MODEL ENTRANCE TEST PAPER

BRITISH SECTION

SUBJECT: MATHEMATICS

GRADE: 11

TOTAL MARKS: 25

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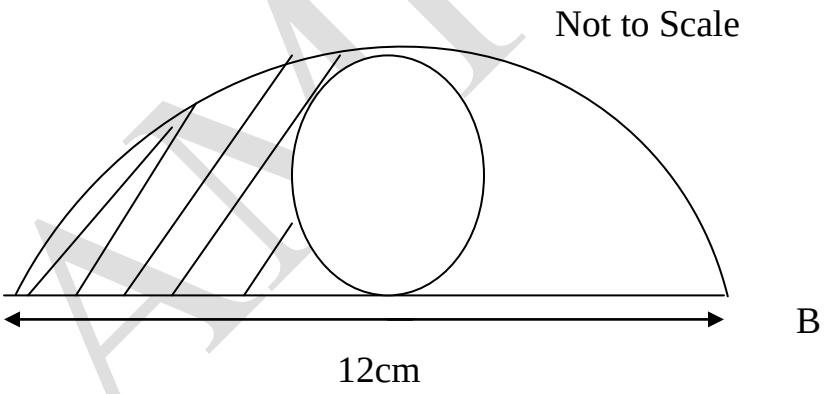
1. Evaluate. $\left(\frac{225}{289}\right)^{3/2}$ [1m]

2. Solve the quadratic equation $3x^2 - 5x = 4$ [2m]

3. Simplify $3x^{1/3} \div 6x^{2/3}$ [1m]

4.



The largest possible circle is drawn inside a semicircle, as shown in the diagram. The distance AB is 12 centimeters.

(a) Find the shaded area.

Answer (a) ----------cm^2 [2m]

(b) Find the perimeter of the shaded area.

Answer (b) ----------cm [1m]

5. A car starting from rest attains a velocity of 20m\s after 5 seconds. It continues at this speed for 15seconds and then slows down and comes to res t in a further 8 seconds. If the acceleration and retardation are constant, draw a velocity time graph and from it find

   (a) the acceleration of the car. [1m]

   (b) the retardation of the car. [1m]

   (c) the distance travelled in the total time of 28seconds. [2m]

6. Find the set of values of x for which
   $x - 2(5+2x) < 11$. [2m]

7. Find all angles between 0^0 and 360^0
   (a) whose sine is 0.4676 [1m]
   (b) whose Cosine is – 0.3572 [1m]
   (c) whose tangent is 1.6874 [1m]

8. P is the point (1, 1). The vector $\mathbf{m} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$ and $\mathbf{n} = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$

   (a) Find the vector m +2n.

   Answer (a) _____. [1m]

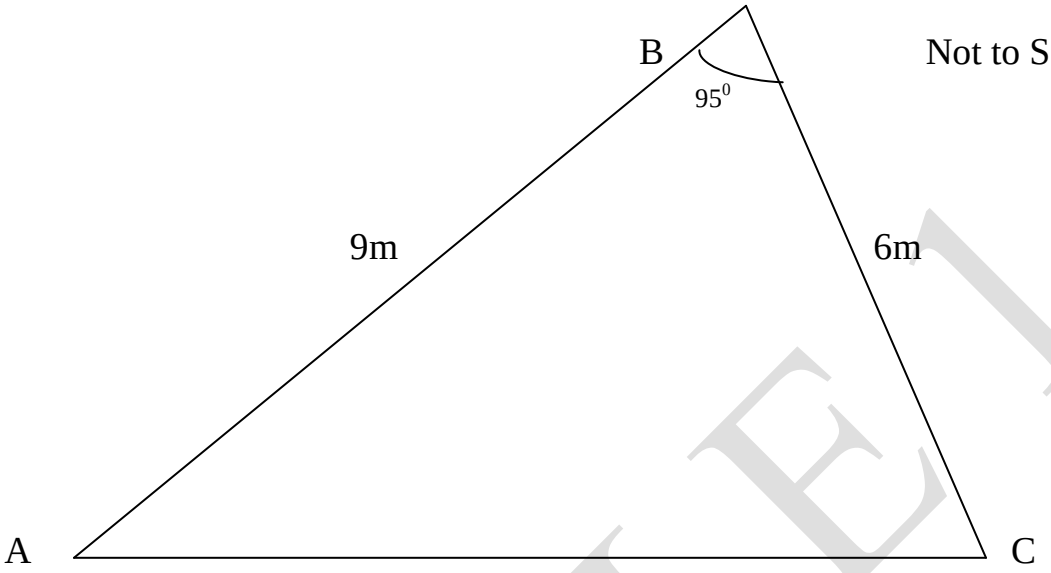
   (b) $\overrightarrow{PQ}$ = m + 2n. Find the position vector of Q.

   Answer (b) _____. [1m]

   (c) Calculate |m|, the magnitude of m.

   Answer(c) |m| _____. [2m]

9.



The triangular area of ABC is part of Henri's garden.

AB = 9m, BC = 6m and angle ABC= 95^0.

Henri puts a fence along AC and plants vegetables in the triangle area ABC. Calculate.

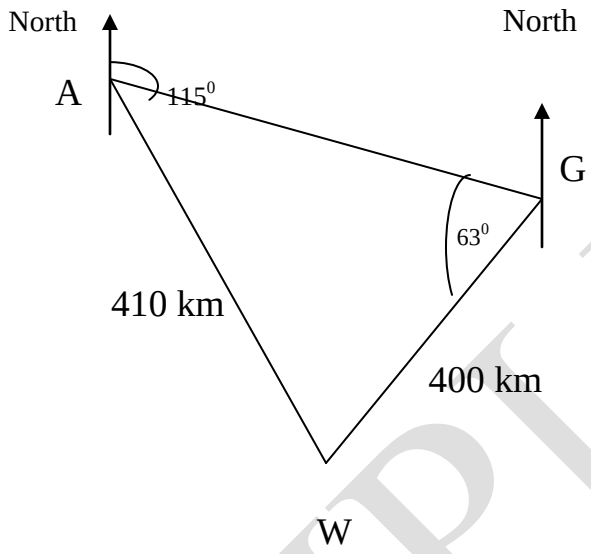
(a) The length of the fence AC. [2m]

Answer (a) A = _____m.

(b) The area for vegetables. [1m]

Answer (b) = _____m^2.

10. A plane flies from Auckland (A) to Gisborne (G) on a bearing of 115^0. The plane then flies on to Wellington (W). Angle AGW = 63^0.



Not to Scale

(a) Calculate the bearing of Wellington from Gisborne. [2m]

Answer (a) = _____.