KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

MATHEMATICS
COMMON TEST
MARCH 2026
MARKING GUIDELINE

PROVINCIAL STANDARDISED ASSESSMENT

GRADE 10

MARKS: 75

This marking guideline consists of 7 pages.

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QUESTION 1

1.1.1	Irrational	✓A (1)
1.1.2	Irrational	✓A (1)
1.1.3	Rational	✓A (1)
1.2.1	$= x(x^2 - 64)$ $= x(x+8)(x-8)$	✓A common factor ✓CA answer (2)
1.2.2	$= x^2 + 6x - 7$ $= (x-1)(x+7)$	✓A $(x-1)$ ✓A $(x+7)$ (2)
1.2.3	$= y - 1 + xy - x$ $= (y-1) + x(y-1)$ $= (y-1)(1+x)$	✓A rearranging ✓CA factors ✓CA answer (3)
1.3.1	$= (2x+y)(2x+y)^2$ $= (2x+y)(4x^2 + 4xy + y^2)$ $= 8x^3 + 8x^2y + 2xy^2 + 4x^2y + 4xy^2 + y^3$ $= 8x^3 + 12x^2y + 6xy^2 + y^3$	✓A $4x^2 + 4xy + y^2$ ✓CA $8x^3 + 8x^2y + 2xy^2$ ✓CA $4x^2y + 4xy^2 + y^3$ ✓CA answer (4)
1.3.2	$= \frac{3x^2y}{6xy^2} \times \frac{4y}{x}$ $= \frac{12x^2y^2}{6x^2y^2}$ $= 2$ **OR** $= \frac{x}{2y} \times \frac{4y}{x}$ $= 2$	✓A multiply by the reciprocal ✓A simplification ✓CA answer (3)
1.3.3	$= \frac{3^{x-1}.2^{6x}}{2^{5x-3}.2^{x+2}.3^{x+2}}$ $= 3^{-3} \times 2^{1}$ $= \frac{2}{27}$	✓A prime bases ✓CA simplification ✓ CA answer (3)

1.3.4	$= \frac{2+x}{4x^2-2x+1} - \frac{8x+1}{(2x+1)(4x^2-2x+1)}$ $= \frac{(2+x)(2x+1)}{(2x+1)(4x^2-2x+1)} - \frac{8x+1}{(2x+1)(4x^2-2x+1)}$ $= \frac{2x^2+5x+2-8x-1}{(2x+1)(4x^2-2x+1)}$ $= \frac{2x^2-3x+1}{(2x+1)(4x^2-2x+1)}$	✓ A factors (denominator) ✓ CA LCD ✓ CA simplification ✓ CA answer (4)
		[24]

QUESTION 2

2.1.1	$4^x = 4^{-2}$ $x = -2$	**OR**	$2^{2x} = 2^{-4}$ $2x = -4$ $\therefore x = -2$	✓A 4^{-2} *or* 2^{-4} ✓CA answer (2)
2.1.2	$3^{2x} + 3^1 \times 3^{2x} = 36$ $4 \times 3^{2x} = 36$ $3^{2x} = 3^2$ $2x = 2$ $x = 1$	**OR**	$3^{2x} + 3^1 \times 3^{2x} = 36$ $3^{2x}(1+3) = 36$ $3^{2x} = 3^2$ $2x = 2$ $x = 1$	✓A $3^{2x} + 3^1 \times 3^{2x} = 36$ ✓CA adding like terms or common factor ✓CA equating exponents ✓CA answer (4)
2.1.3	$\frac{x^2+6}{x(x+1)} + \frac{3}{2x} = 2$ $LCD = 2x(x+1)$ *Restriction* : $x \neq 0$ *or* $x \neq -1$ $\frac{x^2+6}{x(x+1)} \times 2x(x+1) + \frac{3}{2x} \times 2x(x+1) = 2 \times 2x(x+1)$ $2x^2 + 12 + 3x + 3 = 4x^2 + 4x$ $2x^2 + x - 15 = 0$ $(2x-5)(x+3) = 0$ $x = \frac{5}{2}$ *or* $x = -3$			✓A $x(x+1)$ ✓A LCD ✓A simplification ✓CA factors ✓CA answers (5)

2.1.4	$4^{10}\times 3+4^{10}+2\times 4^{10}$ $=6\times 4^{10}$ $=3\times 2\times 2^{20}$ $=3\times 2^{21}$ $\therefore x=21$ **OR** $4^{10}\times 3+4^{10}+2\times 4^{10}$ $=(2^2)^{10}\times 3+(2^2)^{10}+2\times(2^2)^{10}$ $=2^{20}\times 3+2^{20}+2\times 2^{20}$ $=3\times 2^{21}$ $\therefore x=21$	✓A 6×4^{10} ✓A $3\times 2\times 2^{20}$ ✓CA answer (3) ✓A prime bases ✓A 3×2^{21} ✓CA answer (3)
2.2.1	$-4<-\frac{2}{3}x\leq 6$ $6>x\geq -9$ $-9\leq x<6$	✓A subtracting 1 ✓A Multiplicative Inverse ✓CA answer (3)
2.2.2	$x\in[-9;6)$	✓CA ✓CA answer (2)
2.3	$36<38<49$ $\sqrt{36}<\sqrt{38}<\sqrt{49}$ $6<\sqrt{38}<7$ $-6>-\sqrt{38}>-7$ $-7<-\sqrt{38}<-6$	✓A perfect squares ✓CA simplification ✓CA answer (3)

