education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 10

MATHEMATICS P2

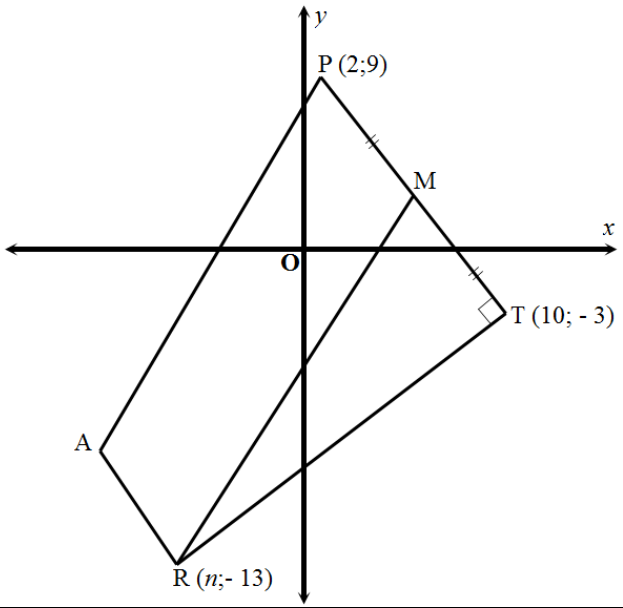
COMMON TEST

JUNE 2019

MARKING GUIDELINE

This marking guideline consists of 5 pages.

QUESTION 1

		
1.1.1	$d = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}$ $dPT = \sqrt{(9+3)^2 + (2-10)^2}$ $dPT = \sqrt{208}$ $dPT = 4\sqrt{13}$	✓correct sub into correct formula ✓CA based on correct formula (2)
1.1.2	$m = \frac{y_2 - y_1}{x_2 - x_1}$ $mPT = \frac{9+3}{2-10}$ $mPT = -\frac{3}{2}$	✓correct sub into correct formula ✓CA based on correct formula (2)
1.1.3	$mAR = -\frac{3}{2}$	✓CA (1)
1.1.4	$M = \left(\frac{x_1 + x_2}{2}; \frac{y_1 + y_2}{2}\right)$ $M = \left(\frac{10+2}{2}; \frac{-3+9}{2}\right)$ $M = (6;3)$	✓correct sub into correct formula ✓CA based on correct formula (2)

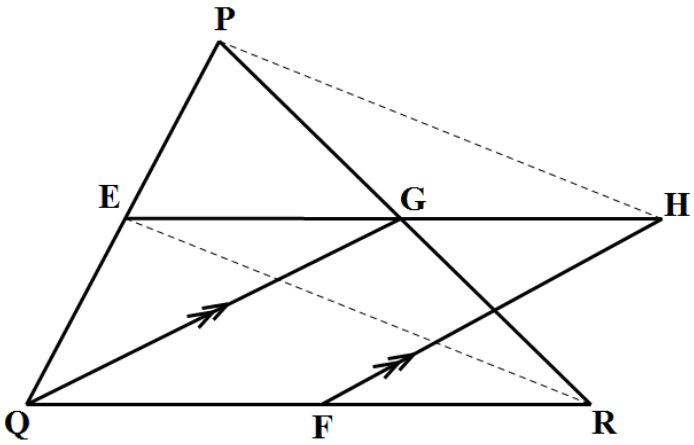
1.2	$mPM = -\frac{3}{2}$ $\therefore y = -\frac{3}{2}x + c$ *Substitute* $P(2;9)$ *to find* "c": $9 = -\frac{3}{2}(2) + c$ $c = 12$ $\therefore y = -\frac{3}{2}x + 12$	✓ ✓ substitution ✓CA (3)
1.3	$mPT \times mRT = -1 \quad (given\ PT \perp RT)$ $\therefore -\frac{3}{2} \times \frac{-3+13}{10-n} = -1$ $\frac{10}{10-n} = \frac{2}{3}$ $30 = 20 - 2n$ $-2n = 10$ $n = -5$	✓ $m_1 \times m_2 = -1$ ✓ substitution ✓CA simplification ✓CA (4)
1.4	$Area\ of\ \Delta RAT = \frac{1}{2}TA \times RT$ $TA = \frac{1}{2}PT = 2\sqrt{13}$ $dRT = \sqrt{(10+5)^2 + (-3+13)^2}$ $RT = 5\sqrt{13}$ $Area\ of\ \Delta RAT = \frac{1}{2}TA \times RT$ $= \frac{1}{2}2\sqrt{13} \times 5\sqrt{13}$ $= 65\ units^2$	✓CA $\left(TA = \frac{1}{2}PT\right)$ ✓ correct substitution in correct formula ✓CA $RT = 5\sqrt{13}$ ✓Formula for area for ΔRAT ✓CA (4)
		[18]

