



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

VHEMBE EAST DISTRICT

SENIOR PHASE

GRADE 9

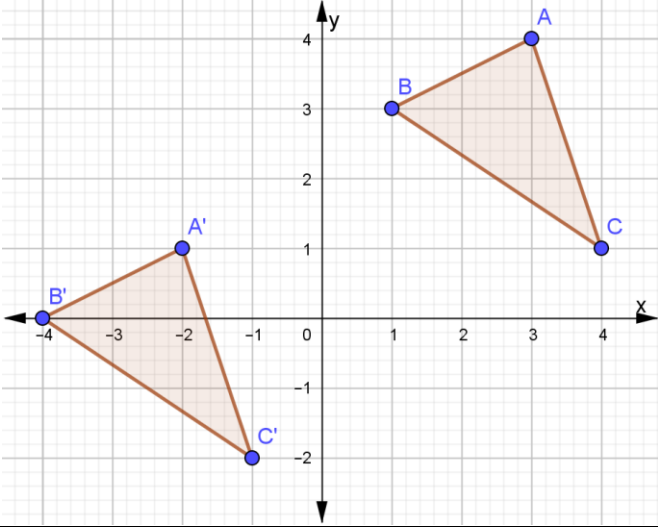
MATHEMATICS PAPER 2
MEMORANDUM
TERM 4 FINAL EXAMINATION
23 NOVEMBER 2023

MARKS: 75

This memorandum consists of 5 pages including the cover page.

No.	Mathematical Calculations	Clarification on mark allocations	Total marks
QUESTION 1			[10]
1.1	C	✓	1
1.2	C	✓	1
1.3	C	✓	1
1.4	C	✓	1
1.5	D	✓	1
1.6	A	✓	1
1.7	D	✓	1
1.8	B	✓	1
1.9	B	✓	1
1.10	D	✓	1
QUESTION 2			[12]
2.1.	$x = 70^\circ$ ✓ (Vert. Opp $\angle$ s) ✓ OR $x + 110 = 180^\circ$ (Sum of $\angle$ s in a straight line) ✓ $x = 180^\circ - 110^\circ = 70^\circ$ ✓	✓ Answer and ✓reason. ✓ Statement and reason. ✓ Answer	6
	$x = y$ (Alt. $\angle$ s, $AB \parallel CD$) ✓ $y = 70^\circ$ ✓ OR $y + 110^\circ = 180^\circ$ (co-int $\angle$ s, $AB \parallel CD$) ✓ $y = 180^\circ - 110^\circ = 70^\circ$ ✓ OR $y = 70^\circ$ ✓ (Corresp. $\angle$ s, $AB \parallel CD$) ✓	✓ Statement and reason. ✓ Answer	
	$z = 110^\circ$ ✓ (Corresp. $\angle$ s, $AB \parallel CD$) ✓ OR $z + y = 180^\circ$ (Sum of $\angle$ s in a straight line) ✓ $z + 70^\circ = 180^\circ$ $z = 180^\circ - 70^\circ = 110^\circ$ ✓ Accept alternatives to x, y and z. (each 2 marks)	✓ Statement and reason. ✓ Answer	
2.2.1	$E\hat{B}C = 32^\circ$ ✓ (Corresp. $\angle$ s, $EB \parallel DA$) ✓ OR $E\hat{B}C = B\hat{C}A$ (Alt. $\angle$ s, $EB \parallel DA$) $B\hat{C}A = 32^\circ$ (Vert. Opp $\angle$ s) $\therefore E\hat{B}C = 32^\circ$	✓ answer ✓reason ✓ Statement and reason. ✓ Answer	2
2.2.2.	$C\hat{A}B + 65^\circ = 180^\circ$ (Co-int $\angle$ s, $EB \parallel DA$) ✓ $C\hat{A}B = 180^\circ - 65^\circ = 115^\circ$ ✓	✓ Statement and ✓ Answer	2

