onderwerp</i></p> <p>✓ Substitution / <i>vervanging</i></p> <p>✓ Standard form / <i>standaardvorm</i></p> <p>✓ Substitution / <i>vervanging</i> / Factors / <i>faktore</i></p> <p>✓ Both <i>y</i>-values / <i>Beide y-waardes</i></p> <p>✓ Both <i>x</i>-values / <i>beide x-waardes</i></p>	<p>A</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p> <p>CA</p>	
(6)				

3.3				
3.3.1	Radius = 31 mm	✓ 31	<b>A</b>	(1)
3.3.2	$C = 2\pi r$ $C = 2\pi(31) = 62\pi$	✓ $62\pi$	<b>CA</b>	(1)
3.3.3	$V = \pi(31)^2(73)$ $V = 220392.25 \text{ mm}^3$	✓ Substitution / <i>vervanging</i> ✓ Value of / <i>waarde van V</i>	<b>A</b> <b>CA</b>	(2)
3.3.4	$C = 2\pi r$ $r = \frac{C}{2\pi}$ $A = \pi r^2$ $A = \pi \left( \frac{C}{2\pi} \right)^2$ $A = \pi \left( \frac{C^2}{4\pi^2} \right)$ $\therefore A = \frac{C^2}{4\pi}$	✓ $r$  ✓ Substitution / <i>vervanging</i>  ✓ Simplification / <i>vereenvoudiging</i>	<b>A</b>  <b>CA</b>  <b>CA</b>	(3)
3.3.5	$A = \pi r^2$ $5665,36 = \pi r^2$ $r = \sqrt{\frac{5665,36}{\pi}}$ $r = 42,47$ $d = 2r = 84,94 \text{ mm}$	✓ Substitution / <i>vervanging</i> ✓ Value of / <i>waarde van r</i>  ✓ $d$	<b>A</b> <b>CA</b>  <b>CA</b>	(3)
				<b>[26]</b>



QUESTION / VRAAG 4				
4.1	Real, Irrational and Unequal / <i>Reëel, irrasionaal en ongelyk</i>	✓ Real / <i>Reëel</i> ✓ Irrational / <i>irrasionaal</i> ✓ Unequal / <i>ongelyk</i>	A A A	(3)
4.2				
4.2.1	$x = 1$	✓ 1	A	(1)
4.2.2	$\frac{x+1}{x-1} + 2 = 0$ $\frac{x+1}{x-1} = -2$ $x+1 = -2x+2$ $3x = 1$ $\therefore x = \frac{1}{3}$	✓ $\Delta = 0$  ✓ Simplification / <i>vereenvoudiging</i>  ✓ Value of / <i>waarde van x</i>	A  CA  CA	(3)
4.2.3	$\frac{x+1}{x-1} < -2$	✓ Less than / <i>minder as -2</i>	A	(1)
				[8]
QUESTION / VRAAG 5				
	$f(x) = -\frac{2}{x} - 2$ and / <i>en</i> $g(x) = -\sqrt{16-x^2}$			
5.1	$x = 0$ and / <i>en</i> $y = -2$	✓ $x = 0$ ✓ $y = -2$	A A	(2)
5.2	$x = 4$ or / <i>of</i> $x = -4$	✓ $x = 4$ ✓ $x = -4$	A A	(2)
5.3	$f(x) = -\frac{2}{x} - 2$ $0 = -\frac{2}{x} - 2$ $2 = -\frac{2}{x}$ $x = -1$	✓ $y = 0$  ✓ Simplification / <i>vereenvoudiging</i>  ✓ $x = -1$	A  CA  CA	(3)
5.4	$g(0) = -\sqrt{16-(0)^2} = -4$	✓ $-4$	A	(1)

<p>5.5</p>		<p><i>f</i></p> <ul style="list-style-type: none"> <li>✓ Shape/ vorm      <b>A</b></li> <li>✓ <i>x</i>-intrept/afsnt      <b>CA</b></li> <li>✓ Asym / <i>Asimp</i>      <b>CA</b></li> </ul> <p><i>g</i></p> <ul style="list-style-type: none"> <li>✓ Shape/ vorm      <b>A</b></li> <li>✓ <i>x</i>-intrept/afsnt      <b>CA</b></li> <li>✓ <i>y</i>-intrept/afsnt      <b>CA</b></li> </ul>	<p>(6)</p>
<p>5.6</p>	<p>See graph / sien grafiek</p>	<ul style="list-style-type: none"> <li>✓ All points / alle punte</li> </ul>	<p><b>A</b> (1)</p>
<p>5.7</p>	<p><math>x \neq 0</math> <b>OR / OF</b>  <math>x \in (-\infty ; 0) \cup (0 ; \infty)</math> <b>OR / OF</b>  <math>x &lt; 0</math> or / of <math>x &gt; 0</math> <b>OR / OF</b>  <math>-\infty &lt; x &lt; 0</math> or / of <math>0 &lt; x &lt; \infty</math></p>	<ul style="list-style-type: none"> <li>✓ Solution set / oplossingvers</li> </ul>	<p><b>A</b> (1)</p>
<p>5.8</p>	<p><math>-\sqrt{16-x^2} = -2</math>  <math>16-x^2 = 4</math>  <math>12 = x^2</math>  <math>\therefore x = \pm \sqrt{12}</math></p> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;"> <p><b>Accept/aanvaar:</b>  <math>x = 2\sqrt{3} \approx 3,46</math></p> </div> <p><math>-\sqrt{12} &lt; x &lt; \sqrt{12}</math> <b>OR / OF</b> <math>-\sqrt{12} &lt; x</math> and/en <math>x &gt; \sqrt{12}</math>  <b>OR / OF</b> <math>x \in (-\sqrt{12} ; \sqrt{12})</math></p>	<ul style="list-style-type: none"> <li>✓ <b>M</b> Equating/ gelykstelling</li> <li>✓ <math>x = \pm \sqrt{12}</math></li> <li>✓ Critical values / kritiese waardes</li> <li>✓ Correct notation / korrekte notasie</li> </ul>	<p><b>A</b>  <b>CA</b>  <b>CA</b>  <b>A</b> (4)</p>
			<p><b>[20]</b></p>

