Chapter: Perimeter, Area, and Mensuration **Class:** 7
Test Code: 2026/Mensuration/VII/01
Max Marks: 15

Q.1 The perimeter of the rectangle is:

$$2 \times (40 + 22) = 124 \text{ cm}$$

The side of the square is:

$$\frac{124}{4} = 31 \text{ cm}$$

The area of the rectangle is:

$$40 \times 22 = 880 \text{ sq. cm}$$

The area of the square is:

$$31^2 = 961 \text{ sq. cm}$$

The difference between the area of the rectangle and the square is:

$$961 - 880 = 81 \text{ sq. cm}$$

Answer: $\boxed{A}$

Q.2 Let the side of the square be a. The area of the square is:

$$a^2$$

The diagonal of the square is:

$$a\sqrt{2}$$

The area of the square drawn on the diagonal is:

$$(a\sqrt{2})^2 = 2a^2$$

The ratio of the area of the original square to the area of the square on the diagonal is:

$$\frac{a^2}{2a^2} = \frac{1}{2}$$

Answer: $\boxed{B}$

Q.3 The inner dimensions of the park after the path is removed are:

$$40 - 2 \times 2.5 = 35 \text{ m} \quad \text{and} \quad 30 - 2 \times 2.5 = 25 \text{ m}$$

The area of the path is:

$$(40 \times 30) - (35 \times 25) = 1200 - 875 = 325 \text{ sq. m}$$

The cost of leveling the path is:

$$325 \times 15 = 4875 \text{ Rs.}$$

Answer: $\boxed{A}$

Q.4 Let the original base be b and height be h. The original area is:

$$b \times h$$

The new base is $2b$ and the new height is $\frac{h}{2}$. The new area is:

$$2b \times \frac{h}{2} = b \times h$$

The ratio of the new area to the original area is:

$$\frac{b \times h}{b \times h} = 1 : 1$$

Answer: $\boxed{C}$

Q.5 The area of the triangle is given by:

$$\frac{1}{2} \times \text{base} \times \text{height} = 42$$

Substituting the base:

$$\frac{1}{2} \times 12 \times \text{height} = 42 \implies 6 \times \text{height} = 42 \implies \text{height} = 7 \text{ cm}$$

Answer: $\boxed{A}$

Q.6 The circumference of the circle is:

$$2 \times \frac{22}{7} \times 42 = 264 \text{ cm}$$

Let the sides of the rectangle be $6x$ and $5x$. The perimeter of the rectangle is:

$$2 \times (6x + 5x) = 22x = 264 \implies x = 12$$

The smaller side of the rectangle is:

$$5x = 60 \text{ cm}$$

Answer: $\boxed{A}$

Q.7 The perimeter of the square is:

$$4 \times 11 = 44 \text{ cm}$$

The circumference of the circle is:

$$2 \times \frac{22}{7} \times r = 44 \implies r = 7 \text{ cm}$$

The area of the circle is:

$$\frac{22}{7} \times 7^2 = 154 \text{ sq. cm}$$

Answer: $\boxed{A}$

Q.8 The dimensions of the cuboid are:

$$4 \text{ cm} \times 4 \text{ cm} \times 8 \text{ cm}$$

The surface area of the cuboid is:

$$2 \times (4 \times 4 + 4 \times 8 + 4 \times 8) = 2 \times (16 + 32 + 32) = 2 \times 80 = 160 \text{ sq. cm}$$

Answer: $\boxed{B}$

Q.9 The volume of the wall is:

$$600 \times 500 \times 50 = 15,000,000 \text{ cubic cm}$$

The volume of one brick is:

$$25 \times 12.5 \times 7.5 = 2343.75 \text{ cubic cm}$$

The number of bricks required is:

$$\frac{15,000,000}{2343.75} = 6400$$

Answer: $\boxed{A}$

Q.10 The side of the cube is:

$$\sqrt[3]{729} = 9 \text{ cm}$$

The total surface area of the cube is:

$$6 \times 9^2 = 6 \times 81 = 486 \text{ sq. cm}$$

Answer: $\boxed{A}$

Q.11 The area of a rhombus is given by:

$$\frac{1}{2} \times d_1 \times d_2 = 96 \implies \frac{1}{2} \times 12 \times d_2 = 96 \implies d_2 = 16 \text{ cm}$$

The side of the rhombus is:

$$\sqrt{\left(\frac{12}{2}\right)^2 + \left(\frac{16}{2}\right)^2} = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10 \text{ cm}$$

The perimeter of the rhombus is:

$$4 \times 10 = 40 \text{ cm}$$

Answer: $\boxed{B}$

Q.12 The circumference of the wheel is:

$$\frac{22}{7} \times 84 = 264 \text{ cm}$$

The number of revolutions to cover 792 meters (79200 cm) is:

$$\frac{79200}{264} = 300$$

Answer: $\boxed{C}$

Q.13 The perimeter of a semi-circle is:

$$\frac{1}{2}\times\pi\times d+d = 36 \implies \frac{22}{14}\times d+d = 36 \implies \frac{22d+14d}{14} = 36 \implies 36d = 504 \implies d = 14 \text{ cm}$$

Answer: $\boxed{A}$

Q.14 The volume of the tank is:

$$6 \times 5 \times 4.5 = 135 \text{ m}^3$$

The capacity of the tank in liters is:

$$135 \times 1000 = 135,000 \text{ liters}$$

Answer: $\boxed{A}$

Q.15 Let the original side be s. The original area is:

$$s^2$$

The new side is:

$$s \times \left(1 + \frac{k}{100}\right)$$

The new area is:

$$\left(s \times \left(1 + \frac{k}{100}\right)\right)^2 = s^2 \times \left(1 + \frac{k}{100}\right)^2$$

The area is increased by 44

$$s^2\times\left(1 + \frac{k}{100}\right)^2 = 1.44\times s^2 \implies \left(1 + \frac{k}{100}\right)^2 = 1.44 \implies 1+\frac{k}{100} = 1.2 \implies \frac{k}{100} = 0.2 \implies$$

Answer: $\boxed{A}$