LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION

NATIONAL SENIOR

GRADE 10

MATHEMATICS P2

JUNE 2025

MARKS: 50

TIME: 1 HOUR

This question paper consists of 6 pages.

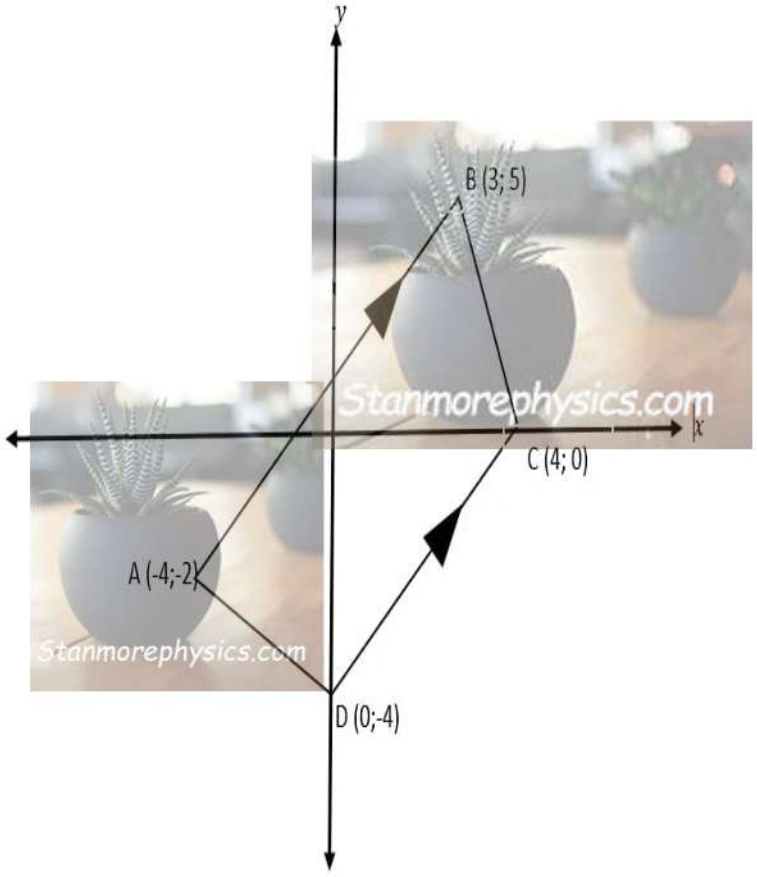
INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 8 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations, diagrams, graphs, et cetera that you have used in determining your answers.
4. Answers only will not necessarily be awarded full marks.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. If necessary, round off answers to TWO decimal places, unless stated otherwise.
7. Diagrams are NOT necessarily drawn to scale.
8. Number the answers correctly according to the numbering system used in this question paper.
9. Write neatly and legibly.

QUESTION 1

1.1 From the diagram below , A $(-4; -2)$ and B $(3; 5)$ are given, determine the following:

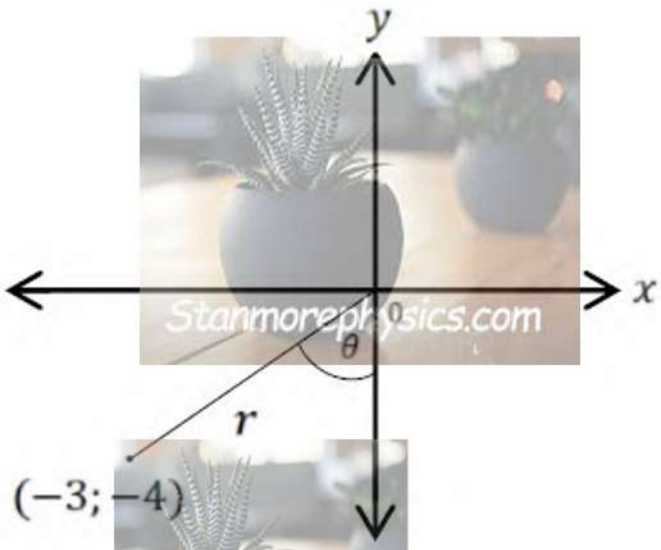


1.1.1 The gradient of AB. (3)

1.1.2 The length of AB. (3)

1.1.3 The midpoint of AB. (4)

1.2 Use the diagram below with point A $(-3;-4)$ to answer the following questions.



1.2.1 Determine the value of r. (2)

1.2.2 Calculate the value of $\cos\theta$ and $\tan\theta$. (2)

1.2.3 Prove that $\cos\theta \,.\, \tan\theta \,.\, \sec\theta = \frac{4}{3}$ (2)

[16]

