education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 10

MATHEMATICS P2

JUNE 2024

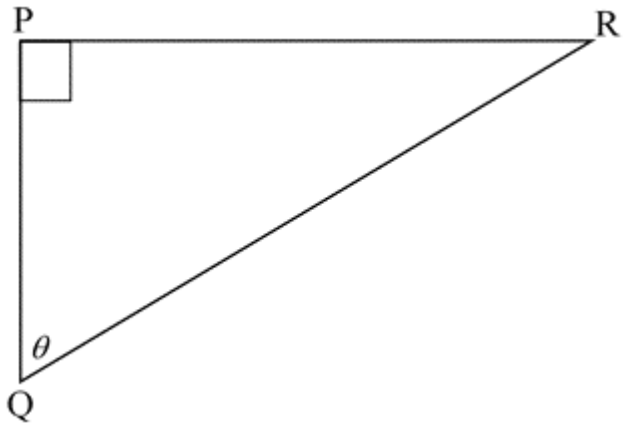
MARKING GUIDELINES

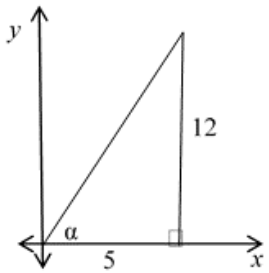
MARKS: 75

These marking guidelines consist of 8 pages.

QUESTION 1

1.1



1.1.1	$\frac{PR}{PQ}$	✓ answer (1)
1.1.2	$\sec(90^\circ - \theta) = \frac{QR}{PR}$	✓✓ answer (2)
1.2.1	$\sin(40° - 25°)$ $= \sin(15°)$ $= 0,26$	✓ sin 15 ✓ answer (2)
1.2.2	$\frac{\cos 25^\circ}{2} - \cot\frac{25^\circ}{2}$ $= \frac{\cos 25^\circ}{2} - \frac{1}{\tan(12,5^\circ)}$ $= -4,06$	✓ correct substitution ✓ answer (2)
1.3		
1.3.1	$r^2 = x^2 + y^2$ – Theorem of pythagoras $r^2 = 5^2 + 12^2$ $r = 13$ $\cos\theta = \frac{5}{13}$	✓ $r = 13$ ✓ $\cos\theta = \frac{5}{13}$ (2)

1.3.2	$(\cos\theta+\sin\theta)^2$ $=\left(\frac{12}{13}+\frac{5}{13}\right)^2$ $=\left(\frac{17}{13}\right)^2$ $=\frac{289}{169}$	✓substitution ✓ answer (2)

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QUESTION 2

2.1	$\cos 60° + \tan^2(45°) - \sin 0°$ $=\frac{1}{2}+\ (\frac{1}{\sqrt{2}}\ )^2 - 0$ $=\frac{1}{2}+\frac{1}{2}$ $=1$	✓ $\frac{1}{2}$ ✓$\left(\frac{1}{\sqrt{2}}\right)^2$ ✓0 ✓1 (4)
2.2.1	$\frac{\sin x}{0,2} - 2 = 1,24$ $\frac{\sin x}{0.2} = 3,24$ $\sin x = 3.24 \times 0.2$ $\sin x = 0.648$ $x = \sin^{-1}(0.648)$ $x = 40,39^\circ$	✓3,24 ✓ $\sin x = 0,648$ ✓answer (3)
2.2.2	$\tan\frac{x}{2} - \frac{1}{\sqrt{3}} = 0$ $\tan\frac{x}{2} = \frac{1}{\sqrt{3}}$ $\frac{x}{2} = 30^\circ$ $x = 60°$	✓ $\tan\frac{x}{2} = \frac{1}{\sqrt{3}}$ ✓ $\frac{x}{2} = 30^\circ$ ✓answer (3)

