



# 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 | $(m-2n)(m^2-6mn-n^2)$ $= m^3 - 6m^2n - mn^2 - 2m^2n + 12mn^2 + 2n^3$ $= m^3 - 8m^2n + 11mn^2 + 2n^3$                                                      | ✓ uitbreiding<br>✓ $m^3$ ; $+2n^3$<br>✓ $-8m^2n + 11mn^2$<br>(3)                                                                |
| 1.1.2 | $\frac{x^3+1}{x^2-x+1} - \frac{4x^2-3x-1}{4x+1}$ $= \frac{(x+1)(x^2-x+1)}{x^2-x+1} - \frac{(4x+1)(x-1)}{4x+1}$ $= x+1-(x-1)$ $= 2$                        | ✓✓ $(x+1)(x^2-x+1)$<br>✓ $(4x+1)(x-1)$<br>✓ $x+1-(x-1)$<br>✓ antwoord<br>(5)                                                    |
| 1.2.1 | $6x^2-7x-20$ $= (3x+4)(2x-5)$                                                                                                                             | ✓ $(3x+4)$<br>✓ $(2x-5)$<br>(2)                                                                                                 |
| 1.2.2 | $a^2+a-2ab-2b$ $= a(a+1)-2b(a+1)$ $= (a+1)(a-2b)$                                                                                                         | ✓ groepering<br>✓ $(1+a)$<br>✓ $(a-2b)$<br>(3)                                                                                  |
| 1.3   | Siende dat $7^2 = 49$ en $8^2 = 64$ en<br>$49 < 51 < 64$ ,<br>$7 < \sqrt{51} < 8$<br>i.e. $\sqrt{51}$ lê tussen 7 en 8                                    | ✓ $49 < 51 < 64$<br>✓ antwoord<br>(2)                                                                                           |
| 1.4   | Laat $x = 0,2\dot{4}\dot{5}$<br>Dan is $1000x = 245,2\dot{4}\dot{5}$<br>i.e. $999x = 245$<br>i.e. $x = \frac{245}{999}$<br>Dus is $x$ 'n rasionale getal. | ✓ benoem die veranderlike<br>✓ $1000x = 245,2\dot{4}\dot{5}$<br>✓ $999x = 245$<br>✓ $x = \frac{245}{999}$<br>(4)<br><b>[19]</b> |

**VRAAG 2**

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

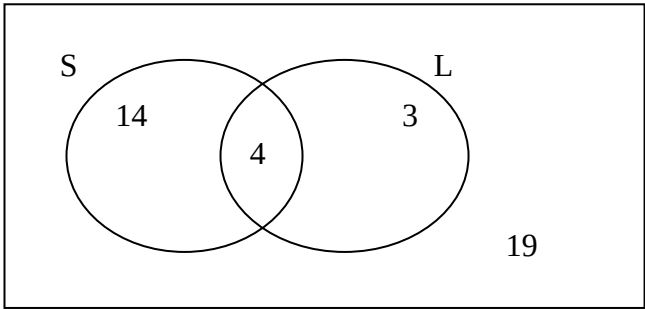
**VRAAG 3**

|       |                                                                                             |                                                                                                                           |
|-------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 3.1.1 | 10 ; 6 ; 2                                                                                  | ✓ 10<br>✓ 6<br>✓ 2<br>(3)                                                                                                 |
| 3.1.2 | $d = -4$<br>$T_n = -4n + 14$                                                                | ✓ $-4n$<br>✓ 14<br>(2)                                                                                                    |
| 3.1.3 | $-4n + 14 < -31$<br>$-4n < -45$<br>$n > 11,25$<br>$n = 12$                                  | ✓ $-4n + 14 < -31$<br>✓ $n > 11,25$<br>✓ antwoord<br>(3)                                                                  |
| 3.2   | $T_n = 6n$<br>$T_{13} = 6(13)$<br>$= 78$ <b>OF</b> $T_n = 3n$<br>$T_{26} = 3(26)$<br>$= 78$ | ✓ $6n$<br>✓ substitusie van 13<br>✓ antwoord<br>(3)<br>✓ $3n$<br>✓ substitusie van 26<br>✓ antwoord<br>(3)<br><b>[11]</b> |

