education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 10

MARKS: 50

TIME: 1 hour

This question paper consists of 6 pages, and 1 diagram sheet.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of FOUR questions.

2. Answer ALL the questions.

3. Clearly show ALL calculations, diagrams, graphs, et cetera which you have used in determining the answers.

4. Answer QUESTION 4.2 on the DIAGRAM SHEET provided at the end of this question paper and hand in your DIAGRAM SHEET with your ANSWER BOOK.

5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.

6. If necessary, answers should be rounded off 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   A right angled triangle has sides p, q and r and the angle α as shown below.
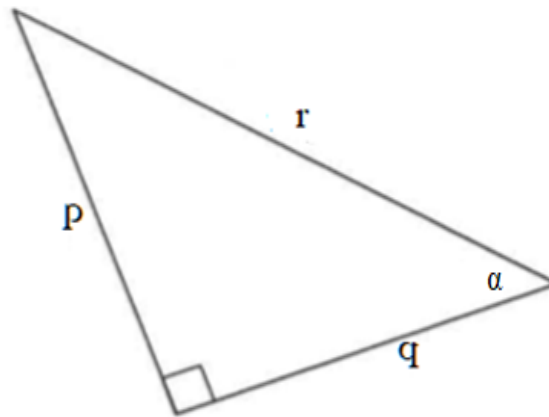
1.1.1   Determine the following in terms of p, q and r:

(a) $\sin \alpha$ (1)

(b) $\cot \alpha$ (2)

1.1.2   If it is given that $p = 7$ units and $\alpha = 55°$, calculate the numerical value of q to the nearest INTEGER.   (3)

1.2   Given:
$\alpha = 48°$, and $\beta = 32°$. Use a calculator to find the value of the following expression correct to two decimal places:

$$\cos\left(\frac{\alpha}{2}\right).\sin \beta$$ (2)

1.3   In each of the following equations, solve for θ where $0° < \theta < 90°$. Give your answers correct to two decimal places.

1.3.1 $\sin \theta = 0{,}4$ (1)
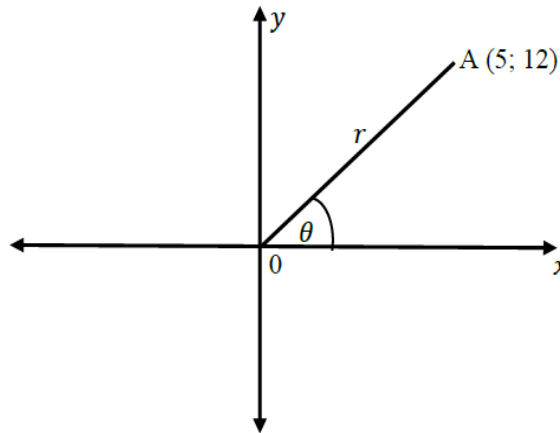
1.3.2 $\tan 2\theta = 1{,}19$ (3)

1.3.3 $\cos(\theta - 20°) = 0{,}67$ (3)

              [15]

QUESTION 2

In the diagram below, O is at the origin. A(5;12) is a point in the first quadrant.

Determine:

2.1 r.   (3)

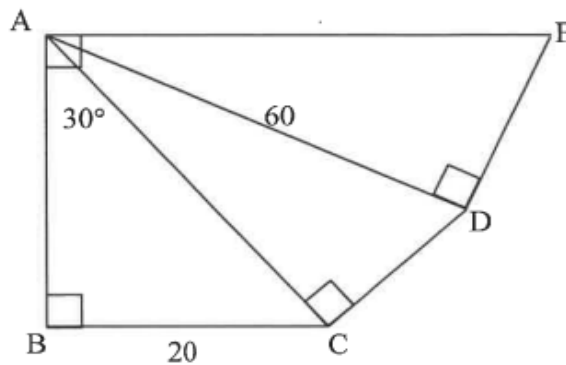2.2 $\sin\theta$.   (1)

