education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 10

MATHEMATICS P2

JUNE 2024

MARKS: 75

TIME: $1\frac{1}{2}$ hours

This question paper consists of 8 pages and an answer book of 13 pages.

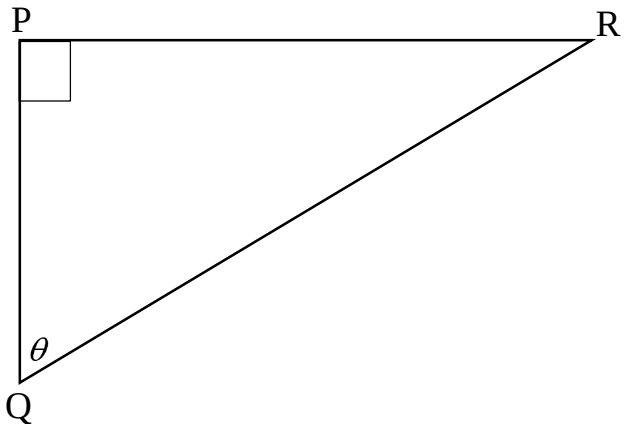
INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of SEVEN questions.
2. Answer ALL the questions in the SPECIAL ANSWER BOOK provided.
3. Clearly show ALL calculations, diagrams, graphs, etc. which 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 correct to TWO decimal places, unless stated otherwise.
7. Diagrams are NOT necessarily drawn to scale.
8. Write neatly and legibly.

QUESTION 1

1.1 In $\Delta PQR, \hat{P} = 90°$ and $\hat{Q} = \theta$



Find the ratios

1.1.1 $\tan\theta$ (1)

1.1.2 $\sec(90° - \theta)$ (2)

1.2 If $x = 25°$ and $y = 40°$. Use a calculator to determine :

1.2.1 $\sin(y - x)$ (2)

1.2.2 $\frac{\cos x}{2} - \cot\frac{x}{2}$ (2)

1.3 If $5\tan\alpha = 12$ and $0° \leq \alpha \leq 90°$, use the sketch to determine :

1.3.1 $\cos\alpha$ (2)

1.3.2 $(\sin\alpha + \cos\alpha)^2$ (2)

[11]

QUESTION 2

2.1 Simplify without using a calculator:

$\cos 60° + \tan^2(45°) - \sin 0°$ (4)

2.2 In each of the following equations, solve for x, where $0° \leq x \leq 90°$ correct your answer to two decimal places.

2.2.1 $\frac{\sin x}{0,2} - 2 = 1,24$ (3)

2.2.2 $\tan\frac{x}{2} - \frac{1}{\sqrt{3}} = 0$ (3)

[10]

QUESTION 3

Given $f(x) = \tan x$ and $g(x) = 2\cos x$ for $0° \leq x \leq 360°$.

3.1 Sketch, on the grid provided, the graph of f and g for $0° \leq x \leq 360°$. (8)

3.2 Write the following:

3.2.1 Period of f. (1)

3.2.2 Amplitude of g. (1)

3.3 Use your graph to determine the values of x for which:

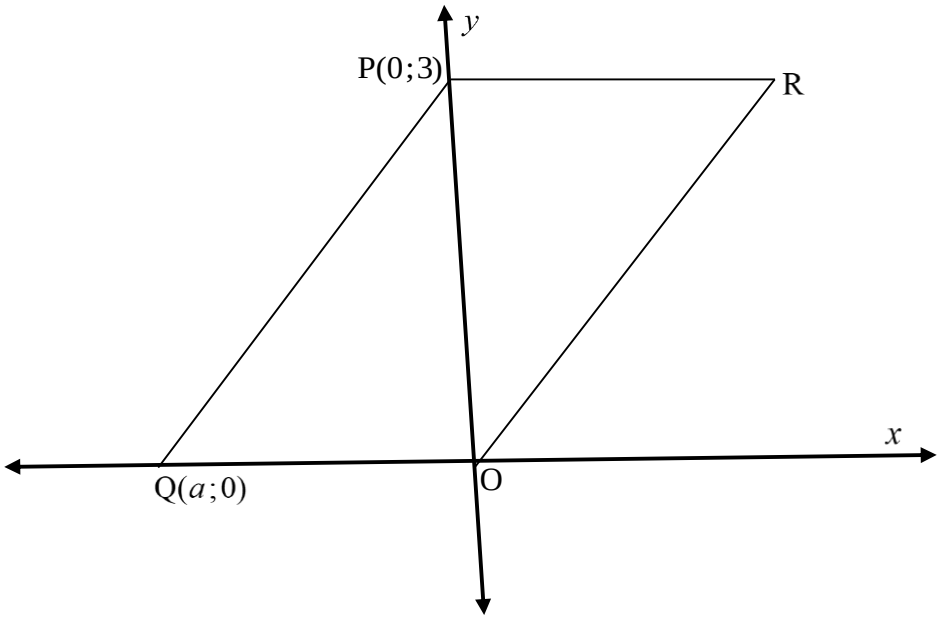
3.3.1 $g(x) - f(x) = 2$. (2)

