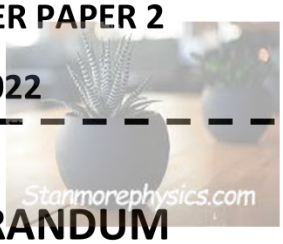
GRADE 10

MATHEMATICS

NOVEMBER PAPER 2

2022



MEMORANDUM

MARKS: 75

TIME: 1½ HOURS

THIS MEMORANDUM CONSISTS OF FIVE PAGES

NOTE:

- If a candidate answered a QUESTION TWICE, mark only the first attempt
- If a candidate crossed out an answer and did not redo it, mark the crossed-out attempt
- Consistent accuracy applies to all aspects of the marking guidelines.
- Assuming values/answer in order to solve a problem is unacceptable.

QUESTION 1

1.1.1.	Number of learners at Amandlethu = 92	✓A 92	(1)
1.1.2.	$\bar{x} = \frac{\sum x}{n} = \frac{(2\times37)+(6\times23)+(10\times9)+(14\times17)+(18\times5)+(22\times1)}{92}$ $= \frac{652}{92}$ = 7.09 (7)	✓A 652 ✓CA 92 ✓CA 7.09 NPR	(3)
1.1.3.	$0 \leq x < 4$	✓A	(1)
1.1.4.	$8 \leq x < 12$	✓✓AA	(2)
1.2.1.	A = 25	✓A 25	(1)
1.2.2.	25% of 12 = 3 months	✓M ✓A	(2)
1.2.3.	25%	✓A	(1)

QUESTION 2

2.1.	dAB = $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$ $= \sqrt{(-2-(-4))^2+(5-(-3))^2}$ $= 2\sqrt{17}$	✓Formula ✓SF ✓CA	(3)
2.2.	mAB = $\frac{y_2-y_1}{x_2-x_1}$ $= \frac{5-(-3)}{-2-(-4)}$ = 4	✓Formula ✓SF ✓CA	(3)
2.3.	M $(-3\,;1)$	✓A ✓A	(2)

2.4.	mAB = mOC (AB‖OC) Equation OC → $y = 4x + C$ Sub (0 ; 0) → $0 = 4(0) + C$ $C = 0$ $y = 4x$ Sub (2; p)→ p = 4(2) P = 8	✓CA mAB = mOC = 4 ✓CA Equation of OC ✓SF Sub (p;2) ✓CA	(4)

QUESTION 3

3.1.1.	$\sin(2(129) + (51))$ $= -0.78$	✓S ✓A NPR	(2)
3.1.2.	$(\tan(129 - 51))^2$ $= 2.56$	✓S ✓A NPR	(2)
3.2.1.	$\cos(3\theta + 10°) = 0.42$ $(3\theta + 10°) = 64.88°$ $3\theta = 54.88°$ $\theta = 18.29$	✓A tan23 = 0.42 ✓CA ✓CA	(3)
3.3.1.	$\cos D = \frac{CD}{AD}$	✓A	(1)
3.3.2.	$\cos D = \frac{DE}{CD}$	✓A	(1)
3.3.3.	$\frac{CD}{AD} = \frac{DE}{CD}$ $ED = \frac{25}{13} = 1.92$	✓ equating ✓CA	(2)
3.4.1.	$y^2 = 15^2 - 9^2$ (Pyth) $y = -12$	✓ Pyth or Sketch ✓ y (negative)	(2)
3.4.2	$5\left(\frac{-12}{15}\right) + 9(\frac{-12}{9})^2$ $-4 + 16 = 12$	✓✓Sub ✓ CA	(3)
3.5.	$\left(\frac{1}{\sqrt{2}}\right)^2 (1) + \sqrt{3}\,(\frac{\sqrt{3}}{2})$ $= \frac{1}{2} + \frac{3}{2} = 2$	✓A $\frac{1}{\sqrt{2}}$ ✓A 1 ✓A $\sqrt{3}$ ✓A $\frac{\sqrt{3}}{2}$) ✓CA 2	(5)

QUESTION 4

4.1.	$y = \cos x$	✓A	(1)
4.2.	$A\ (0\ ;90°)$ $B\ (0\ ;270°)$	✓A ✓A	(2)
4.3.	$-1\ \leq y \leq 1$	✓A	(1)
4.4.	$Period = 360°$	✓A	(1)
4.5.	$90°\ \leq x \leq 270°$	✓✓CA CA	(2)
4.6.	$y = -\cos x - 2$	✓✓CA CA	(2)

QUESTION 5

5.1.	....bisects the third side	✓A	(1)
5.2.1.	In Δ ACG, F and H are midpoints $\therefore FH \parallel CG\ \ (midpoint\ theoreom)$ In Δ AGB, H are midpoints $\therefore HE \parallel BG\ \ (Proved)$ $\therefore\ \ E\ is\ the\ midpoint$ $(Line\ drawn\ from\ midpoint\ of\ one\ side \parallel to\ second\ side$	✓ $FH \parallel CG$ ✓ Midpoint theorem ✓ reason	(3)
5.2.2.	$A\hat{E}H = A\hat{B}C = 90°\ (corresp\ angles\ , BC \parallel EF)$ $Area = \frac{1}{2}(EH) \times AE$ $15 = \frac{1}{2}(5) \times AE$ $AE = 6$ $AB = 2\ \times\ 6 = 12$	✓ sub ✓AE ✓AB	(3)
5.3.	$x = 56°\ \ (Co-\ \ int\ angles, AB \parallel CD)$ $y = 180° - (56° + 62°) = 62°\ (sum\ of\ angles\ in\ a\ \Delta)$	✓A ✓M ✓CA	(3)

5.4.1.	In Δ BAO and ΔQAO 1. AO is common 2.$\widehat{A_1}$ = $\widehat{A_2}$ (given) 3. $\widehat{B_1}$ = $\widehat{B_2}$ (given) = $\widehat{Q_1}$ (alt angles BC‖AD) ∴ Δ BAO ≡ ΔQAO (AAS) $\widehat{O_1}$ = $\widehat{O_4}$ =90° AO⊥BQ	✓S/R ✓S/R ✓S/R ✓S/R	(4)
5.4.2.	In Δ BOP and ΔAOQ 1. $\widehat{O_2}$ = $O_4(\widehat{vert\ opp})$ 2. BO = QO (Proved) 3. $\widehat{Q_1}$ = $\widehat{B_2}$ (alt angles BC‖AD) ∴ Δ BOP ≡ ΔAOQ (AAS) AO = OP and BO = OQ and AO⊥BQ ∴ $ABPQ$ $is\ a\ rhombus$	✓S ✓R ✓S/R ✓S ✓S ✓S /R	(6)
5.4.3.	AB = $2\sqrt{10}$ (Rhombus) CD = $2\sqrt{10}$ (opposite sides or a parm)	✓S/R ✓S/R	(2)