QUESTION / VRAAG 6				
6.1	$y = -4$		✓ $y = -4$	<b>A</b> (1)
6.2	<b>B</b> (0 ; -3)		✓ $x = 0$ ✓ $y = -3$	<b>A</b> <b>A</b> (2)
6.3	$-2 = a^1 - 4$ $-2 + 4 = a$ $\therefore a = 2$		✓ Substitution / <i>vervanging</i>  ✓ Simplification / <i>vereenvoudiging</i>  ✓ Same exponents rule / <i>dieselfde eksponente reël</i>	<b>A</b>  <b>CA</b>  <b>CA</b> (3)
6.4	$y > -4$		✓ $y > -4$	<b>A</b> (1)
6.5	$0 = 2^x - 4$ $2^2 = 2^x$ $\therefore x = 2$		✓ $f(x) = 0$  ✓ $x$ -value / <i>waarde</i>	<b>A</b>  <b>CA</b> (2)
6.6	<b>K</b> (1; 2)		✓ $x = 1$ ✓ $y = 2$	<b>A</b> <b>A</b> (2)
				<b>[11]</b>
QUESTION / VRAAG 7				
7.1	<b>A</b> (-1 ; 0) and/ en <b>D</b> (3 ; 0)	<b>x-intercepts only / slegs x-afsnitte: 1/2</b>	✓ <b>A</b> (-1 ; 0) ✓ <b>D</b> (3 ; 0)	<b>A</b> <b>A</b> (2)
7.2	<b>B</b> (0 ; 6)		✓ $x = 0$  ✓ $y = 6$	<b>A</b>  <b>A</b> (2)
7.3	Axis of symmetry = $\frac{-1+3}{2}$ <i>Simmetriese - as = 1</i>  Maximum turning = $f(1) = (6 - 2)(1 + 1)$ <i>Maksimum draaipt = 8</i>		✓ Method / <i>Metode</i>  ✓ $x = 1$  ✓ 8	<b>A</b>  <b>CA</b>  <b>CA</b> (3)
7.4	$x = 0$ and/en $x = 3$		✓ $x = 0$  ✓ $x = 3$	<b>CA</b>  <b>CA</b> (2)
7.5	$h(x) = (6 - 2(x - 2))(x - 2 + 1)$ $h(x) = (6 - 2x + 4)(x - 1)$ $h(x) = (10 - 2x)(x - 1)$		✓ Substitution / <i>vervanging</i>  ✓ Simplification / <i>vereenvoudiging</i>	<b>A</b>  <b>CA</b> (2)
7.6	Area of $\Delta BOD = \frac{1}{2}(6)(3) = 9$		✓ <b>SF</b> ✓ Area = 9	<b>A</b> <b>CA</b> (2)
				<b>[13]</b>

QUESTION / VRAAG 8				
8.1	$7,8\% \text{ of/van } R2\ 567 = \frac{7,8}{100} \times R2\ 567$ $= R200,23$	✓ R200,23	A	(1)
8.2	$i_{\text{eff}} = \left(1 + \frac{i}{m}\right)^m - 1$ $i_{\text{eff}} = \left(1 + \frac{0,078}{12}\right)^{12} - 1$ $i_{\text{eff}} = 8,01\%$	✓ Formula / formule ✓ Substitution / vervanging ✓ 8,01%	A CA CA	(3)
8.3	$A = P(1 - i)^n$ $R800\ 000 = P\left(1 - \frac{0,072}{4}\right)^{6 \times 4}$ $P = \frac{R800\ 000}{\left(1 - \frac{0,072}{4}\right)^{6 \times 4}}$ $P = R1\ 237\ 126,99$	✓ Formula / formule ✓ $i$ and $n$ ✓ Substitution / vervanging ✓ $P$ the subject / die onderwerp ✓ S	A A A CA CA	(5)
8.4				
8.4.1	$A_1 = R320\ 000(1 + 0,05)^3$ $A_1 = R370\ 440$ $A_3 = R370\ 440 + R400\ 000$ $A_3 = R770\ 440$	✓ Formula / formule ✓ Substitution / vervanging ✓ M + R400 000	A A CA	(3)
8.4.2	$R950\ 000 = R770\ 440(1 + 0,058)^n$ $\frac{R950\ 000}{R770\ 440} = 1,058^n$ $n = \log_{1,058} \left( \frac{R950\ 000}{R770\ 440} \right)$ $\therefore n \approx 3,72 \text{ years/jare}$ $\text{Period} = 3 + 3,72 \approx 6,72 \text{ years / jare}$ $\therefore \text{It will take 7 years}$	✓ Substitution / vervanging ✓ Simplification / vereenvoudiging ✓ Logarithm / logaritme ✓ $n = 3,72 \text{ years/ jare}$ ✓ Period = 7 years / jare	CA CA A CA CA	(5)
				[16]
			<b>TOTAL/TOTAAL:</b>	<b>150</b>