3.3.2 $g(x) = -2$. (1)

[13]

QUESTION 4

In the diagram below , OR is drawn parallel to the straight line through Q(a;3) and P(0;3) such that PR ∥ QO. The length of PQ = 5



4.1 Find the value of a . (2)

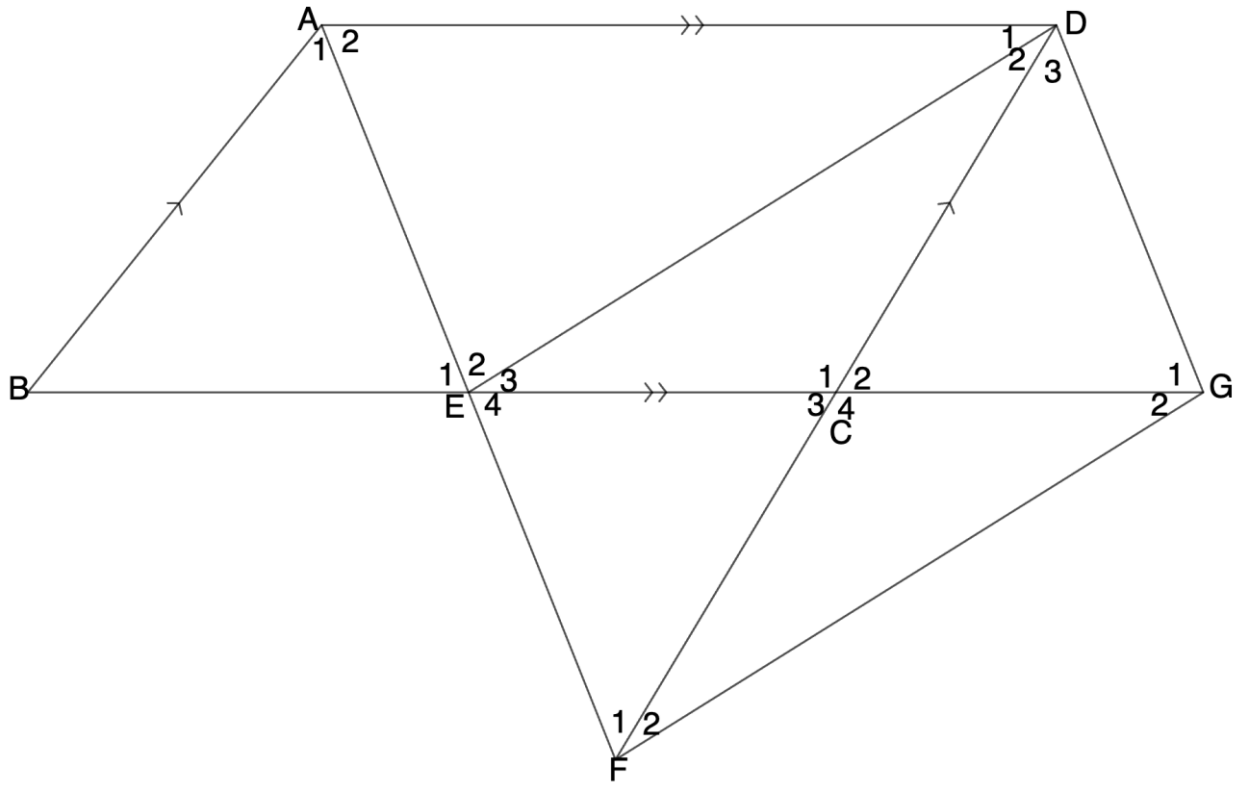
4.2 Determine the equation of PQ. (4)

4.3 Determine the midpoint of OP. (2)

4.4 If PQ ∥ RO. Calculate the coordinates of R . (2)
[10]

QUESTION 5

In the diagram below, AB ∥ DF, AB = EC and AE bisect BÂD.



