AREA CALCULATION - SOLVED EXAMPLES

Q 1 - The difference between the length and breadth of a rectangle is 33 m. If its perimeter is 134 m, then its area is:

A - 800 m^2

B - 850 m^2

C - 900 m^2

D - 950 m^2

Answer - B

Explanation

```
We have: (l − b) = 33 and 2(l + b) = 134 or (l + b) = 67.
Solving the two equations, we get: l = 50 and b = 17.
∴ Area = (l x b) = (50 x 17) m² =850 m².
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Q 2 - The length of a rectangular plot is 40 meters more than its breadth. If the cost of fencing the plot at 53 per meter is Rs. 10,600, what is the length of the plot in meters?

A - 100 m

B - 80 m

C - 60 m

D - 55 m

Answer - A

Explanation

```
Let breadth = X meters. Then, length = (X+ 40) meters.
Perimeter = 10600/53 =200 m
∴ 2[(X + 40) + X] = 200  2X + 40 = 100  2X = 120
⇒X = 60.
Hence, length = x + 40 = 100 m.
```

Q 3 - What is decimal equivalent of 0.8%.

A - 20 cm

B - 16 cm

C - 15 cm

D - 10 cm

Answer - A

Explanation

```
l² + b² = (√(63 ))²=63 Also, lb = 37/2.
(l + b)² = (l² + b²) + 2lb = 63 + 37 = 100
⇒ (l + b) = 10.
∴ Perimeter = 2(l + b) = 20 cm.
```

Q 4 - One side of a rectangular field is 30 m and one of its diagonals is 34 m. Find the area of the field.

A - 420 m²

B - 480 m²

C - 300 m²

D - 240 m²

Answer - B

Explanation

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By pythogerous theorem Other side = √((34)²- (30)²) = 16
⇒Area = (30 x 16) m² = 480 m²
```

Q 5 - What is decimal equivalent of 5%.

A - 400 cm²

B - 420 cm²

C - 480 cm²

D - 540 cm²

Answer - C

Explanation

```
Let length = X and breadth = Y. Then,
2 (X + Y) = 92 OR X + Y = 46 AND X² + Y² = (34)² = 1156.
Now, (X + Y)² = (46)²
⇔ (X² + Y²) + 2XY = 2116 ⇔ 1156 + 2XY = 2116
⇒ XY=480
∴ Area = XY = 480 cm².
```

Q 6 - The length of a rectangle is thrice its breadth. If its length is decreased by 9 cm and breadth is increased by 9 cm, the area of the rectangle is increased by 81 sq. cm. Find the length of the rectangle.

A - 9 cm

B - 15 cm

C - 18 cm

D - 27 cm

Answer - A

Explanation

```
Let breadth = X. Then, length = 3X.
Then, (3X - 9) (X + 9) = 3X * X + 81
⇒3X2+27X-9X-81=3X2+81
18X=162
⇒X=9 cm
∴ Length of the rectangle = 9 cm
```

Q 7 - The ratio between the length and the breadth of a rectangular park is 2: 1. If a man cycling along the boundary of the park at the speed of 18 km/hr completes one round in 10 minutes, then the area of the park (in sq. m) is:

A - 5000 m^2

B - 50 m^2

C - 50000 m^2

D - 500000 m^2

Answer - D

Explanation

```
Perimeter = Distance covered in 10 min. =18000/60 x 10=3000 m
Let length = 4X meters and breadth = X meters.
Then, 2(2X +1X) = 3000 or X = 500.
Length = 1000 m and Breadth = 500 m.
∴ Area = (1000 x 500) m² = 500000 m².
```

Q 8 - Find the area of a square, one of whose diagonals is 7.2 m long.

A - 24.62 m^2

B - 18.18 m^2

C - 3.6 m^2

D - 25.92 m^2

Answer - D

Explanation

```
Area of the square = 1/2 (diagonal)²= 1/2x7.2²≡ 7.2x7.2/2=25.92 m²
```

Q 9 - The diagonals of two squares are in the ratio of 3 : 7. Find the ratio of their areas.

A - 3:49

B - 9:49

C - 9:7

D - 81:24

Answer - B

Explanation

```
Let the diagonals of the squares be 3X and 7X respectively.
Ratio of their areas = (1/2)*(3X)² :( 1/2)*(7X)² = 9X²: 49X² = 9: 49.
```

Q 10 - The perimeters of two squares are 80 cm and 64 cm. Find the perimeter of a third square whose area is equal to the difference of the areas of the two squares.

A - 24 cm

B - 48 cm

C - 64 cm

D - 16 cm

Answer - B

Explanation

```
Side of first square = (80/4) = 20 cm;
Side of second square = (64/4)cm = 16 cm.
Area of third square = [(20)² - (16)²] cm²
= (400 - 256) cm² = 144 cm².
Side of third square = √144 cm = 12 cm.
Required perimeter = (12 x 4) cm = 48 cm.
```

Q 11 - What is the least number of squares tiles required to pave the floor of a room 30 m 34 cm long and 18 m 4 cm broad?