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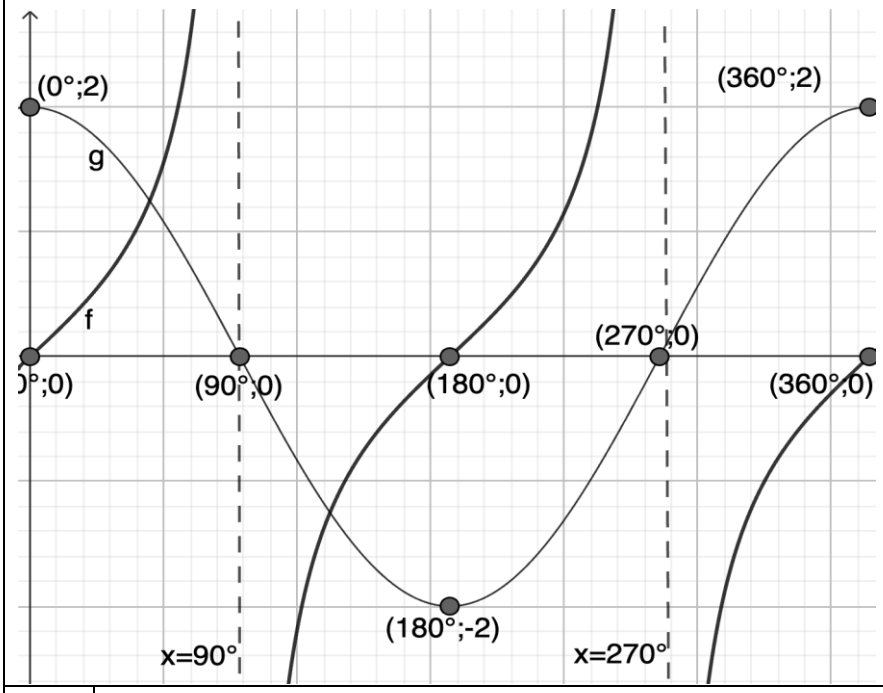
QUESTION 3

3.1	$f(x)=\tan x$ and $g(x)=2\cos x$ for $0° \le x \le 360°$. 	***f* graph** ✓*y*-intercept ✓*x*-intercept ✓Asymptotes ✓Shape ***g* graph** ✓*y*-intercept ✓*x*-intercept ✓T.P ✓Shape (8)
3.2.1	Period $=180°$	✓answer (1)
3.2.2	Amplitude = 2	✓answer (1)
3.3.1	$x=0°$ $x=360°$	✓ $x=0°$ ✓ $x=360°$ (2)
3.3.2	$x=180°$	✓answer (1)

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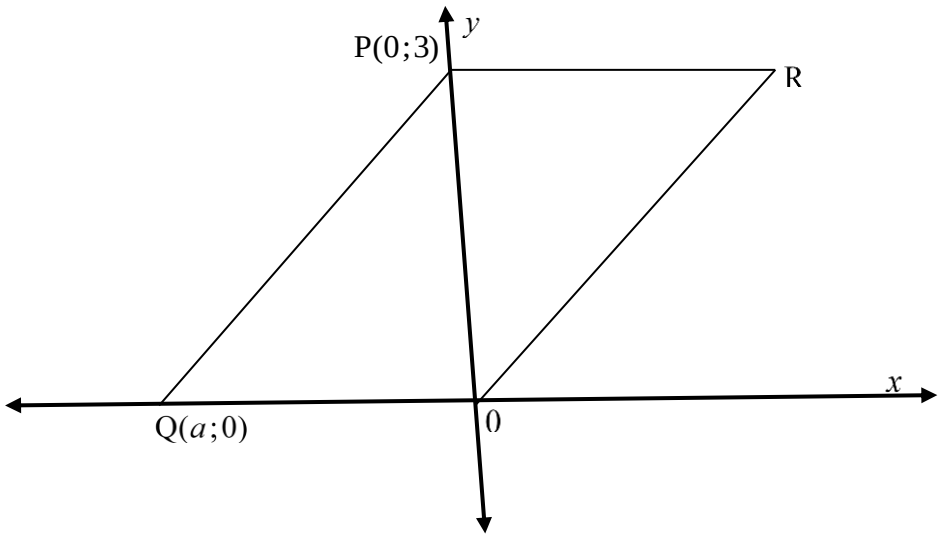
QUESTION 4



4.1	$OQ^2 + OP^2 = QP^2$ [Pyth] $a^2 + 3^2 = 5^2$ $a^2 = 16$ $a = \pm 4$ $\therefore a = -4$	✓ substitution ✓ answer (2)
4.2	$c = 3$ $m = \frac{y_2 - y_1}{x_2 - x_1}$ $= \frac{3-0}{0-(-4)}$ $= \frac{3}{4}$ $y = mx + c$ $\therefore y = \frac{3}{4}x + 3$	✓ $y-$ intercept/ $c = 3$ ✓ substitution ✓ $m = \frac{3}{4}$ ✓ answer (4)
4.3	M $\left(\frac{x_1 + x_2}{2}; \frac{y_1 + y_2}{2}\right)$ M $\left(\frac{0+0}{2}; \frac{0+3}{2}\right)$ M $(0; \frac{3}{2})$	✓ substitution for x and y ✓ answer (2)
4.4	R(4 ; 3)	✓ 4 ✓ 3 (2)

