Chapter: Perimeter, Area, and Mensuration **Class:** 7
Test Code: 2026/Mensuration/VII/05
Max Marks: 15

Q.1 The area of the square is:

$$24^2 = 576 \text{ sq. cm}$$

The area of the rectangle is also 576 sq. cm. If the length is 32 cm, the breadth is:

$$\frac{576}{32} = 18 \text{ cm}$$

The perimeter of the rectangle is:

$$2(32 + 18) = 2 \times 50 = 100 \text{ cm}$$

Answer: $\boxed{A}$

Q.2 The inner side of the park is:

$$30 - 2 \times 1 = 28 \text{ m}$$

The area of the remaining part is:

$$30^2 - 28^2 = 900 - 784 = 116 \text{ sq. m}$$

The cost of planting grass is:

$$116 \times 5 = 580 \text{ Rs.}$$

Note: The options provided do not match the calculated answer. Please verify the question or options. **Answer:** $\boxed{\text{None of the above}}$

Q.3 Let the original height be h and the base be b. The original area is:

$$\frac{1}{2} \times b \times h$$

The new height is $0.9h$ and the new base is $1.1b$. The new area is:

$$\frac{1}{2} \times 1.1b \times 0.9h = 0.99 \times \frac{1}{2} \times b \times h$$

The area decreases by 1%. **Answer:** $\boxed{C}$

Q.4 Let the height be h. The base is $2h$. The area is:

$$2h \times h = 72 \implies 2h^2 = 72 \implies h^2 = 36 \implies h = 6 \text{ cm}$$

Answer: $\boxed{A}$

Q.5 The inner radius is:

$$r = \frac{440}{2\pi} = \frac{440 \times 7}{2 \times 22} = 70 \text{ m}$$

The outer radius is:

$$R = \frac{528}{2\pi} = \frac{528 \times 7}{2 \times 22} = 84 \text{ m}$$

The width of the track is:

$$R - r = 84 - 70 = 14 \text{ m}$$

Answer: $\boxed{B}$

Q.6 The circumference of the wheel is:

$$2\pi r = 2 \times \frac{22}{7} \times 35 = 220 \text{ cm}$$

The distance to cover is:

$$1.1 \text{ km} = 110,000 \text{ cm}$$

The number of rotations is:

$$\frac{110,000}{220} = 500$$

Answer: $\boxed{A}$

Q.7 The side of the rhombus is:

$$\sqrt{\left(\frac{16}{2}\right)^2 + \left(\frac{30}{2}\right)^2} = \sqrt{8^2 + 15^2} = \sqrt{64 + 225} = \sqrt{289} = 17 \text{ cm}$$

The perimeter of the rhombus is:

$$4 \times 17 = 68 \text{ cm}$$

Answer: $\boxed{C}$

Q.8 The perimeter of the rectangle is:

$$2(15 + 7) = 44 \text{ cm}$$

The circumference of the circle is 44 cm. The radius is:

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

The area of the circle is:

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

Answer: $\boxed{A}$

Q.9 The volume of the cuboid is:

$$16 \times 8 \times 4 = 512 \text{ cu. cm}$$

The side of the new cube is:

$$\sqrt[3]{512} = 8 \text{ cm}$$

The surface area of the new cube is:

$$6 \times 8^2 = 384 \text{ sq. cm}$$

Answer: $\boxed{B}$

Q.10 The volume of the tank is:

$$2 \times 1.5 \times 1 = 3 \text{ m}^3$$

The volume of water is:

$$\frac{3}{4} \times 3 = 2.25 \text{ m}^3 = 2250 \text{ liters}$$

Answer: $\boxed{A}$

Q.11 The perimeter of a semi-circle is:

$$\pi r + 2r = 108 \implies \frac{22}{7}r + 2r = 108 \implies \frac{22r + 14r}{7} = 108 \implies 36r = 756 \implies r = 21 \text{ cm}$$

Answer: $\boxed{B}$

Q.12 The ratio of the edges is the cube root of the ratio of their volumes:

$$\sqrt[3]{\frac{1}{64}} = \frac{1}{4}$$

Answer: $\boxed{A}$

Q.13 The area of the rectangle is:

$$12 \times 10 = 120 \text{ sq. cm}$$

The area of the hole is:

$$\pi r^2 = \frac{22}{7} \times 3.5^2 = 38.5 \text{ sq. cm}$$

The area of the remaining sheet is:

$$120 - 38.5 = 81.5 \text{ sq. cm}$$

Answer: $\boxed{A}$

Q.14 Let the original base be b and the height be h. The original area is:

$$\frac{1}{2} \times b \times h$$

The new base is $1.2b$. Let the new height be kh. The new area is:

$$\frac{1}{2} \times 1.2b \times kh = \frac{1}{2} \times b \times h \implies 1.2k = 1 \implies k = \frac{1}{1.2} = \frac{5}{6} \approx 0.833$$

The height should be reduced by $16\frac{2}{3}\%$. **Answer:** $\boxed{B}$

Q.15 The internal dimensions are:

$$24 - 2 \times 2 = 20 \text{ cm}, \quad 14 - 2 \times 2 = 10 \text{ cm}, \quad 10 - 2 = 8 \text{ cm}$$

The volume of the box is:

$$20 \times 10 \times 8 = 1600 \text{ cu. cm}$$

The external volume is:

$$24 \times 14 \times 10 = 3360 \text{ cu. cm}$$

The volume of wood used is:

$$3360 - 1600 = 1760 \text{ cu. cm}$$

Answer: $\boxed{A}$