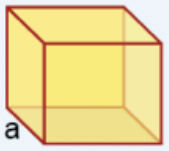
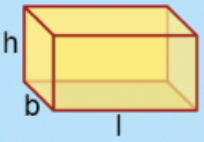
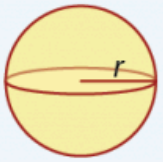
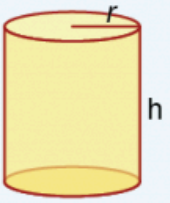
Name of the Bundle	Proficient Bundle V1	**Subject**	Aptitude
Topic	Area	**Last updated on**	14 October 2024

Solid	Volume	CSA	TSA	Figure
Cube a=side	a^3	$4\ a^2$	$6\ a^2$	
Cuboid l = length b = breadth h = height	$l \times b \times h$	$2h(l + b)$	$2\ (lb + bh + hl)$	
Sphere r = radius	$(4/3)\ \pi\ r^3$	$4\ \pi\ r^2$	$4\ \pi\ r^2$	
Hemisphere r = radius	$(⅔)\ \pi\ r^3$	$2\ \pi\ r^2$	$3\ \pi\ r^2$	
Cylinder r = radius h = height	$\pi\ r^2\ h$	$2\pi\ r\ h$	$2\pi rh + 2\pi r^2$	
Cone r = radius l = slant height h = height	$(⅓)\ \pi\ r^2\ h$	$\pi\ r\ l$	$\pi r\ (r + l)$	

Name of the Bundle	Proficient Bundle V1	Subject	Aptitude
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In areas concept we have different types of shapes:

- Rectangle
- Square
- Triangle
- Circle
- Other shapes

Formulae for rectangle/square:

- Area of a rectangle = Length x Breadth
- Length of a rectangle = Area / Breadth
- Breadth of a rectangle = Area / Length
- Perimeter of a rectangle = 2(Length + Breadth)
- Area of 4 walls = 2(length + Breadth) x height
- Area of a Square = $(side)^2$ = 1/2$(diagonal)^2$

Formulae for triangle:

- Area of a triangle= (1/2 x Base x Height)

  $\triangle = \sqrt{S(S-A)(S-B)(S-C)}$, where S=1/2(a+b+c)

- Area of equilateral triangle = $\sqrt{3}/4 \times a^2$
- Radius of a in circle of an equilateral triangle of side a = $a/2\sqrt{3}$
- Radius of a circumcircle of an equilateral triangle of side a =$a/\sqrt{3}$
- Radius of in circle of a triangle= $\triangle/S$, Where s=1/2 (a+b+c)

Formulae for circle:

- Area of a circle= πR^2
- Circumference = $2\pi R$
- Arc length= $2\pi R\vartheta/360$, where ϑ is a central angle.
- Area of Sector=1/2(arc length x R) = $\pi R^2\vartheta/360$
- Area of Semicircle= $1/2\pi R^2$

Name of the Bundle	Proficient Bundle V1	Subject	Aptitude
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Formulae for remaining shapes:

- Area of a parallelogram = (base x height)
- Area of a rhombus= 1/2(product of diagonals)
- Area of a trapezium=1/2 (sum of parallel sides) x (distance between them)

1) The difference between the length and the breadth of a rectangle is 33 m. If its perimeter is 134 m, then its area is:(m^2)

a) 700 m^2
b) 800 m^2
c) 850 m^2
d) 900 m^2

ANS: c) 850 m^2

Explanation:

We have: (l - b) = 33 and 2(l + b) = 134 or (l + b) = 67.

Solving the two equations,

we get:

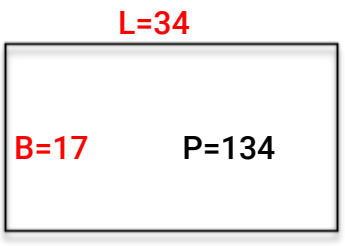
l = 50 and b = 17.

∴ Area = (l x b)

= (50 x 17 m^2

=850 m^2.

Alternatively:



134/2=67

67-33=34

34=17+17

B=17

L=17+33 more=50

Area = (l x b) =17x50= 850 m^2.

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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) 50 m
b) 100 m
c) 150 m
d) 200 m

ANS: b)100 m

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.

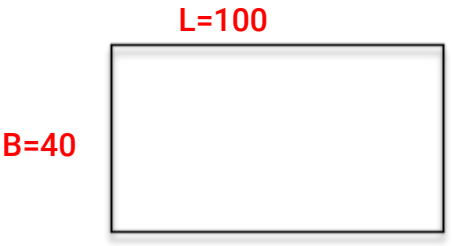
Alternatively:

10600/53=200=P

200/2=100

100-40=60 = B

B=60 & L=60+40 more=100 m.



Name of the Bundle	Proficient Bundle V1	Subject	Aptitude
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3.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) 18 m
b) 27 m
c) 9 m
d) 81 m

ANS: c)9 m

Explanation:

Let breadth = X.

Then, length = 3X.

