

1- The ratio between the length and the breadth of a rectangular park is 3 : 2. If a man cycling along the boundary of the park at the speed of 12 km/hr completes one round in 8 minutes, then the area of the park (in sq. m) is:

- A.15360
- B.153600
- C.30720
- D.307200
- E.None of these

Answer & Explanation

Answer - B (153600)

Explanation -

$$\text{Perimeter} = \text{Distance covered in 8 min.} = \frac{12000}{60} \times 8\text{m} = 1600 \text{ m.}$$

Let length = $3x$ metres and breadth = $2x$ metres.

Then, $2(3x + 2x) = 1600$ or $x = 160$.

Length = 480 m and Breadth = 320 m.

Area = $(480 \times 320) \text{ m}^2 = 153600 \text{ m}^2$.

2- An error 2% in excess is made while measuring the side of a square. The percentage of error in the calculated area of the square is:

- A.2%
- B.2.02%
- C.4%
- D.4.04%
- E.None of these

Answer & Explanation

Answer - D (4.04%)

Explanation - 100 cm is read as 102 cm.

$$A_1 = (100 \times 100) \text{ cm}^2 \text{ and } A_2 (102 \times 102) \text{ cm}^2.$$

$$(A_2 - A_1) = [(102)^2 - (100)^2]$$

$$= (102 + 100) \times (102 - 100)$$

$$= 404 \text{ cm}^2.$$

$$\text{Percentage error} = \frac{404}{100 \times 100} \times 100\% = 4.04\%$$

3- The ratio between the perimeter and the breadth of a rectangle is 5:1. If the area of the rectangle is 216 sq. cm, what is the length of the rectangle?

- A. 16 cm
- B. 18 cm
- C. 24 cm
- D. Data inadequate
- E. None of these

Answer & Explanation

Answer - B (18 cm)

Explanation -

$$\frac{2(l + b)}{b} = \frac{5}{1}$$

$$2l + 2b = 5b$$

$$3b = 2l$$

$$b = \frac{2}{3}l$$

Then, Area = 216 cm²

$$l \times b = 216$$

$$l \times \frac{2}{3}l = 216$$

$$l^2 = 324$$

$$l = 18 \text{ cm}$$

4- The percentage increase in the area of a rectangle, if each of its sides is increased by 20% is:

- **A.**40%
- **B.**42%
- **C.**44%
- **D.**46%
- **E.**None of these

Answer & Explanation

Answer - **C** (44%)

Explanation - Let original length = x metres and original breadth = y metres.

Original area = (ab) m².

$$\text{New length} = \frac{120}{100} a \text{ m} = \frac{6}{5} b \text{ m.}$$

$$\text{New breadth} = \frac{120}{100} b \text{ m} = \frac{6}{5} b \text{ m.}$$

$$\text{New Area} = \frac{6}{5} a \times \frac{6}{5} b \text{ m}^2 = \frac{36}{25} ab \text{ m}^2.$$

The difference between the original area = ab and new-area 36/25 ab is

$$= (36/25)ab - ab$$

$$= ab (36/25 - 1)$$

$$= ab (11/25) \text{ or } (11/25) ab$$

$$\text{Increase \%} = \frac{11}{25} ab \times \frac{1}{ab} \times 100\% = 44\%.$$

5- A rectangular park 60 m long and 40 m wide has two concrete crossroads running in the middle of the park and rest of the park has been used as a lawn. If the area of the lawn is 2109 sq. m, then what is the width of the road?

- A. 2.91 m
- B. 3 m
- C. 5.82 m
- D. Data inadequate
- E. None of these

Answer & Explanation

Answer - B (3 m)

Explanation - Area of the park = $(60 \times 40) \text{ m}^2 = 2400 \text{ m}^2$.

Area of the lawn = 2109 m^2 .

Area of the crossroads = $(2400 - 2109) \text{ m}^2 = 291 \text{ m}^2$.

Let the width of the road be x metres. Then,

$$60x + 40x - x^2 = 291$$

$$x^2 - 100x + 291 = 0$$

$$(x - 97)(x - 3) = 0$$

$$x = 3.$$

6- The diagonal of the floor of a rectangular closet is $7\frac{1}{2}$ feet. The shorter side of the closet is $4\frac{1}{2}$ feet. What is the area of the closet in square feet?

- **A.** $5\frac{1}{4}$
- **B.** $13\frac{1}{2}$
- **C.** 27
- **D.** 37
- **E.** None of these

Answer & Explanation

Answer - **C** (27)

Explanation -

$$\begin{aligned}\text{Other side} &= \left(\frac{15}{2}\right)^2 - \left(\frac{9}{2}\right)^2 \text{ft} \\ &= \frac{225}{4} - \frac{81}{4} \text{ ft} \\ &= \frac{144}{4} \text{ ft} \\ &= 36 \text{ ft.}\end{aligned}$$

Other side = 6 ft

Area of closet = (6×4.5) sq. ft = 27 sq. ft

7- A towel, when bleached, was found to have lost 20% of its length and 10% of its breadth. The percentage of decrease in area is:

- A. 10 %
- B. 10.08 %
- C. 20 %
- D. 28 %
- E. None of these

Answer & Explanation

Answer - D (28 %)

Explanation - Let original length = a and original breadth = b.

$$\begin{aligned}\text{Decrease in area} &= ab - \frac{80}{100}a \times \frac{90}{100}b \\ &= ab - \frac{18}{25}ab \\ &= \frac{7}{25}ab.\end{aligned}$$

$$\text{Decrease \%} = \frac{7}{25}ab \times \frac{1}{ab} \times 100\% = 28\%.$$

8- A man walked diagonally across a square lot. Approximately, what was the percent saved by not walking along the edges?

- **A.**20
- **B.**24
- **C.**30
- **D.**33
- **E.**None of these

Answer & Explanation

Answer - **C** (30)

Explanation - Let the side of the square(ABCD) be x metres.

Then, $AB + BC = 2x$ metres.

$$AC = 2x = (1.41x) \text{ m.}$$

Saving on $2x$ metres = $(0.59x)$ m.

$$\text{Saving \%} = \frac{0.59x}{2x} \times 100\% = 30\% \text{ (approx.)}$$

9- The diagonal of a rectangle is 41 cm and its area is 20 sq. cm. The perimeter of the rectangle must be:

- **A.**9 cm
- **B.**18 cm
- **C.**20 cm
- **D.**41 cm
- **E.**None of these

Answer & Explanation

Answer - **B** (18 cm)

Explanation - $l^2 + b^2 = 41^2$.

Also, $lb = 20$.

$$(l + b)^2 = (l^2 + b^2) + 2lb = 41^2 + 40 = 81$$

$$(l + b) = 9.$$

$$\text{Perimeter} = 2(l + b) = 18 \text{ cm.}$$

10- What is the least number of squares tiles required to pave the floor of a room 15 m 17 cm long and 9 m 2 cm broad?

- **A.**814
- **B.**820
- **C.**840
- **D.**844
- **E.**None of these

Answer & Explanation

Answer - **A** (814)

Explanation - Length of largest tile = H.C.F. of 1517 cm and 902 cm = 41 cm.

Area of each tile = $(41 \times 41) \text{ cm}^2$.

Required number of tiles = $\frac{1517 \times 902}{41 \times 41} = 814$.

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