QUESTION 2

2.1.1	$\frac{1}{2}\cos\alpha = \frac{1}{2}\cos 24,6° = 0,45$	ANSWER ONLY: 1/1	(1)
2.1.2	$\cos ec 2\beta = \frac{1}{\sin 2\beta} = -1,00$	ANSWER ONLY: 2/2	(2)
2.2.1	Option **C**	✓ A	(1)
2.2.2	Option **B**	✓ A	(1)

2.3	$\sin^2 45° + \cos^2 45°$ $= \left(\frac{1}{\sqrt{2}}\right)^2 + \left(\frac{1}{\sqrt{2}}\right)^2$ $= \frac{1}{2} + \frac{1}{2}$ $= 1$ ANSWER ONLY: 0/2	✓ $\left(\frac{1}{\sqrt{2}}\right)$ or $\left(\frac{\sqrt{2}}{2}\right)$ ✓ A (2)
2.4	$\sin 2x = 0,291$ $2x = 16,91783.....$ $x = 8,5$ Incorrect rounding: 1/2	✓ $\sin^{-1}(0,291)$ ✓A (2)
2.5.1	$x^2 = r^2 - y^2$ $x = \sqrt{(3)^2 - \left(\sqrt{5}\right)^2}$ $x = -2$	✓Pythagoras ✓A (2)
2.5.2	$\cos\theta = \frac{-2}{3}$	✓ CA $x = -2$ ✓ A (2)
2.5.3	$1 - \sin^2\theta$ $= 1 - \left(\frac{\sqrt{5}}{3}\right)^2$ $= \frac{4}{9}$	✓Correct sub into correct ratio ✓A (2)
2.6.1	$a = -5$ $b = +2$	✓A ✓A (2)
2.6.2	$360°$	✓A (1)
2.6.3	$y \in [-1;3]$ or $-1 \le y \le 3$	✓A (1)
2.6.4	$x \in (120°;240°)$ or $120° < x < 240°$	values ✓A notation ✓A (2)
		[21]

QUESTION 3

3.1	Parallel Half	✓**A** ✓**A** (2)
3.2		
3.2.1	$PE = EQ$ *and* $PG = GR$ (*given mid – point*) $\therefore EG \,//\, QR$ (*Mid point theorem*) $qg \,//\, FH$ (*given*) $\therefore GHFQ$ *is a parm* (*opp sides parallel*)	✓S/R ✓S ✓S/R (3)
3.2.2	$GH = QF$ (opp sides of parm $GHFQ$) $EG = \frac{1}{2}QR$ (mid-point theorem) $\therefore \; EG = QF$ *but* $GH = QF$ $\therefore \; EG = GH$	✓S/R ✓S/R ✓S (3)
3.2.3	$PG = GR$ (*given mid point*) $EG = GH$ (*proved above*) $\therefore PHRE$ *is a parm* (*diagonals bisect*) $\therefore ER \,//\, PH$ (*opp sides of parm //*)	✓S/R ✓S/R ✓R (3)
		[11]

TOTAL: **50**