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2.4	$2x+3y=39$ ... (1) $4x+y=41$ ... (2) $y=41-4x$ ... (3) $2x+3(41-4x)=39$ $2x+123-12x=39$ $-10x=-84$ $x=R8,40$ $y=41-4(8,40)$ $y=R7,40$	✓A both equations ✓A y as the subject ✓CA substitution ✓CA value of x ✓CA value of y (5)
	OR	
	$2x+3y=39$ ... (1) $4x+y=41$ ... (2) *Equation* (1) $\times 2$ $4x+6y=78$ ...(3) *Equation* (3) − *Equation* (2) $5y=37$ $y=R7,40$ $x=R8,40$	✓A both equations ✓A method ✓A simplification ✓CA value of y ✓A value of x (5)
2.5	$x^2+2xy+y^2=28+2xy$ $(x+y)^2=28+2(4)$ $\sqrt{(x+y)^2}=\sqrt{36}$ $x+y=6$	✓A adding $2xy$ both sides ✓A substitution ✓A simplification ✓A answer
	OR	
	$(x+y)^2 = x^2+2xy+y^2$ $= x^2+y^2+2(xy)$ $= 28+2(4)$ $\sqrt{(x+y)^2}=\sqrt{36}$ $x+y = 6$	✓A $x^2+2xy+y^2$ ✓A substitution ✓A simplification ✓A answer (4)
		[31]

QUESTION 3

3.1.1	$(\cos 28°)(\cot 28°)$ $=(\cos 28°)\left(\frac{1}{\tan 28°}\right)$ $=1,66$	✓A $\frac{1}{\tan 28°}$ ✓CA answer (2)
3.1.2	$\sec(40°+10°)$ $=\sec 50°$ $=\frac{1}{\cos 50°}$ $=1,56$ Answer only - full marks	✓A $\frac{1}{\cos 50°}$ ✓CA answer (2)
3.2.1 a)	$\sin\theta$ $=\frac{8}{10}$ *or* $\frac{4}{5}$	✓A answer (1)
3.2.1 b)	$\cot\alpha$ $=\frac{8}{6}$ *or* $\frac{4}{3}$	✓A answer (1)
3.2.1 c)	$\cos\alpha$ $=\frac{8}{10}$ *or* $\frac{4}{5}$	✓A answer (1)
3.2.2	$\sin\theta=\frac{8}{10}$ *or* $\sin\theta=\frac{4}{5}$ $\theta=53,13°$ **OR** $\cos\theta=\frac{6}{10}$ *or* $\cos\theta=\frac{3}{5}$ $\theta=53,13°$ **OR** $\tan\theta=\frac{8}{6}$ *or* $\tan\theta=\frac{4}{3}$ $\theta=53,13°$	✓✓CA correct trig ratio ✓CA answer (3) ✓✓A correct trig ratio ✓CA answer (3) ✓✓A correct trig ratio ✓CA answer (3)
		[10]

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QUESTION 4

4.1.1	$x^2 + y^2 = r^2$ $x^2 + (12)^2 = (13)^2$ $x = \pm 5$ $\therefore x = 5$ $\therefore \cos\theta = \frac{5}{13}$	✓A substitution Pythagoras ✓CA $x = 5$ ✓CA answer (3)
4.1.2	$(\sin\theta)(\sin\theta) + (\cos\theta)(\cos\theta)$ $= \left(\frac{12}{13}\right)\left(\frac{12}{13}\right) + \left(\frac{5}{13}\right)\left(\frac{5}{13}\right)$ $= 1$ **OR** $(\sin\theta)(\sin\theta) + (\cos\theta)(\cos\theta)$ $= \sin^2\theta + \cos^2\theta$ $= \left(\frac{12}{13}\right)^2 + \left(\frac{5}{13}\right)^2$ $= 1$	✓A ✓CA substitution ✓CA answer (3) ✓A ✓CA substitution ✓CA answer (3)
4.2	$\frac{\sqrt{3}}{10}\tan^2 60° - \frac{3\sqrt{3}}{10}\cot^2 45°$ $= \frac{\sqrt{3}}{10}\left(\frac{\sqrt{3}}{1}\right)^2 - \frac{3\sqrt{3}}{10}\left(\frac{1}{1}\right)^2$ $= \frac{3\sqrt{3}}{10} - \frac{3\sqrt{3}}{10}$ $= 0$	✓A $\left(\frac{\sqrt{3}}{1}\right)^2$ ✓A $\left(\frac{1}{1}\right)^2$ ✓CA simplification ✓CA answer (4)
		[10]

TOTAL MARKS: 75

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