2.2.3	$32^\circ + \widehat{F\hat{C}A} = 180^\circ$ (Sum of $\angle$'s in a str line) ✓ $\therefore \widehat{F\hat{C}A} = 180^\circ - 32^\circ$ $\therefore \widehat{F\hat{C}A} = 148^\circ$ ✓	✓ Statement and reason ✓ Answer	2												
QUESTION 3			[19]												
3.1.1.	180° ✓	✓ Answer	6												
3.1.2.	(Sum of $\angle$ s in a straight line) ✓	✓ Answer													
3.1.3.	$\widehat{D}_1 = 55^\circ$ ✓	✓ Answer													
3.1.4.	($\angle$ s opp equal sides) ✓ or Isosceles $\triangle EDF$ or $ED = EF$	✓ Answer													
3.1.5.	180° ✓	✓ Answer													
3.1.6.	$\therefore \widehat{E} = 70^\circ$ ✓	✓ Answer													
3.2.	$8x + 4 + 4x + 4 + 5x - 4 + x - 4 = 360^\circ$ (Sum of $\angle$ s in quad $STVU$) ✓ $18x = 360^\circ$ ✓ $\frac{18x}{18} = \frac{360^\circ}{18}$ $x = 20^\circ$ ✓	✓ Statement&reason ✓ $18x = 360^\circ$ ✓ Answer	3												
3.3	$x = 100^\circ$ ✓ (symmetry line MO) or (Opp $\angle$ s where the adj unequal sides meet) $\widehat{O}_1 = 35^\circ$ (Diagonal MO of a kite) ✓ $35^\circ + 100^\circ + y = 180^\circ$ ✓ (Sum of $\angle$ s in a $\triangle MPO$) $y = 180^\circ - 135^\circ$ $y = 45^\circ$ ✓	✓ Value of x ✓ Value of $\widehat{O}_1$ ✓ Statement ✓ Value of y	4												
3.4.1.	(Common side) ✓	✓ Answer	2												
3.4.2.	(S, S, S) ✓	✓ Answer													
3.5.	<table><tr><td>Statement</td><td>Reason</td></tr><tr><td>In $\triangle PST$ and $\triangle PQR$,</td><td></td></tr><tr><td>$\widehat{P} = \widehat{P}$ ✓</td><td>Common angle</td></tr><tr><td>$\widehat{S}_1 = \widehat{Q}$ ✓</td><td>Corresp. $\angle$s, $ST \parallel QR$</td></tr><tr><td>$\widehat{T}_1 = \widehat{R}$ ✓</td><td>Corresp. $\angle$s, $ST \parallel QR$</td></tr><tr><td>$\therefore \triangle PST \cong \triangle PQR$</td><td>$\angle, \angle, \angle$ ✓</td></tr></table>	Statement	Reason	In $\triangle PST$ and $\triangle PQR$,		$\widehat{P} = \widehat{P}$ ✓	Common angle	$\widehat{S}_1 = \widehat{Q}$ ✓	Corresp. $\angle$ s, $ST \parallel QR$	$\widehat{T}_1 = \widehat{R}$ ✓	Corresp. $\angle$ s, $ST \parallel QR$	$\therefore \triangle PST \cong \triangle PQR$	$\angle, \angle, \angle$ ✓	✓ $\widehat{P}$ is common ✓ Statement and reason ✓ Statement and reason ✓ Reason	4
Statement	Reason														
In $\triangle PST$ and $\triangle PQR$,															
$\widehat{P} = \widehat{P}$ ✓	Common angle														
$\widehat{S}_1 = \widehat{Q}$ ✓	Corresp. $\angle$ s, $ST \parallel QR$														
$\widehat{T}_1 = \widehat{R}$ ✓	Corresp. $\angle$ s, $ST \parallel QR$														
$\therefore \triangle PST \cong \triangle PQR$	$\angle, \angle, \angle$ ✓														
QUESTION 4															
4.1	Reflection ✓	✓ Answer	1												
4.2	<u>Each point is translated 2 units to the right</u> ✓ and <u>1 unit down</u> ✓	✓✓ Answer	2												
4.3	$A'(-1; -4)$ ✓✓	✓ $x = -1$ ✓ $y = -4$	2												

