



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NASIONALE SENIOR SERTIFIKAAT

GRAAD 10

WISKUNDE V1

MODEL 2012

MEMORANDUM

PUNTE: 100

Hierdie memorandum bestaan uit 7 bladsye.

VRAAG 1

1.1.1	$(m - 2n)(m^2 - 6mn - n^2)$ $= m^3 - 6m^2n - mn^2 - 2m^2n + 12mn^2 + 2n^3$ $= m^3 - 8m^2n + 11mn^2 + 2n^3$	<ul style="list-style-type: none"> ✓ uitbreiding ✓ m^3 ; $+2n^3$ ✓ $-8m^2n + 11mn^2$ 	(3)
1.1.2	$\frac{x^3 + 1}{x^2 - x + 1} - \frac{4x^2 - 3x - 1}{4x + 1}$ $= \frac{(x+1)(x^2 - x + 1)}{x^2 - x + 1} - \frac{(4x+1)(x-1)}{4x+1}$ $= x+1 - (x-1)$ $= 2$	<ul style="list-style-type: none"> ✓✓ $(x+1)(x^2 - x + 1)$ ✓ $(4x+1)(x-1)$ ✓ $x+1 - (x-1)$ ✓ antwoord 	(5)
1.2.1	$6x^2 - 7x - 20$ $= (3x + 4)(2x - 5)$	<ul style="list-style-type: none"> ✓ $(3x + 4)$ ✓ $(2x - 5)$ 	(2)
1.2.2	$a^2 + a - 2ab - 2b$ $= a(a+1) - 2b(a+1)$ $= (a+1)(a-2b)$	<ul style="list-style-type: none"> ✓ groepering ✓ $(1+a)$ ✓ $(a-2b)$ 	(3)
1.3	<p>Siende dat $7^2 = 49$ en $8^2 = 64$ en $49 < 51 < 64$, $7 < \sqrt{51} < 8$ i.e. $\sqrt{51}$ lê tussen 7 en 8</p>	<ul style="list-style-type: none"> ✓ $49 < 51 < 64$ ✓ antwoord 	(2)
1.4	<p>Laat $x = 0,\dot{2}\dot{4}\dot{5}$ Dan is $1000x = 245,\dot{2}\dot{4}\dot{5}$ i.e. $999x = 245$ i.e. $x = \frac{245}{999}$ Dus is x 'n rasionale getal.</p>	<ul style="list-style-type: none"> ✓ benoem die veranderlike ✓ $1000x = 245,\dot{2}\dot{4}\dot{5}$ ✓ $999x = 245$ ✓ $x = \frac{245}{999}$ 	(4)

[19]

VRAAG 2

<p>2.1.1</p>	$x^2 - 4x = 21$ $x^2 - 4x - 21 = 0$ $(x + 3)(x - 7) = 0$ $x + 3 = 0 \quad \text{of} \quad x - 7 = 0$ $x = -3 \quad \quad \quad x = 7$	<p>✓ standaardvorm ✓ faktore</p> <p>✓ antwoorde</p> <p>(3)</p>
<p>2.1.2</p>	$96 = 3x^{\frac{5}{4}}$ $32 = x^{\frac{5}{4}}$ $x = (32)^{\frac{4}{5}}$ $= (2^5)^{\frac{4}{5}}$ $= 2^4$ $= 16$	<p>✓ $32 = x^{\frac{5}{4}}$ ✓ $x = (32)^{\frac{4}{5}}$</p> <p>✓ antwoord</p> <p>(3)</p>
<p>2.1.3</p>	$R = \frac{2\sqrt{x}}{3S}$ $\frac{3RS}{2} = \sqrt{x}$ $x = \frac{9R^2S^2}{4}$	<p>✓ Vermenigvuldig met 3S en deel deur 2 ✓ Kwadreer beide kante</p> <p>(2)</p>
<p>2.2</p>	<p>$6q + 7p = 3$.....Vergelyking 1</p> <p>$2q + p = 5$.....Vergelyking 2</p> <p>$6q + 7p = 3$.....Vergelyking 1</p> <p>$14q + 7p = 35$.....vermenigvuldig vergelyking 2 met 7....vergelyking 3</p> <p>Vergelyking 3 – Vergelyking 1:</p> $8q = 32$ $q = 4$ $2(4) + p = 5$ $p = -3$	<p>✓ $14q + 7p = 35$</p> <p>✓ $8q = 32$ ✓ $q = 4$</p> <p>✓ substitusie ✓ $p = -3$</p> <p>(5) [13]</p>