**VRAAG 4**

|       |                                                                                                                                                                                                           |                                                                                                                 |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 4.1   | $A = P(1+i)^n$<br>$= 4500 \left( 1 + \frac{4.25}{100} \right)^{2.5}$<br>$= R 4993.47$                                                                                                                     | ✓ $n = 2.5$<br>✓ substitusie<br>✓ antwoord<br>(3)                                                               |
| 4.2.1 | Leningsbedrag = R 5 999 – R 600<br>$= R 5 399$<br><br>Totale bedrag wat geskuld word = $5\,399[1+(0,08)(1,5)]$<br>$= R 6\,046.88$<br><br>Maandelikse terugbetaling = $\frac{6046.88}{18}$<br>$= R 335.94$ | ✓ $y = 0$<br><br>✓ 5 399<br>✓ $n = 1,5$<br>✓ Substitusie<br><br>✓ R 6 046.88<br>✓ $\div 18$<br>✓ R335.94<br>(6) |
| 4.2.2 | $R 6\,046.88 - R 5\,399$<br>$= R 647.88$                                                                                                                                                                  | ✓ antwoord<br>(1)                                                                                               |
| 4.3   | $1\text{kg} = 1000\text{g}$<br>$\frac{1000}{28,35} = 35,27336861\dots$ onse<br>$35,27336861\dots \times 978,34 \times 8,79$<br>$= R303\,337.16$                                                           | ✓ omskakeling<br>✓ deling<br>✓ vermenigvuldiging<br>✓ antwoord<br>(4)<br><b>[14]</b>                            |

**VRAAG 5**

|           |                                                                                   |                                                       |
|-----------|-----------------------------------------------------------------------------------|-------------------------------------------------------|
| 5.1.1     | $A \cap B$ <b>OF</b> A en B                                                       | ✓ antwoord<br>(1)                                     |
| 5.1.2     | $A'$ <b>OF</b> nie A nie                                                          | ✓ antwoord<br>(1)                                     |
| 5.2       | B                                                                                 | ✓ antwoord<br>(1)                                     |
| 5.3.1     | 19 leerders is regshandig en speel nie sokker nie.                                | ✓ antwoord<br>(1)                                     |
| 5.3.2     |  | ✓ 15<br>✓ 4<br>✓ 2<br>✓ 19<br>(4)                     |
| 5.3.3 (a) | $P(L \text{ OF } S) = \frac{14 + 4 + 3}{40}$ $= \frac{21}{40}$                    | ✓ $15 + 4 + 2$<br>✓ 40<br>✓ antwoord<br>(3)           |
| 5.3.3 (b) | $P(R \text{ EN } S) = \frac{14}{40}$ $= \frac{7}{20}$                             | ✓ $\frac{15}{40}$<br>✓ antwoord<br>(2)<br><b>[13]</b> |

**VRAAG 6**

|     |                                                                                                                                                              |                                                                                       |     |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----|
| 6.1 |                                                                                                                                                              | ✓ vorm van $f$<br>✓ x-afsnit van $f$<br>✓ x-afsnit van $g$<br>✓ y-afsnit van $g$      | (4) |
| 6.2 | $x = 0$ en<br>$y = 1$                                                                                                                                        | ✓ antwoord<br>✓ antwoord                                                              | (2) |
| 6.3 | $(-\infty; 0) \cup (0; \infty)$                                                                                                                              | ✓ waardes<br>✓ notasie                                                                | (2) |
| 6.4 | $\frac{3}{x} + 1 = -2x - 4$<br>$\frac{3}{x} = -2x - 5$<br>$3 = -2x^2 - 5x$<br>$2x^2 + 5x + 3 = 0$<br>$(2x + 3)(x + 1) = 0$<br>$x = -\frac{3}{2}$ of $x = -1$ | ✓ $\frac{3}{x} + 1 = -2x - 4$<br><br>✓ standaardvorm<br>✓ faktore<br><br>✓✓ antwoorde | (5) |
| 6.5 | $-1 \leq -2x - 4 < 3$<br>$3 \leq -2x < 7$<br>$-1,5 \geq x > -3,5$<br>$-3,5 < x \leq -1,5$<br>OF $x \in (-3,5; -1,5]$                                         | ✓<br>$-1 \leq -2x - 4 < 3$<br>✓ $3 \leq -2x < 7$<br><br>✓ antwoord                    | (3) |
| 6.6 | $k(x) = 2(-2x - 4)$<br>$= -4x - 8$<br>y-afsnit: $(0; -8)$                                                                                                    | ✓ vergelyking van $k(x)$<br>✓ antwoord                                                | (2) |
| 6.7 | x-afsnit: $(2; 0)$<br>y-afsnit: $(0; -4)$                                                                                                                    | ✓ x-afsnit<br>✓ y-afsnit                                                              | (2) |

**[20]**

**VRAAG 7**

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

**TOTAAL: 100**