



GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

**GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION**

JUNE 2018

GRADE 10

MATHEMATICS

PAPER 1

MEMORANDUM

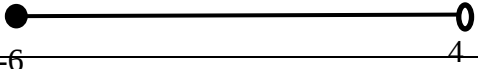
6 pages

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QUESTION 1		
1.1	$25 < 33 < 36$ $\sqrt{25} < \sqrt{33} < \sqrt{36}$ $5 < \sqrt{33} < 6$ $\sqrt{33}$ lies between 5 and 6	$\checkmark \sqrt{25}; \sqrt{36}$ $\checkmark$ answer (2)
1.2	$x = 0,4545454545$ $100x = 45,45454545$ $x = 0,4545454545$ $99x = 45$ $x = \frac{45}{99}$ $= \frac{5}{11}$	$\checkmark 100x = 45,45454545$ $\checkmark 99x = 45$ $\checkmark x = \frac{5}{11}$ (3)
		[5]

QUESTION 2			
2.1	2.1.1	$\frac{(3x)^2(-2xy)^3}{2x^5y^4}$ $= \frac{9x^2 \cdot -8x^3y^3}{2x^5y^4}$ $= \frac{-72x^5y^3}{2x^5y^4}$ $= -36x^{5-5}y^{3-4}$ $= -36y^{-1}$ $= -\frac{36}{y}$	$\checkmark 9x^2 \cdot -8x^3y^3$ $\checkmark -36y^{-1}$ $\checkmark -\frac{36}{y}$ (3)
	2.1.2	$\left(\frac{1}{p} - q\right)\left(\frac{1}{p} + q\right) - \frac{q}{p^2}\left(\frac{1}{q} + qp^2\right)$ $= \left(\frac{1}{p^2} - q^2\right) - \left(\frac{q}{p^2q} + \frac{q^2p^2}{p^2}\right)$ $= \left(\frac{1}{p^2} - q^2\right) - \left(\frac{1}{p^2} + q^2\right)$ $= \frac{1}{p^2} - q^2 - \frac{1}{p^2} - q^2$ $= -2q^2$	$\checkmark = \left(\frac{1}{p^2} - q^2\right)$ $- \left(\frac{q}{p^2q} + \frac{q^2p^2}{p^2}\right)$ $\checkmark \frac{1}{p^2} - q^2 - \frac{1}{p^2} - q^2$ $\checkmark -2q^2$ (3)
2.2	2.2.1	$6p + 40 - p^2$ $= -(p^2 - 6p - 40)$ $= -(p - 10)(p + 4)$	$\checkmark -(p^2 - 6p - 40)$ $\checkmark -(p - 10)$ $\checkmark (p + 4)$ (3)
	2.2.2	$-xy - (y - x)b + b^2$ $= -xy - by + bx + b^2$ $= -y(x + b) + b(x + b)$ $= (x + b)(-y + b)$	$\checkmark -xy - by + bx + b^2$ $\checkmark$ grouping $\checkmark (x + b)$ $\checkmark (-y + b)$ (4)
			[13]

QUESTION 3

3.1	$\frac{x+2}{x^2-3x-4} = \frac{3}{x-4} - \frac{1}{2+2x}$ $\frac{x+2}{(x-4)(x+1)} = \frac{3}{x-4} - \frac{1}{2(x+1)}$ CD: $2(x-4)(x+1)$ Restriction: $x \neq 4; x \neq -1$ $2(x+2) = 6(x+1) - 1(x-4)$ $2x+4 = 6x+6-x+4$ $2x-5x = 10-4$ $-3x = 6$ $x = -2$	✓ correct factors ✓ $2(x+2)$ ✓ $6(x+1)$ ✓ $-x+4$ ✓ answer (5)
3.2	$-2 \leq \frac{x}{2} + 1 < 3$ $-3 \leq \frac{x}{2} < 2$ $-6 \leq x < 4$ 	✓ $-3 \leq \frac{x}{2} < 2$ ✓ $-6 \leq x < 4$ ✓ number line (3)
		[8]

QUESTION 4			
4.1	4.1.1	$T_1 = 3(1) + 2 = 5$ $T_2 = 3(2) + 2 = 8$ $T_3 = 3(3) + 2 = 11$ $T_4 = 3(4) + 2 = 14$ $T_n = 3n + 2$	✓method ✓ $3n$ ✓2 (3)
4.2	4.2.1	$3x - 7; 2x; 3x + 1; \dots$ $2x - (3x - 7) = 3x + 1 - 2x$ $2x - 3x + 7 = x + 1$ $-2x = -6$ $x = 3$	✓ d values ✓equate ✓simplify ✓answer (4)
	4.2.2	2; 6; 10; ... $T_n = 4n - 2$ $4n - 2 > 31$ $4n > 33$ $n > 8,25$ $\therefore n = 9$	✓ $4n - 2 > 31$ ✓ $n > 8,25$ ✓conclusion (3)
			[10]

QUESTION 5			
5.1		$q = 1$ $y = b^x + 1$ $5 = b^2 + 1$ $b^2 = 4$ $b = 2$	$\checkmark q = 1$ $\checkmark$ substitute coordinate $\checkmark b = 2$ (3)
5.2	5.2.1	$y = -x + 2 \dots\dots\dots(1)$ $y = \frac{-3}{x} \dots\dots\dots(2)$ Substitute (1) in (2): $-x + 2 = \frac{-3}{x}$ $-x^2 + 2x + 3 = 0$ $-(x - 3)(x + 1) = 0$ $x = 3 \quad \text{OR} \quad x = -1$ $y = -(3) + 2 \quad \text{OR} \quad y = -(-1) + 2$ $y = -1 \qquad \qquad y = 3$ $Q(3; -1) \qquad P(-1; 3)$	$\checkmark$ substitute $\checkmark$ simplification $\checkmark$ factors $\checkmark x$ values $\checkmark y$ values $\checkmark$ coordinate form (6)
	5.2.2	B(2; 0)	$\checkmark 2$ $\checkmark 0$ (2)
	5.2.3	$y = -(-6) + 2$ $GE = 8$ $y = \frac{-3}{-6}$ $EF = \frac{1}{2}$ $\therefore GF = 8 - \frac{1}{2}$ $= 7\frac{1}{2}$	$\checkmark GE = 8$ $\checkmark EF = \frac{1}{2}$ $\checkmark 7\frac{1}{2}$ (3)
			[14]
			TOTAL : 50