2.3 $\cos\theta \times \sec\theta$.   (3)

2.4   The size of θ.   (3)
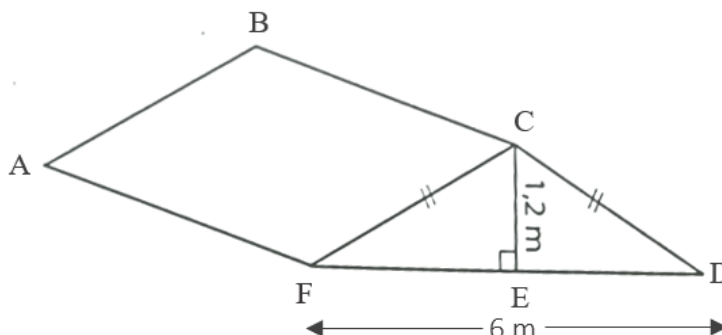
[10]

QUESTION 3

3.1   In the diagram below, ABC, ACD and ADE are right angled triangles.
      $\hat{BAE} = 90°$ and $\hat{BAC} = 30°$. BC = 20 units and AD = 60 units.

Calculate the:

3.1.1   length of AC.   (2)

3.1.2   size of $\hat{CAD}$ (2)

3.1.3   length of DE   (3)

3.2   The diagram below shows roof of a house. Any roof must be assembled with an angle of $21°$ or more in order for rainwater to flow off the roof and not leak into the house. FE = ED

3.2.1   If $FD = 6m$, write down the length of FE.   (1)

3.2.2   Calculate the size of $\hat{CFE}$.   (3)

3.2.3   Will this roof leak, when it rains? Motivate your answer.   (2)

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QUESTION 4

4.1   The graphs of $f(x) = a\sin x$ and $g(x) = \cos x + 1$ for $x \in [0°; 360°]$ are sketched below.
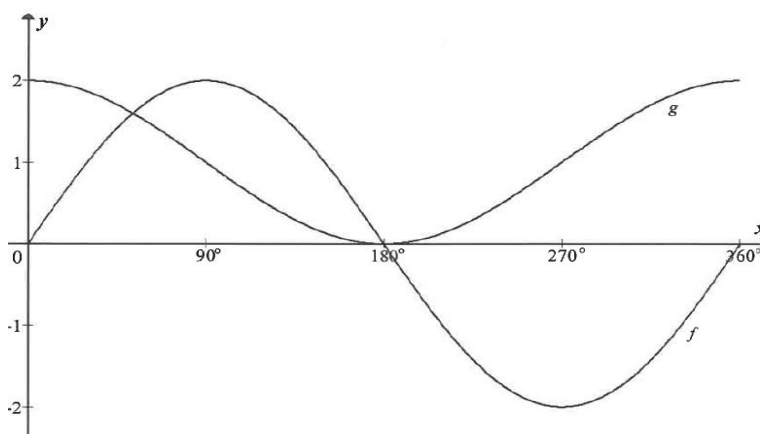
4.1.1   Write down the value of a.   (1)

4.1.2   Write down the period of f.   (1)

4.1.3   Write down the range of g.   (2)

4.1.4   The graph of g has shifted 1 unit downwards to obtain the graph of h.
Write down the equation of h.   (2)

4.2   **Answer this question on the diagram sheet provided and submit with your answer book.**

Given: $f(x) = \tan x$ for $x \in [0°; 360°]$.

4.2.1   Complete the table below:

x	0°	45°	90°	135°	180°	225°	270°	315°	360°
$f(x)$									

(2)

4.2.2   Sketch the graph of $f(x)$ on the diagram sheet provided.
        Show all the asymptotes and the intercepts.

(4)

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DIAGRAM SHEET

NAME OF LEARNER: _____

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4.2.1

x	0°	45°	90°	135°	180°	225°	270°	315°	360°
$f(x)$									

4.2.2