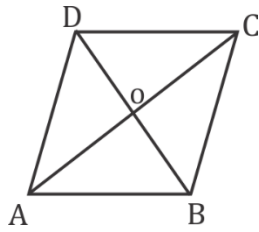S1. Ans.(a)
Sol.

Diagonals of a rhombus bisect each other at right angle and divides it in the ratio of 1 : 1
Therefore,
In $\triangle ADB$, $OA = 8$ cm and $OB = 6$ cm
by Pythagoras theorem, $(OA)^2 + (OB)^2 = (AB)^2$
$\Rightarrow (8)^2 + (6)^2 = (AB)^2$
$\Rightarrow 64 + 36 = AB$
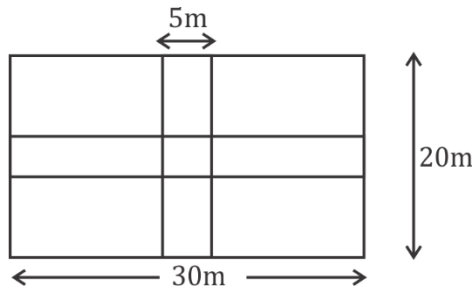$\Rightarrow \sqrt{100} = AB$
$\Rightarrow 10$ cm

S2. Ans.(b)
Sol. Area of Trapezium
$\Rightarrow \frac{1}{2} (13 + 7) \times 4$
$\Rightarrow 40$ cm²

S3. Ans.(c)
Sol.

$30 \times 5 + 20 \times 5 - 5 \times 5 = 250 - 25 = 225$ m
Cost of Gravelling = 225×0.30
= Rs. 67.5

S4. Ans.(d)
Sol.
Let the breadth of the rectangle = 3x and length = 5x
Perimeter of Square = Perimeter of rectangle
$4 \times$ Side = 2 (length + breadth)

4 × 120 = 2(3x + 5x)

x = 30

Length = 3x = 3 × 30 = 90m

Breadth = 5x = 5 × 30 = 150m

Area of Rectangle = 90 × 150 = 13500m²

S5. Ans.(d)

Sol.

Let the breadth of the rectangle = 3x and length = 5x

Perimeter of Square = Perimeter of rectangle

4 × Side = 2 (length + breadth)

4 × 120 = 2(3x + 5x)

x = 30

Length = 3x = 3 × 30 = 90m

Breadth = 5x = 5 × 30 = 150m

Area of Rectangle = 90 × 150 = 13500m²

S6. Ans.(b)

Sol. Circumference of circle = 2π r

Now, 2π r = 264 $\Rightarrow$ r = $\frac{264 \times 7}{2 \times 22}$ = 42

r = 42 cm

2π R = 396 $\Rightarrow$ R = 63 cm

Area between two circles = $\pi R^2 - \pi r^2$

= $\pi [(63)^2 - (42)^2] = \pi [(63 + 42) (63 - 42)]$

$\frac{22}{7}$ × 105 × 21 = 6930 cm²

S7. Ans.(d)

Sol. Radius of two inner circles are 2x and 4x

Radius of two outer circles are 4x and 5x

A.T.Q

$(4x)^2 - (2x)^2 : (5x)^2 - (4x)^2$

$16x^2 - 4x^2 : 25x^2 - 16x^2$

$12x^2 : 9x^2$

4 : 3

S8. Ans(b)

Sol:

Circumference of the circular wire=$2 \times \frac{22}{7} \times 63 = 396\ cm$

Perimeter of semi-circular wire= circumference of the circular wire=396 cm

Let the radius of the semi- circular wire be r cm

Then, $\frac{22}{7} \times r + 2r = 396$

$r\left(\frac{22}{7} + 2\right) = 396$

r=77 cm

diameter of the semi-circular wire=1.54 m

S9. Ans.(b)

Sol. Semi – perimeter of triangle

$= \frac{72+128+100}{2} = 150$

Area of park $= \sqrt{150 \times 78 \times 22 \times 50} = 3587.47$

Required value = 3587.47 × 5.5

= 19731.085~19731

S10. Ans.(a)

Sol.

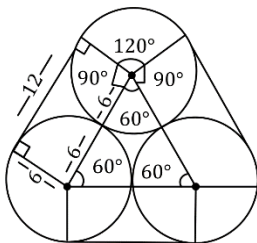|	Old	New
Length →	100	108
Breadth →	100	105
Area →	100 × 100	108 × 105

Increase in area $= \frac{1340}{10,000} \times 100 = 13.4\%$

2nd solution:

Total increase in area $= X+Y+\frac{XY}{100} \to 8 + 5 + 0.4$

= 13.4%

S11. Ans.(a)

Sol.

$3 \times \left[\frac{120}{360} \times 2\pi r\right] + 3 \times [12]$

$3 \times \frac{120}{360} \times 2\pi \times 6 + 36$

$(12\pi + 36)$cm

S12. Ans(d)

Sol. Area of sector of a circle $= \frac{\theta}{360}\pi r^2$

$$308 = \frac{45}{360} \times \frac{22}{7} \times r^2$$

$$r^2 = \frac{308 \times 360 \times 7}{45 \times 22}$$

$$r = \sqrt{2 \times 7 \times 2 \times 2 \times 2 \times 7}$$

$$r = 2 \times 2 \times 7 = 28\text{cm}$$

S13. Ans.(c)
Sol.
$\pi rl = 924$

$\frac{22}{7} \times r \times 28 = 924$

r = 10.5 cm

S14. Ans.(a)
Sol. Volume of prism = Area of Base × Height

30 = Area of Base × 15

Area of Base $= \frac{30}{15}$

Area of Base = 2 cm²

S15. Ans.(a)
Sol. Ratio of volume = 27 : 64

According to Question, 64x - 27x = 296

Volume of smaller cube = 37 × 8 = 296cm³

Side = 8 cm, Surface area = 6 × (side)²

= 6 × (8)² = 384cm²