QUESTION 2

2.1 Determine the values of the following using a calculator:

$$\frac{3\cos 120^\circ}{\sin 150^\circ - \cos 80^\circ}$$ (2)

2.2 Determine the value of each of the following equations, correct to two decimal places:

2.2.1 $4\sin\theta = 2{,}1$ (2)

2.2.2 $\cos(\theta + 15^\circ) = 0{,}845$ (2)

2.3 Without the use of a calculator, determine the value of:

$\sin 0^\circ + \cos^2 60^\circ + \sqrt{2}\cos 45^\circ$ (4)

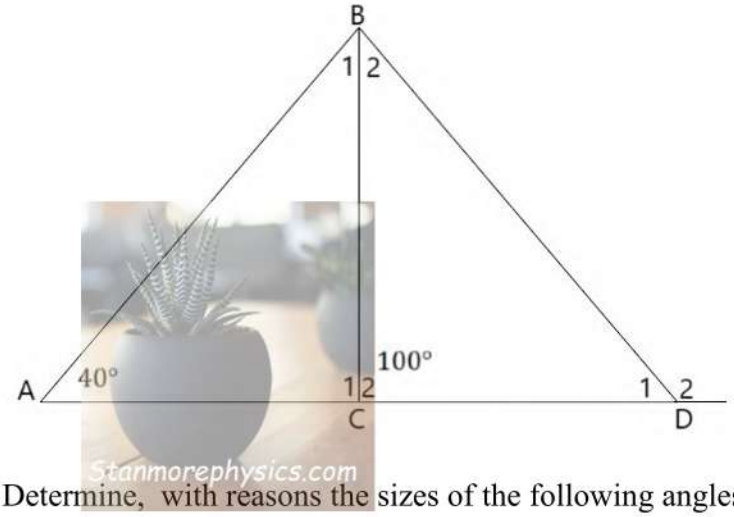
2.4 Find the value of x without the use of a calculator:

$$x\cot 60° = \frac{\sin 50°.\sin 30°.\cos ec 50°}{\cot 45°} \quad (5)$$

[15]

QUESTION 3

3.1 In the diagram below, $\hat{A} = 40°$; $\hat{C}_2 = 100°$ *and* $BC = CD$.



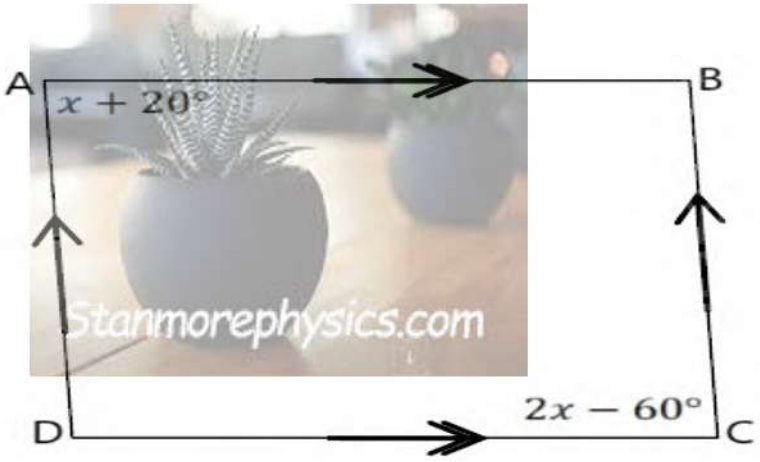
Determine, with reasons the sizes of the following angles:

3.1.1 $\hat{B}_1$ (2)

3.1.2 $\hat{B}_2$ (3)

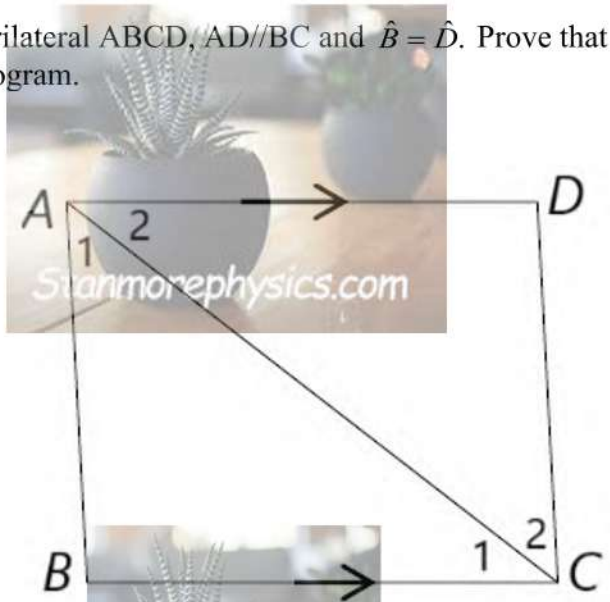
3.2 Give two properties of a rhombus. (2)

