

National 5 Maths Practice Paper F

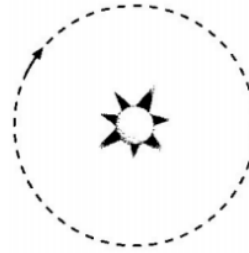
Paper 2 You may use a calculator

1. The orbit of a planet around a star is circular.

The radius of the orbit is 4.96×10^7 kilometres.

Calculate the circumference of the orbit.

Given your answer in scientific notation.



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2. A boat was bought for £35 000. Its value decreases by 8% each year.

How much will the boat be worth after 4 years?

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3. Change the subject of the formula below to x .

$$\frac{x}{c} + a = b$$

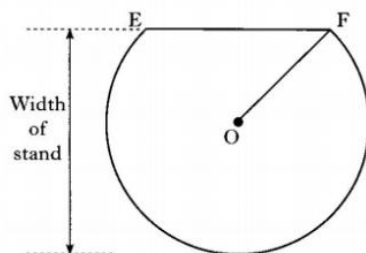
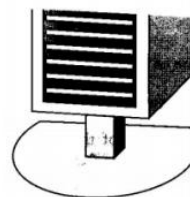
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4. Solve algebraically the system of equations

$$\begin{aligned} 4x + 2y &= 13 \\ 5x + 3y &= 17. \end{aligned}$$

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6. The diagram shows the base of a loudspeaker stand which has the shape of part of a circle.



- The centre of the circle is O.
- EF is a chord of the circle.
- EF is 18 centimetres.
- The radius, OF, of the circle is 15 centimetres.

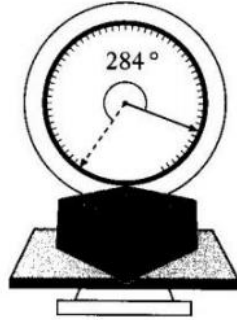
Find the width of the stand.

4

9. A set of scales has a circular dial.

The pointer is 9 centimetres long.

The tip of the pointer moves through an arc of 2 centimetres for each 100 grams of weight on the scales.



A parcel, placed on the scales, moves the pointer through an angle of 284° .

Calculate the weight of the parcel.

4

10. The number of diagonals, d , in a polygon of n sides is given by the formula

$$d = \frac{1}{2}n(n - 3).$$

- (a) How many diagonals does a polygon of 7 sides have?

2

- (b) A polygon has 65 diagonals.

Show that for this polygon, $n^2 - 3n - 130 = 0$.

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- (c) Hence find the number of sides in this polygon.

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12. In triangle ABC,

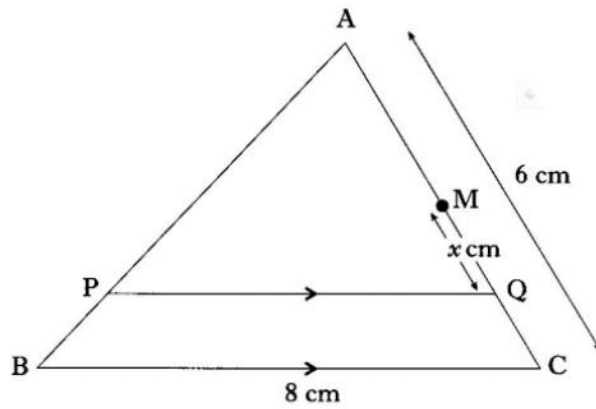
○ $BC = 8$ centimetres

○ $AC = 6$ centimetres

○ PQ is parallel to BC

○ M is the midpoint of AC .

○ Q lies on AC , x centimetres from M , as shown in the diagram.



(a) Write down an expression for the length of AQ .

1

(b) Show that $PQ = \left(4 + \frac{4}{3}x\right)$ centimetres.

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