LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

SEKHUKHUNE SOUTH DISTRICT

GRADE 10

MATHEMATICS
MEMORANDUM
MARCH 2023

MARKS: 50 MARKS

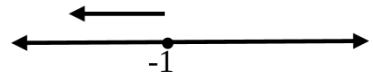
DURATION: 1 HOUR.

This memorandum consist of 6 pages including cover page.

QUESTION 1				
1.1				
	1.1.1	Irrational	✓ Irrational	(1)
	1.1.2	Irrational	✓ Irrational	(1)
	1.1.3	Rational	✓ Rational	(1)
	1.1.4	Non-real	✓ Non-real	(1)
1.2				
	1.2.1	$(a-2)(a^2+2a+4) = a^3-8$	✓ a^3 ✓ -8	(2)
	1.2.2	$-(2x-5)^2 = -(4x^2-20x+25)$ $= -4x^2+20x-25$	✓ $4x^2-20x+25$ ✓ Answer	(2)
	1.2.3	$\left(\frac{a}{2}+1\right)\left(\frac{a}{2}-1\right) = \frac{a^2}{4}-1$	✓ $\frac{a^2}{4}$ ✓ -1	(2)
1.3				
	1.3.1	$x-3-\frac{5x-6}{2-x}-\frac{4}{x-2} = x-3+\frac{5x-6}{x-2}-\frac{4}{x-2}$ $= \frac{x(x-2)-3(x-2)+5x-6-4}{x-2}$ $= \frac{x^2-2x-3x+6+5x-6-4}{x-2}$ $= \frac{x^2-4}{x-2}$ $= \frac{(x-2)(x+2)}{x-2}$ $= x+2$	✓ LCD: $(x-2)$ ✓ Simplifying ✓ Factors ✓ Answer	(4)

	1.3.2	$\frac{4^{2y-1}.9^{y+1}}{18^{y}.8^{y-1}} = \frac{(2^2)^{2y-1}.(3^2)^{y+1}}{(2.3^2)^{y}.(2^3)^{y-1}}$ $= \frac{2^{4y-2}.3^{2y+2}}{2^{y}.3^{2y}.2^{3y-3}}$ $= 2^{4y-2-y-3y+3}.3^{2y+2-2y}$ $= 2^{1}.3^{2}$ $= 18$	✓ prime bases ✓ simplifying ✓ $2^1.3^2$ ✓ answer	(4)
	1.3.3	$\frac{2^{2n+2} - 2^{2n+1}}{4^{n+1}}$ $= \frac{2^{2n}.2^2 - 2^{2n}.2^1}{2^{2n}.2^2}$ $= \frac{2^{2n}(2^2-2)}{2^{2n}.2^2}$ $= \frac{4-2}{4}$ $= \frac{1}{2}$	✓ prime bases ✓ common factor: 2^{2n} ✓ answer	(3)
1.4				
	1.4.1	$8x^3 + 1 = (2x+1)(4x^2 - 2x + 1)$	✓ $2x+1$ ✓ $4x^2 - 2x + 1$	(2)
	1.4.2	$2x^2 - x - 6 = (2x+3)(x-2)$	✓ $2x+3$ ✓ $x-2$	(2)

	1.4.3	$a^2 - 2ab - 2b^2 + ab = (a - 2b) + b(a - 2b)$ $= (a + b)(a - 2b)$	✓ $a(a - 2b)$ ✓ $b(a - 2b)$ ✓ *answer*	(3)
				[28]
QUESTION 2				
2.1	2.1.1	$x^2 = 5x$ $x^2 - 5x = 0$ $x(x - 5) = 0$ $x = 0$ *or* $x = 5$	✓ $x^2 - 5x = 0$ ✓ $x(x - 5) = 0$ ✓ both x *values*	(3)
	2.1.2	$R = \frac{2\sqrt{x}}{3S}$ $3RS = 2\sqrt{x}$ $\frac{3RS}{2} = \sqrt{x}$ $x = \frac{9R^2S^2}{4}$	✓ multiplying by 3S ✓ dividing by 2 ✓ answer	(3)
	2.1.3	$\left(\frac{1}{3}\right)^{x-1} = 27$ $(3^{-1})^{x-1} = 3^3$ $3^{-x+1} = 3^3$ $-x + 1 = 3$ $x = -2$	✓ simplifying ✓ $-x + 1 = 3$ ✓ answer	(3)

	2.1.4	$3(2-3x) \geq 15$ $6-9x \geq 15$ $-9x \geq 9$ $x \leq -1$  OR $2-3x \geq 5$ $-3x \geq 3$ $x \leq -1$	✓ simplifying ✓ $-9x \geq 9$ ✓ answer ✓ number line	(4)
2.2		$a+b=12$……..(1) $4a+2b=44$……..(2) From (1) : $a=12-b$ $4(12-b)+2b=44$ $48-4b+2b=44$ $-2b=-4$ $b=2$ $a=10$ OR From (1)….. $b=12-a$ $4a+2(12-a)=44$ $4a+24-2a=44$ $2a=20$	✓ $a=12-b$ ✓ $4(12-b)+2b=44$ ✓ $48-4b+2b=44$ ✓ $b=2$ ✓ $a=10$ or ✓ $b=12-a$ ✓ $4a+2(12-a)+2b=44$ ✓ $4a+24-2a=44$	

		$a = 10$ $b = 2$	✓ $a = 10$ ✓ $b = 2$	(5)
2.3		Son George Now x $7x$ In 25 years $x + 25$ $7x + 25$ Equation : $7x + 25 = 2(x + 25)$ $7x + 25 = 2x + 50$ $5x = 25$ $x = 5$ His son is 5 years old .	✓ $x + 25$ ✓ $7x + 25$ ✓ $7x + 25 = 2x + 50$ ✓ $5x = 25$ ✓ Answer	(4)
				[22]
		TOTAL: 50		