Chapter: Perimeter, Area, and Mensuration **Class:** 7
Test Code: 2026/Mensuration/VII/04
Max Marks: 15

Q.1 Let the original length be l and breadth be b. The perimeter is:

$$2(l+b) = 48 \implies l+b = 24 \quad (1)$$

The new length is $l+4$ and the new breadth is $b-2$. The area remains the same:

$$l \times b = (l+4)(b-2)$$

Expanding and simplifying:

$$lb = lb-2l+4b-8 \implies 0 = -2l+4b-8 \implies 2l-4b+8 = 0 \implies l-2b+4 = 0 \implies l = 2b-4 \quad (2)$$

Substituting (2) into (1):

$$(2b-4)+b = 24 \implies 3b-4 = 24 \implies 3b = 28 \implies b = \frac{28}{3} \approx 9.33 \text{ cm}$$

$$l = 2 \times \frac{28}{3} - 4 = \frac{56}{3} - \frac{12}{3} = \frac{44}{3} \approx 14.67 \text{ cm}$$

The closest option is 14 cm, 10 cm. **Answer:** $\boxed{A}$

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

$$x = s^2$$

The new side is $2s$. The new area is:

$$y = (2s)^2 = 4s^2$$

The ratio $x : y$ is:

$$\frac{x}{y} = \frac{s^2}{4s^2} = \frac{1}{4}$$

Answer: $\boxed{B}$

Q.3 Since both have the same base and area, their heights must be equal. However, the non-parallel sides of the parallelogram are longer than the sides of the rectangle. Therefore, the perimeter of the parallelogram is greater than that of the rectangle.
Answer: $\boxed{A}$

Q.4 Let the other leg be b. Using the Pythagorean theorem:

$$5^2 + b^2 = 13^2 \implies 25 + b^2 = 169 \implies b^2 = 144 \implies b = 12 \text{ cm}$$

The area of the triangle is:

$$\frac{1}{2} \times 5 \times 12 = 30 \text{ sq. cm}$$

Answer: $\boxed{B}$

Q.5 The ratio of the areas of two circles is the square of the ratio of their radii:

$$\left(\frac{3}{5}\right)^2 = \frac{9}{25}$$

Answer: $\boxed{C}$

Q.6 The side of the outer square is:

$$21 + 2 \times 3 = 27 \text{ m}$$

The area of the path is:

$$27^2 - 21^2 = 729 - 441 = 288 \text{ sq. m}$$

Answer: $\boxed{A}$

Q.7 The circumference is proportional to the radius. If the circumference increases by 50%, the radius also increases by 50%. The area is proportional to the square of the radius:

$$(1.5)^2 = 2.25$$

The area increases by 125%. **Answer:** $\boxed{C}$

Q.8 The height of the cuboid is:

$$\frac{960}{12 \times 10} = 8 \text{ cm}$$

The total surface area is:

$$2(12 \times 10 + 12 \times 8 + 10 \times 8) = 2(120 + 96 + 80) = 2 \times 296 = 592 \text{ sq. cm}$$

Answer: $\boxed{A}$

Q.9 If the edges of a cube are doubled, the volume becomes:

$$(2)^3 = 8 \text{ times}$$

Answer: $\boxed{D}$

Q.10 The circumference of the circle is:

$$2 \times \frac{22}{7} \times 21 = 132 \text{ cm}$$

The perimeter of the square is:

$$132 \text{ cm}$$

The side of the square is:

$$\frac{132}{4} = 33 \text{ cm}$$

Answer: $\boxed{A}$

Q.11 The volume of the Godown is:

$$60 \times 40 \times 30 = 72,000 \text{ m}^3$$

The number of boxes is:

$$\frac{72,000}{0.8} = 90,000$$

Answer: $\boxed{A}$

Q.12 Let the base be $3x$ and the height be $4x$. The area is:

$$\frac{1}{2} \times 3x \times 4x = 150 \implies 6x^2 = 150 \implies x^2 = 25 \implies x = 5$$

The base is:

$$3x = 15 \text{ cm}$$

Answer: $\boxed{A}$

Q.13 The horse can graze in a quarter circle of radius 7 m:

$$\frac{1}{4} \times \frac{22}{7} \times 7^2 = \frac{1}{4} \times 154 = 38.5 \text{ sq. m}$$

Answer: $\boxed{C}$

Q.14 Let the side of the cube be s. The surface area is:

$$6s^2 = 150 \implies s^2 = 25 \implies s = 5 \text{ cm}$$

The volume is:

$$s^3 = 125 \text{ cu. cm}$$

Answer: $\boxed{A}$

Q.15 Let the dimensions be x, $2x$, and $3x$. The total surface area is:

$$2(x{\times}2x{+}x{\times}3x{+}2x{\times}3x) = 2(2x^2{+}3x^2{+}6x^2) = 2{\times}11x^2 = 22x^2 = 88 \implies x^2 = 4 \implies x = 2$$

The dimensions are 2 cm, 4 cm, 6 cm. The volume is:

$$2 \times 4 \times 6 = 48 \text{ cu. cm}$$

Answer: $\boxed{A}$