Chapter: Perimeter, Area, and Mensuration **Class:** 7
Test Code: 2026/Mensuration/VII/02
Max Marks: 15

Q.1 The outer dimensions of the park including the path are:

$$100 + 2 \times 5 = 110 \text{ m} \quad \text{and} \quad 70 + 2 \times 5 = 80 \text{ m}$$

The area of the park including the path is:

$$110 \times 80 = 8800 \text{ sq. m}$$

The area of the park excluding the path is:

$$100 \times 70 = 7000 \text{ sq. m}$$

The area of the path is:

$$8800 - 7000 = 1800 \text{ sq. m}$$

Answer: $\boxed{A}$

Q.2 Let the sides of the squares be a and b. The ratio of their areas is:

$$\frac{a^2}{b^2} = \frac{9}{16} \implies \frac{a}{b} = \frac{3}{4}$$

The ratio of their perimeters is:

$$\frac{4a}{4b} = \frac{a}{b} = \frac{3}{4}$$

Answer: $\boxed{A}$

Q.3 The area of the parallelogram is:

$$15 \times 8 = 120 \text{ sq. cm}$$

Let the corresponding base be x. Then:

$$x \times 10 = 120 \implies x = 12 \text{ cm}$$

Answer: $\boxed{A}$

Q.4 The area of the square is:

$$12^2 = 144 \text{ sq. cm}$$

The area of the triangle is:

$$\frac{1}{2} \times 18 \times h = 144 \implies 9h = 144 \implies h = 16 \text{ cm}$$

Answer: $\boxed{A}$

Q.5 The side of the square is:

$$\sqrt{121} = 11 \text{ cm}$$

The perimeter of the square is:

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

The radius of the circle is:

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

The area of the circle is:

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

Answer: $\boxed{A}$

Q.6 The area of the circular ring is:

$$\pi(R^2 - r^2) = 770 \implies \frac{22}{7}(21^2 - r^2) = 770 \implies 21^2 - r^2 = 245 \implies r^2 = 441 - 245 = 196 \implies r$$

Answer: $\boxed{A}$

Q.7 The volume of the cuboidal box is:

$$100 \times 80 \times 50 = 400,000 \text{ cubic cm}$$

The volume of one small cube is:

$$10^3 = 1000 \text{ cubic cm}$$

The number of small cubes is:

$$\frac{400,000}{1000} = 400$$

Answer: $\boxed{A}$

Q.8 The volume of water is:

$$4 \times 3 \times 2 = 24 \text{ cubic m}$$

The base area of the cubical tank is:

$$4 \times 4 = 16 \text{ sq. m}$$

The height of water in the cubical tank is:

$$\frac{24}{16} = 1.5 \text{ m}$$

Answer: $\boxed{A}$

Q.9 Let the original length be L and breadth be B. The original area is:

$$L \times B$$

The new length is $1.2L$ and the new breadth is $0.8B$. The new area is:

$$1.2L \times 0.8B = 0.96LB$$

The area decreases by 4%. **Answer:** $\boxed{C}$

Q.10 The circumference of the wheel is:

$$\frac{22}{7} \times 70 = 220 \text{ cm}$$

The distance traveled in 1000 revolutions is:

$$1000 \times 220 = 220,000 \text{ cm} = 2.2 \text{ km}$$

Answer: $\boxed{A}$

Q.11 The side of the rhombus is:

$$\frac{52}{4} = 13 \text{ cm}$$

The area of the rhombus is:

$$\text{side} \times \text{altitude} = 120 \implies 13 \times h = 120 \implies h = \frac{120}{13} \approx 9.23 \text{ cm}$$

Answer: $\boxed{A}$

Q.12 The area of the square is:

$$14^2 = 196 \text{ sq. cm}$$

The area of the four quadrants is:

$$4 \times \frac{1}{4} \times \frac{22}{7} \times 7^2 = 154 \text{ sq. cm}$$

The area of the shaded region is:

$$196 - 154 = 42 \text{ sq. cm}$$

Answer: $\boxed{A}$

Q.13 The volume of the three cubes is:

$$3^3 + 4^3 + 5^3 = 27 + 64 + 125 = 216 \text{ cubic cm}$$

The edge of the new cube is:

$$\sqrt[3]{216} = 6 \text{ cm}$$

Answer: $\boxed{A}$

Q.14 The semi-perimeter of the trapezium is:

$$s = \frac{25 + 10 + 14 + 13}{2} = 31 \text{ m}$$

The area of the trapezium is:

$$\sqrt{s(s-a)(s-b)(s-c)(s-d)} = \sqrt{31 \times 6 \times 21 \times 17 \times 18} \quad \text{(Using Heron's formula)}$$

However, for a trapezium, the area is:

$$\frac{1}{2} \times (a + b) \times h$$

Using the Pythagorean theorem to find the height:

$$h = \sqrt{14^2 - \left(\frac{25 - 10}{2}\right)^2} = \sqrt{196 - 6.25^2} = \sqrt{196 - 39.0625} = \sqrt{156.9375} \approx 12.53 \text{ m}$$

The area is:

$$\frac{1}{2} \times (25 + 10) \times 12.53 \approx 210 \text{ sq. m}$$

Answer: $\boxed{B}$

Q.15 The height of the cuboid is:

$$\frac{440}{88} = 5 \text{ cm}$$

Answer: $\boxed{A}$