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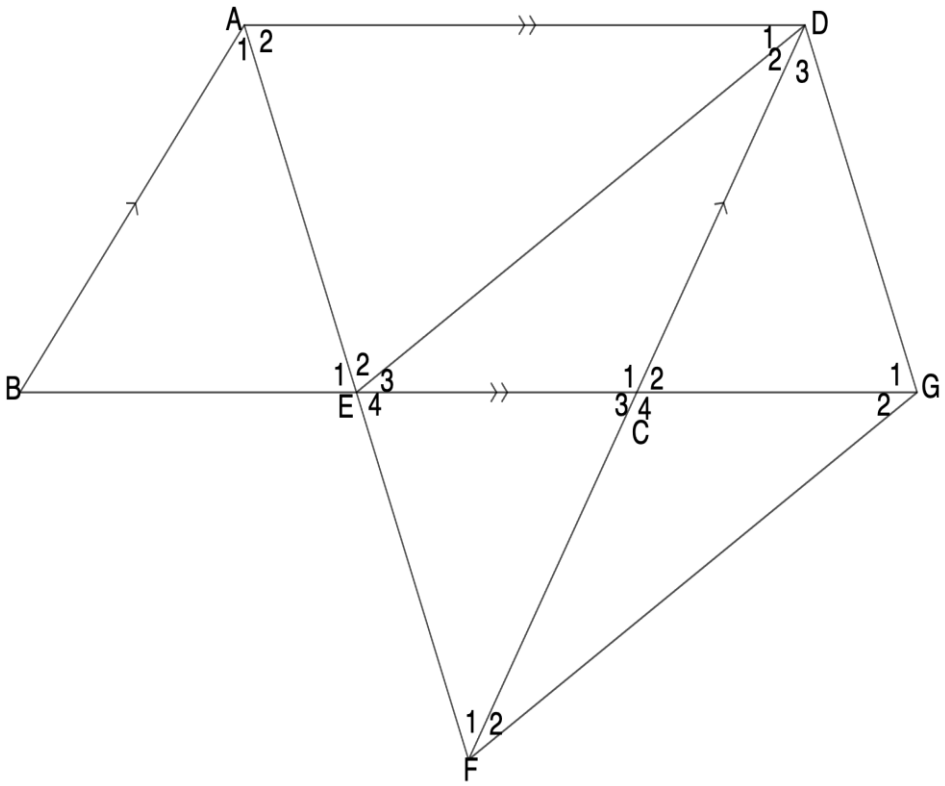
QUESTION 5

		
5.1	AB = EC [given] AB = BC [opp sides of a parm ABCD] ΔDCE is an isoceles [2 sides = in Δ]	✓S/R ✓S/R ✓R (3)
5.2.1	A_2 = x [AE bisects BAD] E_1 = x [alt ∠'s AD$\|\|$BG] E_4 = x [corr ∠'s AB$\|\|$FD] $A\hat{F}D$ = x [alt ∠'s AB$\|\|$FD]	✓S ✓R ✓S ✓R ✓S ✓R ✓S ✓R (8)
5.2.2	$\hat{B} = 180° - 2x$ [sum of ∠'s of a Δ]	✓S ✓R (2)

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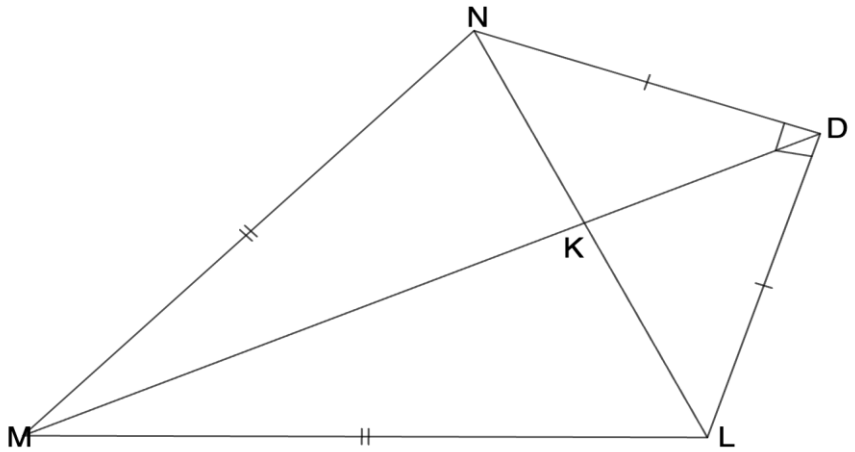
QUESTION 6