4.4.1	A(3;4) ✓ B(1;3) ✓ and C(4;1) ✓	✓A(3;4) ✓B(1;3) ✓C(4;1)	3
4.4.2		✓Correct image ✓Vertices correctly labelled i.e. A'B'C'	2
QUESTION 5			[12]
5.1	$Area = l \times l$ $Area = 8\text{ cm} \times 8\text{ cm} \checkmark$ $\therefore Area = 64\text{ cm}^2 \checkmark$	✓Method ✓Answer	2
5.2.1	$P = 2(l + b)$ $46 = 2(2x + 5 + x + 6) \checkmark$ $46 = 2(3x + 11)$ $46 = 6x + 22$ $24 = 6x \checkmark$ $x = \frac{24}{6}$ $\therefore x = 4\text{ cm} \checkmark$	✓Method ✓Simplifying ✓Answer	3
5.2.2	$l = 2(4) + 5 = 13\text{ cm} \checkmark$ $b = 4 + 6 = 10\text{ cm} \checkmark$ $Area = 13\text{ cm} \times 10\text{ cm} \checkmark$ $\therefore Area = 130\text{ cm}^2 \checkmark$	✓ $l = 13\text{ cm}$ ✓ $b = 10\text{ cm}$ ✓Method ✓Answer	4
5.3	$C = 2\pi r$ $52 = 2\pi r \checkmark$ $r = \frac{52}{2\pi}$ $r = \frac{26}{\pi}$ $\therefore r = 8,28\text{ cm} \checkmark$ $Area\ of\ a\ circle = \pi r^2$ $A = \pi \times 8,28\text{ cm} \times 8,28\text{ cm}$ $\therefore A = 215\text{ cm}^2 \checkmark\text{ or } 215,38\text{ cm}^2$	✓ $52 = 2\pi r$ ✓Value of r ✓Answer Do not penalize for any rounding off.	3

QUESTION 6			[12]
6.1	$Total SA = 2(lh + lb + bh)$ $Total SA = 2(8 \times 2 + 8 \times 4 + 4 \times 2) \checkmark$ $Total SA = 2(16 + 32 + 8) \checkmark$ $Total SA = 2 \times 56 \checkmark$ $\therefore Total SA = 112 m^2 \checkmark$ OR $Total SA = (8 \times 2 \times 2) + (8 \times 4 \times 2) + (4 \times 2 \times 2) \checkmark \checkmark$ Identical faces. $Total SA = 32 + 64 + 16 \checkmark$ $\therefore Total SA = 112 m^2 \checkmark$	$\checkmark \checkmark$ Method $\checkmark$ Calculation $\checkmark$ Answer	4
6.2.1	Total surface area of the pool $= (2 \times l \times h) + (2 \times b \times h) + (l \times b)$ $= (2 \times 8m \times 2m) + (2 \times 6m \times 2m) + (8m \times 6m) \checkmark$ $= 32m^2 + 24m^2 + 48m^2 \checkmark$ $= 104 m^2 \checkmark$	Method: 1 Mark Calculation: 1 Mark Answer: 1 mark	3
6.2.2	$1 \text{ bucket paint} \approx 26 m^2$ $2 \text{ buckets paint} \approx 52 m^2 \checkmark$ $4 \text{ buckets paint} \approx 104 m^2 \checkmark$ Or $1 \text{ bucket paint} \approx 26 m^2$ $x \approx 104 m^2$ $\frac{x}{1} = \frac{104 m^2}{26 m^2} \checkmark$ $x = 4$ Number of buckets = 4 $\checkmark$	Method: 1 Mark Answer: 1 mark	2
6.3	$V = Area \text{ of base} \times Perpendicular \text{ height}$ $27\,000 = x \times x \times x \checkmark$ (all sides equal to x) $30m \times 30m \times 30m = x \times x \times x \checkmark$ $\therefore x = 30 m \checkmark$	$\checkmark$ Method $\checkmark$ Calculation $\checkmark$ Answer	3

TOTAL = 75