3.3 The diagram below shows parallelogram ABCD, with AB//CD and AD//BC. $\hat{A} = x + 20°$ *and* $\hat{C} = 2x - 60°$.



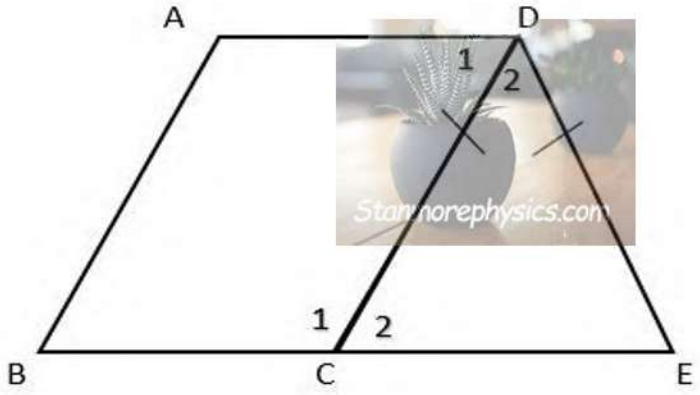
Determine the value of $\hat{C}$. (3)

3.4 In quadrilateral ABCD, AD//BC and $\hat{B} = \hat{D}$. Prove that ABCD is a parallelogram.



(5)

3.5 If quadrilateral ABCD is a parallelogram, AD//BC and AB//CD, $\widehat{A} = 100°$ *and* $CD = DE$.



If $\widehat{D}_2 = 2x$, calculate the value of x. (4)

[19]

TOTAL: 50

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 10

MATHEMATICS P2

JUNE 2025

MAKING GUIDELINES

MARKS: 50

These marking guidelines consist of 5 pages including the cover page.

QUESTION 1			
1.1.1	$m_{AB} = \frac{y_2 - y_1}{x_2 - x_1}$ $= \frac{5-(-2)}{3-(-4)}$ $= \frac{5+2}{3+4}$ $= \frac{7}{7}$ $= 1$	✓ $\frac{y_2 - y_1}{x_2 - x_1}$ ✓ $\frac{5-(-2)}{3-(-4)}$ ✓1	(3)
1.1.2	$AB = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$ $= \sqrt{(3-(-4))^2 + (5-(-2))^2}$ $= \sqrt{7^2+7^2}$ $= \sqrt{98}$ $= 9,99$	✓ $\sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$ ✓ $\sqrt{(3-(-4))^2 + (5-(-2))^2}$ ✓9,99	(3)
1.1.3	$M\left(\frac{x_1+x_2}{2}; \frac{y_1+y_2}{2}\right)$ $= \left(\frac{-4+3}{2}; \frac{-2+5}{2}\right)$ $= \left(\frac{-1}{2}; \frac{3}{2}\right)$ $= (-1,5; 1,5)$	✓ $M\left(\frac{x_1+x_2}{2}; \frac{y_1+y_2}{2}\right)$ ✓✓ $\left(\frac{-4+3}{2}; \frac{-2+5}{2}\right)$ ✓ $(-1,5; 1,5)$	(4)
1.2.1	$x^2 + y^2 = r^2$ $(-3)^2 + (-4)^2 = r^2$ $9+16 = r^2$ $r = \sqrt{25}$ $r = 5$	✓ $(-3)^2 + (-4)^2 = r^2$ ✓ $r = 5$	(2)
1.2.2	$\cos\theta = \frac{x}{r} = \frac{-3}{5}$ $\tan\theta = \frac{y}{x} = \frac{-4}{-3} = \frac{4}{3}$	✓ $\frac{-3}{5}$ ✓ $\frac{4}{3}$	(2)

1.2.3	$\cos\theta.\tan\theta.\sec\theta$ $=\frac{-3}{5}\times\frac{4}{3}\times\frac{5}{-3}$ $=\frac{4}{3}$	✓$\frac{-3}{5}\times\frac{4}{3}\times\frac{5}{-3}$ ✓$\frac{4}{3}$	(2)
			[16]
QUESTION 2			
2.1	$\frac{3\cos 120°}{\sin 150°-\cos 80°}$ $=-4,596266659$ $=-4,60$	✓$-4,596266659$ ✓$-4,60$	(2)
2.2.1	$4\sin\theta=2,1$ $\sin\theta=\frac{2,1}{4}$ $\theta=\sin^{-1}(0,525)$ $\theta=31,66824325$ $\theta=31,7°$	✓$\sin\theta=\frac{2,1}{4}$ ✓$\theta=31,7°$	(2)
2.2.2	$\cos(\theta+15°)=0,845$ $\theta+15°=\cos^{-1}(0,845)$ $\theta+15°=32,32806412°$ $\theta=32,32806412°-15°$ $\theta=17,3°$	✓$\theta+15°=\cos^{-1}(0,845)$ ✓$\theta=17,3°$	(2)
2.3	$\sin 0°+\cos^2 60°+\sqrt{2}\cos 45°$ $=0+\left(\frac{1}{2}\right)^2+\sqrt{2}\times\frac{\sqrt{2}}{2}$ $=\frac{1}{4}+1$ $=\frac{1+4}{4}$ $=\frac{5}{4}$	✓0 ✓$\left(\frac{1}{2}\right)^2$ ✓$\frac{\sqrt{2}}{2}$ ✓$\frac{5}{4}$	(4)