5.1 Prove that Δ DCE is an isosceles triangle. (3)

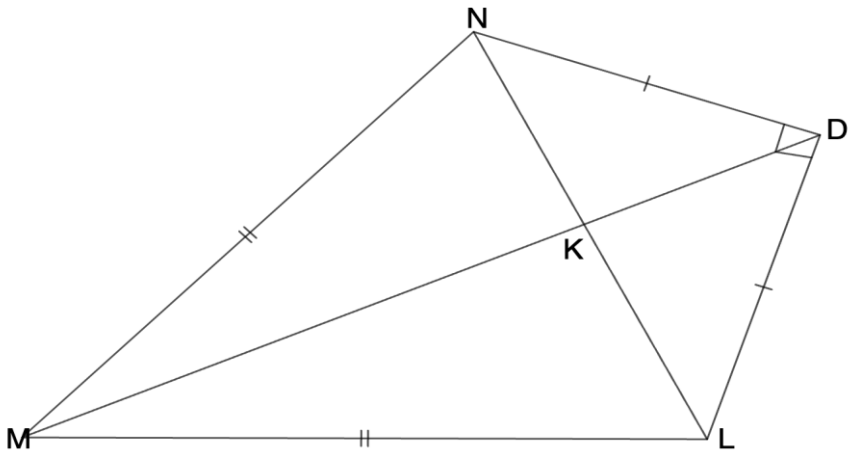
5.2 If $\hat{A}_1 = x$, determine with reasons:

5.2.1 Four other angles equalt of x. (8)

5.2.2 $\hat{B}$ in terms of x. (2)
[13]

QUESTION 6

In the diagram below, LMND is a kite with DM = $45\sqrt{2}$ units, $L\hat{D}N = 90°$ and DN = 30 units. The diagonals meet at K.



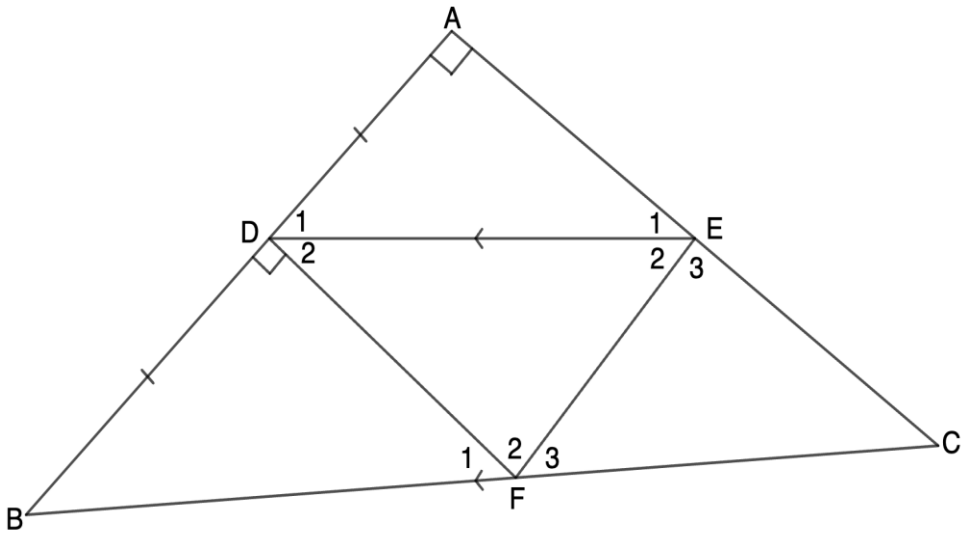
6.1 Determine the size of $N\hat{D}K$ (2)

6.2 Show that NK = $\frac{30}{\sqrt{2}}$ (2)

6.3 Show that NM = $15\sqrt{10}$ (3)
[7]

QUESTION 7

In the diagram below, ΔABC is right angled at $\hat{A}$. D is the midpoint AB; $DE \parallel BC$ and $FD \perp AB$.



Prove that :

7.1 AE = EC (3)

7.2 $DF \parallel AC$ (2)

7.3 BF = FC (2)

7.3 If $\hat{E}_1 = 30°$ and $AB \parallel EF$
Determine what type of a quadrilateral will ADFE be. (Show all your working) (4)
[11]

TOTAL: 75