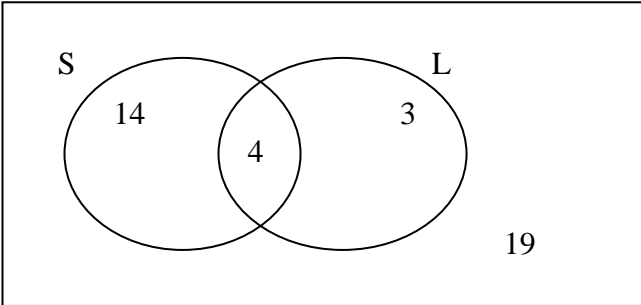
VRAAG 3

3.1.1	10 ; 6 ; 2	<ul style="list-style-type: none"> ✓ 10 ✓ 6 ✓ 2 	(3)		
3.1.2	$d = -4$ $T_n = -4n + 14$	<ul style="list-style-type: none"> ✓ $-4n$ ✓ 14 	(2)		
3.1.3	$-4n + 14 < -31$ $-4n < -45$ $n > 11,25$ $n = 12$	<ul style="list-style-type: none"> ✓ $-4n + 14 < -31$ ✓ $n > 11,25$ ✓ antwoord 	(3)		
3.2	$T_n = 6n$ $T_{13} = 6(13)$ $= 78$	OF	$T_n = 3n$ $T_{26} = 3(26)$ $= 78$	<ul style="list-style-type: none"> ✓ $6n$ ✓ substitusie van 13 ✓ antwoord 	(3)
				<ul style="list-style-type: none"> ✓ $3n$ ✓ substitusie van 26 ✓ antwoord 	(3)
[11]					

VRAAG 4

4.1	$A = P(1+i)^n$ $= 4500 \left(1 + \frac{4.25}{100} \right)^{2.5}$ $= R 4993.47$	<ul style="list-style-type: none"> ✓ $n = 2.5$ ✓ substitusie ✓ antwoord 	(3)	
4.2.1	<p>Leningsbedrag = R 5 999 – R 600 = R 5 399</p> <p>Totale bedrag wat geskuld word = $5\,399[1+(0,08)(1,5)]$ = R 6 046.88</p> <p>Maandelikse terugbetaling = $\frac{6046.88}{18}$ = R 335.94</p>	<ul style="list-style-type: none"> ✓ $y = 0$ ✓ 5 399 ✓ $n = 1,5$ ✓ Substitusie ✓ R 6 046.88 ✓ $\div 18$ ✓ R335.94 	(6)	
4.2.2	$R 6\,046.88 - R 5\,399$ = R 647.88	<ul style="list-style-type: none"> ✓ antwoord 	(1)	
4.3	$1\text{kg} = 1000\text{g}$ $\frac{1000}{28,35} = 35,27336861\dots \text{onse}$ $35,27336861\dots \times 978,34 \times 8,79$ = R303 337.16	<ul style="list-style-type: none"> ✓ omskakeling ✓ deling ✓ vermenigvuldiging ✓ antwoord 	(4)	
[14]				