2.4	$x.\cot 60° = \dfrac{\sin 50°.\sin 30°.\cos ec50°}{\cot 45°}$ $x.\cot 60° = \dfrac{\sin 30°}{\cot 45°}$ $x.\left(\dfrac{1}{\sqrt{3}}\right) = \dfrac{\frac{1}{2}}{1}$ $x\left(\dfrac{1}{\sqrt{3}} \times \sqrt{3}\right) = \dfrac{1}{2} \times \sqrt{3}$ $x = \dfrac{\sqrt{3}}{2}$	✓ $\dfrac{1}{\sqrt{3}}$ ✓ $\dfrac{1}{2}$ ✓ 1 ✓ $\dfrac{1}{2} \times \sqrt{3}$ ✓ $\dfrac{\sqrt{3}}{2}$	(5)
			[15]
QUESTION 3			
3.1.1	$\hat{B}_1 + \hat{A} = \hat{C}_2\ (ext.\angle\ of\ \Delta = sum\ of\ \text{int}\ opp\ \angle s)$ $\hat{B}_1 + 40° = 100°$ $\hat{B}_1 = 100° - 40°$ $\hat{B}_1 = 60°$	✓S/R ✓ $\hat{B}_1 = 60°$	(2)
3.1.2	$\hat{B}_2 = \hat{D}_1 (\angle s\ opp = sides)$ $\hat{B}_2 + \hat{C}_2 + \hat{D}_1 = 180° (sum\ of \angle s\ of \Delta)$ $2\hat{B}_2 + 100° = 180°$ $2\hat{B}_2 = 180° - 100°$ $2\hat{B}_2 = 80°$ $\hat{B}_2 = 40°$	✓S/R ✓ $\hat{B}_2 + \hat{C}_2 + \hat{D}_1 = 180°\ (sum\ of \angle s\ of \Delta)$ ✓ $\hat{B}_2 = 40°$	(3)
3.2	- both pairs of opposite sides are parallel. - all sides are equal. - diagonals bisect the angles. - diagonals bisect at right angles. - both pairs of opposite angles are equal	✓✓ Any 2 properties	(2)

3.3	$\hat{A} = \hat{C}(opp \angle s\ of //^m)$ $x + 20° = 2x - 60°$ $2x - x = 60° + 20°$ $x = 80°$ $\hat{C} = 100°$	✓S ✓ $x = 80°$ ✓ $\hat{C} = 100°$	(3)
3.4	In Δ ABC and Δ CDA $\hat{B} = \hat{D}$(given) AC is common $\hat{C}_1 = \hat{A}_2$(alt∠s =; AD//BC) ∴ ΔABC ≡ ΔCDA(∠, ∠, S) AD = BC(ΔABC ≡ ΔCDA) ∴ ABCD is a paralle log r am(oneside = //) OR *In ΔABC and ΔCDA* $\hat{B} = \hat{D}$ *(given)* *AC is common* $\hat{C}_1 = \hat{A}_2(alt \angle s; AD//BC)$ *ΔABC ≡ ΔCDA(∠, ∠, S)* *AD = BC(ΔABC ≡ ΔCDA)* *AB = DC(ΔABC ≡ ΔCDA)* *∴ ABCD is a paralle log r am(oppsides =)*	 ✓S✓R ✓SR ✓S ✓R ✓SR ✓R ✓S✓R ✓R	(5)
3.5	$\hat{C}_1 = 100°(opp \angle s\ of //^m)$ $\hat{C}_2 = 80°(adj \angle s\ on\ a\ str\ line\ = 180°)$ $\hat{E} = 80°(\angle s\ opp = sides)$ $\hat{D}_2 = 20°(sum\ of \angle s\ in\ a\ \Delta)$ $2x = 20°$ $x = 10°$	✓S ✓S ✓SR ✓answer	(4)
			[19]
		TOTAL = 50	