Education

MPUMALANGA PROVINCE

REPUBLIC OF SOUTH AFRICA



NATIONAL SENIOR CERTIFICATE

GRADE 10

MATHEMATICS CONTROLLED TEST

24 MARCH 2025

MARKING GUIDELINES



MARKS: 50

TIME: 1 HOUR

This marking guidelines consists of 5 pages.

QUESTION 1

1.1	$\sqrt{36} < \sqrt{47} < \sqrt{49}$ $6 < \sqrt{13} < 7$ Between 6 and 7	✓ $\sqrt{36} < \sqrt{47} < \sqrt{49}$ ✓ answer	(2)
1.2	Let $x = 0,131313\ldots$ $100x = 13,1313\ldots$ $100x - x = 13,1313 - 0,1313$ $99x = 13$ $x = \frac{13}{99}$	✓ $100x = 13,1313\ldots$ ✓ $100x - x = 13,1313 - 0,1313$ ✓answer	(3)
1.3.1	$x^2 - 3x - 10$ $(x+2)(x-5)$	✓✓factors	(2)
1.3.2	$25x^4 - 4y^8$ $= (5x^2)^2 - (2y^4)^2$ $= (5x^2 - 2y^4)(5x^2 + 2y^4)$	✓ $(5x^2)^2 - (2y^4)^2$ ✓factors	(2)
1.3.3	$125x^3 + 27$ $= (5x)^3 + 3^3$ $= (5x+3)(25x^2 - 15x + 9)$	✓✓ factors	(2)
1.3.4	$3x - 6xy - 2y + 1$ $= 3x(1-2y) + 1(-2y+1)$ $= (3x+1)(1-2y)$	✓ $3x(1-2y)$ ✓ $1(-2y+1)$ ✓ answer	(3)
1.4.1	$(2x-5)(x^2 - 2x + 3)$ $= 2x^3 - 4x^2 + 6x - 5x^2 + 10x - 15$ $= 2x^3 - 9x^2 + 16x - 15$	✓ simplification ✓answer	(2)
1.4.2	$\frac{x^2 - x - 2}{x+1} = \frac{(x-2)(x+1)}{x+1}$ $= x - 2$	✓factors ✓ answer	(2)

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1.4.3	$\frac{3^{500}.7^{500}.2^{502}}{42^{500}} = \frac{3^{500}.7^{500}.2^{502}}{(3.7.2)^{500}}$ $= \frac{3^{500}.7^{500}.2^{502}}{3^{500}.7^{500}.2^{500}}$ $= 2^{502-500}$ $= 2^2 = 4$	✓ $(2.3.7)^{500}$ ✓ $2^{500}.3^{500}.7^{500}$ ✓ $2^{502-500}$ ✓answer	(4)
			[20]

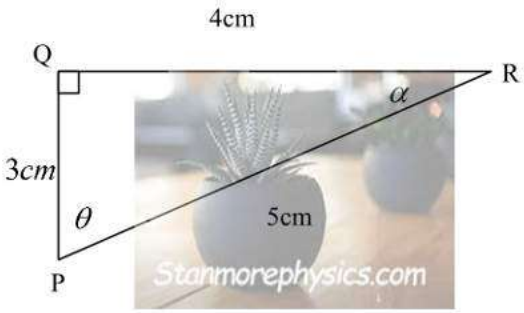
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QUESTION 2

2.1.1	$x(5-x)=0$ $x=0 \quad or \quad x=5$	✓ ✓ answer	(2)
2.1.2	$x-2=\frac{8}{x}$ $x^2-2x=8$ $x^2-2x-8=0$ $(x-4)(x+2)=0$ $x=4 \, or \quad x=-2$	✓ standard form ✓three factors ✓answer	(3)
2.1.3	$x^4=27x$ $x^3=27$ $x^3=3^3$ $x=3$	✓ $x^3=27$ ✓ $x^3=3^3$ ✓answer	(3)
2.2	$\frac{4^x-3.2^x-18}{2^x+3} = \frac{2^{2x}-3.2.^x-18}{2^x+3}$ $= \frac{(2^x+3)(2^x-6)}{2^x+3}$ ، $= 2^x-6$ `	✓2^{2x} ✓✓factors ✓answer	(4)
2.3.1	$-15<1-4x<5$	✓ $-16<-4x<4$	

	$-16 < -4x < 4$ $4 > x > -1$ $-1 < x < 4$	✓ end points ✓notation	(3)
2.3.2		✓✓ answer	(2)
2.4	$x + 3y = 12$ . . . .(1) $2x + y = 9$ . . . .(2) $x = 12 - 3y$ . . . .(3) Substitute (3) into (2): $2(12 - 3y) + y = 9$ $24 - 6y + y = 9$ $-5y = -15$ $y = 3$ Subst. $y = 3$ into (3) $x = 12 - 3(3)$ $x = 3$	✓equation 3 ✓substitution ✓ simplification ✓x-value ✓y-value	(5)
			[22]

QUESTION 3



3.1.1	$\sin\theta$ $=\frac{QR}{PR}$ $=\frac{4}{5}$	✓answer	(1)
3.1.2	$\sec\alpha$ $=\frac{1}{\cos\alpha}$ $=\frac{1}{\frac{QR}{PR}}$ $=\frac{1}{\frac{4}{5}}$ $=\frac{5}{4}$	✓ $\sec\alpha=\frac{1}{\cos\alpha}$ ✓substitution ✓ answer	(3)
3.1.3	$\tan\theta$ $=\frac{QR}{QP}$ $=\frac{4}{3}$	✓answer	(1)
3.2.2	$\sin\theta=\frac{QR}{PR}$ $\sin\theta=\frac{4}{5}$ $\theta=\sin^{-1}(\frac{4}{5})$ $\theta=53{,}13°$	✓correct ratio ✓ substitution ✓answer	(3)
			[8]

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TOTAL MARKS: 50