6.1	$N\hat{D}K = 45°$ [MD bisects $N\hat{D}L$] **OR** $N\hat{K}D = 90°$ [diagonals of kite] $L\hat{N}D = 45°$ [$\angle$'s opp = sides; ND = LD] $\therefore N\hat{D}K = 45°$ [Sum of $\angle$'s of a Δ NDK]	✓S ✓R ✓method ✓answer (2)
6.2	$\sin 45° = \frac{NK}{ND}$ $\sin 45° = \frac{NK}{30}$ $NK = 30\sin 45°$ $NK = \frac{30}{\sqrt{2}}$	✓ $\sin 45° = \frac{NK}{30}$ ✓ $NK = 30\sin 45°$ (2)
6.3	$MK = DM - DK$ $MK = 45\sqrt{2} - 15\sqrt{2} = 30\sqrt{2}$ $NM^2 = NK^2 + MK^2$ $NM^2 = (15\sqrt{2})^2 + (30\sqrt{2})^2$ $NM = 15\sqrt{10}$	✓MK=DM–DK ✓ $MK = 30\sqrt{2}$ ✓substitution (3)

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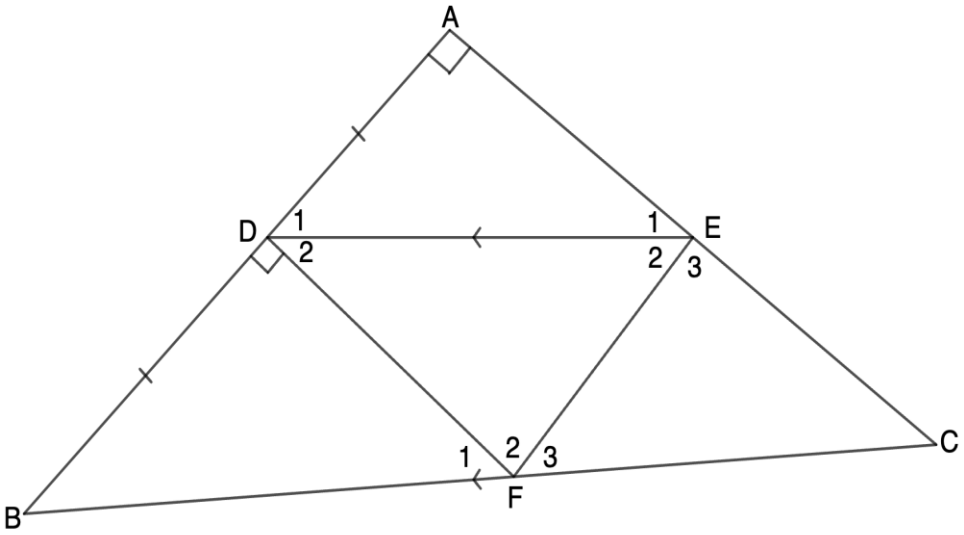
QUESTION 7

		
7.1	DE ∥ BC - given AD = DB [given] AE = EC [Line through midpoint ∥ to 2nd side]	✓S ✓SR ✓conclusion (3)
7.2	$\hat{B}DF = \hat{D}AE$ given/corr ∠ 's DF ∥ AC	✓S ✓R (2)
7.3	DF ∥ AC and AD = BD [proved above] ∴BF= FC [Line through midpoint ∥ to 2nd side]	✓S ✓R (2)
7.4	$\hat{D} = 60°$ [∠'s of Δ] AD ≠ AE [ADE will not be an isoceles Δ] ∴ ADFE is a rectangle [opp sides = and ∥, angles = 90°]	✓S ✓S ✓R ✓R (4)

[11]

TOTAL: 75