

EASY MODERN MTHEMATICS

1. Calculate the values of m and n that satisfy the simultaneous linear equations:

$$\begin{aligned}\frac{1}{2}m - 3n &= 10 \\ 5m + 6n &= -8\end{aligned}$$

2. Calculate the values of k and w that satisfy the following simultaneous linear equations.

$$\begin{aligned}2k - 3w &= 10 \\ 4k + w &= -1\end{aligned}$$

3. Solve the equation $3x^2 = 2(x-1) + 7$.

4. Solve the quadratic equation $\frac{3x(x-1)}{2} = x + 6$

5.

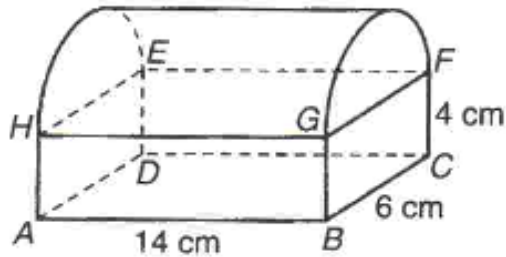


DIAGRAM 1

Diagram 1 shows a solid formed by joining a cuboid and a half-cylinder.

Using $\pi = \frac{22}{7}$, calculate the volume, in cm^3 , of the solid.

6. In Diagram 2, $OPQS$ is a quadrant with the centre O and $OSQR$ is a semicircle with the centre S .

Area = πr^2
Perimeter = $2 \pi r$

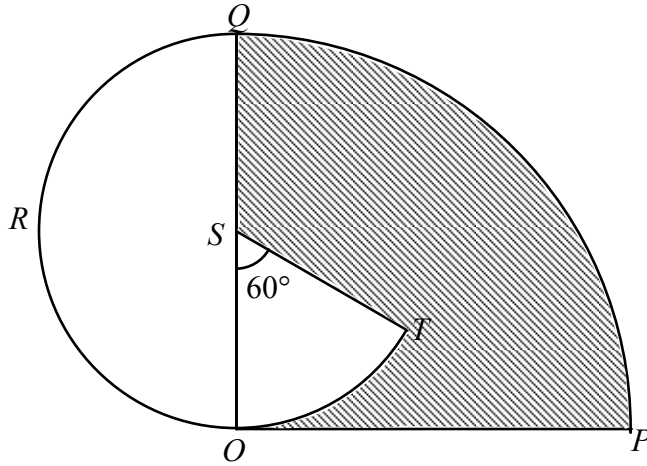


DIAGRAM 2

Given that $OP = 14$ cm. Using $\pi = \frac{22}{7}$, calculate

- (a) the area, in cm^2 , of the shaded region,
 (b) the perimeter, in cm, of the whole diagram.
7. In diagram 6, $NOMR$ is a semicircle with diameter NM . PQ is an arc of another circle with centre O . $NOMP$ and ORQ are straight lines

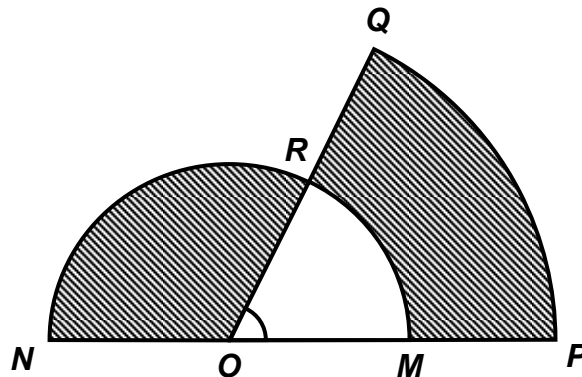


Diagram 6

$OM = MP = 7$ cm and $\angle POQ = 60^\circ$.

Using $\pi = \frac{22}{7}$, calculate

- (a) the area, in cm^2 , of the shaded region.
 (b) the perimeter, in cm, of the whole diagram.

8. (a) Complete each statement in the answer space with the quantifier “all” or “some” so that it will become a true statement.
- (i) _____ of the multiples of 3 are even numbers.
- (ii) _____ rhombus have equal sides.
- (b) Write down two implications based on the following sentence:
 x is an even number if and only if x can be divided by 2
- (c) Make a general conclusion by induction for the following number pattern :
- $$2 = (0)^2 + 2$$
- $$3 = (1)^2 + 2$$
- $$6 = (2)^2 + 2$$
- $$11 = (3)^2 + 2$$
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9. (a) State whether each of the following statement is true or false
- (i) $2^2 = 4$ or $(-3)^3 = -9$
- (ii) $8 > 7$ and $3^2 = 6$
- (b) Complete the following argument .
 Premise 1 : All factors of 12 are factors of 24.
 Premise 2 : 3 is a factor of 12.
 Conclusion : _____
- (c) State the converse of the following statement and hence, determine whether its converse is true or false. [6 marks]

If $x > 7$, then $x > 4$