VRAAG 5

5.1.1	$A \cap B$ OF A en B	✓ antwoord (1)
5.1.2	A' OF nie A nie	✓ antwoord (1)
5.2	B	✓ antwoord (1)
5.3.1	19 leerdere is regshandig en speel nie sokker nie.	✓ antwoord (1)
5.3.2	 <p>A Venn diagram with two overlapping circles, S on the left and L on the right, inside a rectangular universal set. The number 14 is in the part of circle S that does not overlap with L. The number 3 is in the part of circle L that does not overlap with S. The number 4 is in the overlapping region of S and L. The number 19 is in the region outside both circles but inside the rectangle.</p>	✓ 15 ✓ 4 ✓ 2 ✓ 19 (4)
5.3.3 (a)	$P(L \text{ OF } S) = \frac{14+4+3}{40}$ $= \frac{21}{40}$	✓ $15 + 4 + 2$ ✓ 40 ✓ antwoord (3)
5.3.3 (b)	$P(R \text{ EN } S) = \frac{14}{40}$ $= \frac{7}{20}$	✓ $\frac{15}{40}$ ✓ antwoord (2) [13]

VRAAG 6

6.1		<ul style="list-style-type: none"> ✓ vorm van f ✓ x-afsnit van f ✓ x-afsnit van g ✓ y-afsnit van g <p style="text-align: right;">(4)</p>
6.2	$x = 0$ en $y = 1$	<ul style="list-style-type: none"> ✓ antwoord ✓ antwoord <p style="text-align: right;">(2)</p>
6.3	$(-\infty ; 0) \cup (0 ; \infty)$	<ul style="list-style-type: none"> ✓ waardes ✓ notasie <p style="text-align: right;">(2)</p>
6.4	$\frac{3}{x} + 1 = -2x - 4$ $\frac{3}{x} = -2x - 5$ $3 = -2x^2 - 5x$ $2x^2 + 5x + 3 = 0$ $(2x + 3)(x + 1) = 0$ $x = -\frac{3}{2} \text{ of } x = -1$	<ul style="list-style-type: none"> ✓ $\frac{3}{x} + 1 = -2x - 4$ ✓ standaardvorm ✓ faktore ✓✓ antwoorde <p style="text-align: right;">(5)</p>
6.5	$-1 \leq -2x - 4 < 3$ $3 \leq -2x < 7$ $-1,5 \geq x > -3,5$ $-3,5 < x \leq -1,5$ <p style="text-align: center;">OF $x \in (-3,5 ; -1,5]$</p>	<ul style="list-style-type: none"> ✓ $-1 \leq -2x - 4 < 3$ ✓ $3 \leq -2x < 7$ ✓ antwoord <p style="text-align: right;">(3)</p>
6.6	$k(x) = 2(-2x - 4)$ $= -4x - 8$ <p>y-afsnit: $(0 ; -8)$</p>	<ul style="list-style-type: none"> ✓ vergelyking van $k(x)$ ✓ antwoord <p style="text-align: right;">(2)</p>
6.7	x -afsnit: $(2 ; 0)$ y -afsnit: $(0 ; -4)$	<ul style="list-style-type: none"> ✓ x-afsnit ✓ y-afsnit <p style="text-align: right;">(2)</p> <p style="text-align: right;">[20]</p>

VRAAG 7

7.1	$C(-2; 0)$	✓ antwoord (1)
7.2	$f(x) = ax^2 + q$ $f(x) = a(x^2 - 4)$ $2,5 = a((-3)^2 - 4)$ $2,5 = 5a$ $a = \frac{1}{2}$ $f(x) = \frac{1}{2}(x^2 - 4)$	✓ $f(x) = a(x^2 - 16)$ ✓ substitusie van $(-5; 2,25)$ ✓ antwoord (3)
7.3	Waardeversameling van f : $[-2; \infty)$	✓ antwoord (1)
7.4	Waardeversameling van h : $(-\infty; 0]$	✓ notasie ✓ kritieke waardes (2)
7.5	$g(x) = b^x - 4$ $0 = b^2 - 4$ $4 = b^2$ $b = 2$ $g(x) = 2^x - 4$	✓ $g(x) = b^x - 4$ ✓ substitusie ✓ antwoord (3) [10]

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