A - 814

B - 816

C - 800

D - 712

Answer - A

Explanation

```
Length of largest tile = H.C.F. of 3034 cm and 1804 cm = 82 cm.
Area of each tile = (82 x 82) cm².
Required number of tiles  3034x1804/82x82  = 37x22=814.
```

Q 12 - If each side of a square is increased by 16%, find the percentage change in its area.

A - 34.56%

B - 10.16%

C - 24.46%

D - 44.58%

Answer - A

Explanation

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Let each side of the square be X. Then, area = X2.
New side =(116X/100) =(29X/25). New area = (29X/25)²
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Increase in area = (29X/25)² – X² =841/625X² – X²=216/625X²
⇒ Increase% = [(216/625X²x1/(X²))*100] % = 34.56%.
```

Q 13 - A wheel makes 2000 revolutions in covering a distance of 44 km. Find the radius of the wheel.

A - 12 m

B - 14 m

C - 13 m

D - 15 m

Answer - B

Explanation

```
Distance covered in one revolution = ((44 X 2000)/1000) = 88m.
⇒ 2πR = 88
⇒ 2 x (22/7) x R = 88
∴ R = 88 x (7/44) = 14 m.
```

Q 14 - Find the area of a rhombus one side of which measures 10 cm and one diagonal 12 cm.

A - 96 cm²

B - 98 cm²

C - 100 cm²

D - 94 cm²

Answer - A

Explanation

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Let other diagonal = 2x cm.
Since diagonals of a rhombus bisect each other at right angles,
we have: (10)² = (6)² + (x)²
⇒ x = √((10)² – (6)²)= √64= 8 cm.
So, other diagonal = 16 cm.
∴ Area of rhombus = (1/2) x (Product of diagonals)
= ((1/2) x 12 x 16) cm² = 96 cm²
```

Q 15 - The area of a circular field is 6.7914 hectares. Find the cost of fencing it at the rate of Rs. 2.20 Per meter.

A - Rs. 20328

B - Rs. 10528

C - Rs. 20444

D - Rs. 24562

Answer - A

Explanation

```
Area = (6.7914 x 10000) m² = 67914 m².
πR2= 67914
⇒(R)² = (67914 x (7/22)) ⇔ R = 147 m.
Circumference = 2 π R = (2 x (22/7) x 147) m = 924 m.
Cost of fencing = Rs. (9240 x 2.20) = Rs. 20328.
```

Q 16 - The difference between two parallel sides of a trapezium is 8 cm. perpendicular distance between them is 38 cm. If the area of the trapezium is 950 cm, find the lengths of the parallel sides.

A - 30 cm & 22 cm

B - 29 cm & 21 cm

C - 32 cm & 24 cm

D - 33 cm & 17 cm

Answer - B

Explanation

```
Let the two parallel sides of the trapezium be X cm and Y cm.
Then, X − Y = 8
And, (1/2) x (X+ Y) x 38 = 950
⇒ (X +Y) = ((950 x 2)/38)
⇒ X + Y = 50
Solving (i) and (ii), we get: X = 29, Y = 21.
So, the two parallel sides are 29 cm and 21 cm.
```

Q 17 - The base of a parallelogram is (X + 2), altitude to the base is (X-6) and the area is (X² - 4), find out its actual area.

A - 52 units

B - 46 units

C - 50 units

D - 42 units

Answer - A

Explanation

```
Area of a parallelogram, A = bh
(where b is the base and h is the height of the parallelogram)
⇒ (X2 − 48) = (X-6) (X + 3)
⇒ X=10
⇒ Actual Area = 102-48=52 units
```

Q 18 - If the diagonals of a rhombus are 20 cm and 10 cm, what will be its perimeter?

A - 20√5 cm

B - 10√5 cm

C - 30√5 cm

D - 40√5 cm

Answer - A

Explanation

```
Perimeter =2√(20²+10² )   =20√5 cm
```

Q 19 - If two squares are similar but not equal and the diagonal of larger square is 8 m. What is the area of smaller square if it area is 1/2 of larger square.

A - 4 m^2

B - 16 m^2

C - 24 m^2

D - 32 m^2

Answer - B

Explanation

```
Area is larger square =1/2 x 8² =32
⇒ Area is smaller square=32/2=16 m²
```

Q 20 - The area of rhombus is 300 cm2. The length of one of the diagonals is 20 cm. The length of the other diagonal is:

A - 30 cm

B - 20 cm

C - 10 cm

D - 5 cm

Answer - A

Explanation

```
We know the area of diagonals is 1/2 x (product of diagonals)
Let the other diagonal be X
So 300 = 1/2 x X x 20
⇒ X=30 cm.
```