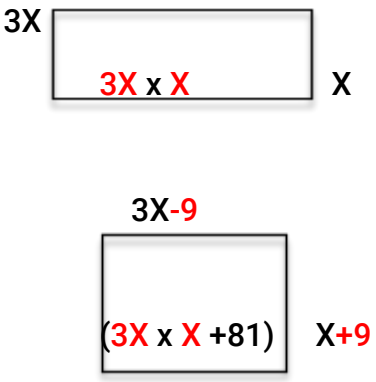
(3X - 9) (X + 9) = 3X * X + 81

⇒3X^2+27X-9X-81=3X^2+81

⇒18X=162

⇒X=9 cm

∴ Length of the rectangle = 9 cm



Name of the Bundle	Proficient Bundle V1	Subject	Aptitude
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4.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) 102 cm
c) 32 cm
d) 48 cm

ANS: d)48 cm

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] cm^2

= (400 - 256) cm^2

= 144 cm^2.

Side of third square = √144 cm
= 12 cm.

Required perimeter = (12 x 4) cm

= 48 cm.

Alternatively

P=80/4=20 P=64/4=16

20^2 16^2

Difference $(20^2-16^2)=144$

12^2 12

perimeter = (12 x 4) = 48 cm

Name of the Bundle	Proficient Bundle V1	Subject	Aptitude
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5) Find the area of a rhombus one side of which measures 10 cm and one diagonal 12 cm.

a) 48 cm^2
b) 96 cm^2
c) 24 cm^2
d) 192cm^2

ANS: b)96 cm^2

Explanation:

Length of one side of the rhombus s= 10 cm

One diagonal d1=12 cm => 12/2=6 cm,

Let the other diagonal d2= 2x cm => 2x/2=x cm.

Since diagonals of a rhombus bisect each other at right angles,

$(s)^2 = (d1)^2 + (d2)^2 \Rightarrow (10)^2 = (6)^2 + (x)^2$

$\Rightarrow x = \sqrt{((10)^2 - (6)^2)}$

$\Rightarrow x = \sqrt{64} = 8$ cm.

$\Rightarrow d2 = 2x = 2*8 = 16$ cm.

∴ Area of rhombus = (1/2) x (Product of diagonals)

= ((1/2) x 12 x 16) cm^2

= 96 cm^2.

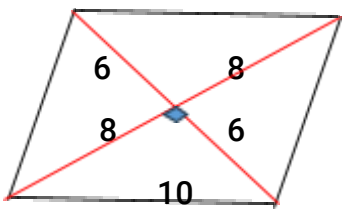
Alternatively:

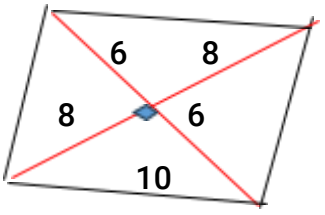
Right Angle Triangle

Triplets Values

6 , 8 , 10

Area =1/2 x6x8=24





Area of rhombus 24x 4=96 cm^2

Name of the Bundle	Proficient Bundle V1	Subject	Aptitude
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6) The perimeter of a right triangle is 60cm and its hypotenuse is 26cm. Find the area of the triangle.

a) $160cm^2$
b) $180cm^2$
c) $120cm^2$
d) $240cm^2$

ANS: c)$120cm^2$

Explanation:

Hypotenuse c=26 cm, Perimeter P=60 cm

The sum of the lengths: a+b=60−26 => 34

Pythagorean theorem: a^2+b^2=26^2 => 676

b=34−a, substitute into the Pythagorean theorem:

a^2+(34−a)^2=676

2a^2−68a+240=0

(a−24)(a−10)=0⟹a=24 or 10

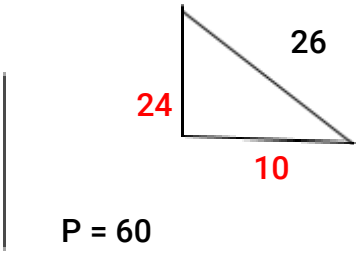
Area=1/2×24×10=$120cm^2$

Alternatively:

Triplets Values

5 12 13

10 24 26



P = 60

1/2 x 24x10 =$120cm^2$

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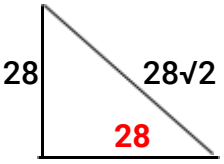
7) If the hypotenuse of a right isosceles triangle is 28 √2 cm . Find the area of the triangle.

a) 369cm^2
b) 784cm^2
c) 392cm^2
d) 468cm^2



ANS: c)392cm^2

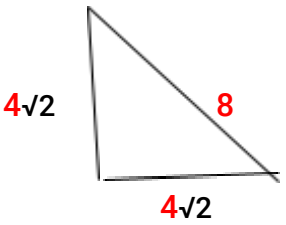
Explanation:

Area of triangle =1/2 x 28x28

=392 cm^2

8) If the hypotenuse of a right isosceles triangle is 8 cm . Find the area of the triangle.

a) 16cm^2
b) 8cm^2
c) √32cm^2
d) 2√32cm^2



ANS: a)16cm^2

Explanation:

Area of triangle =1/2 x 4√2x4√2 =16cm^2

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9) If the diagonals of two squares are in the ratio of 3:5, them their areas will be in the ratio of:

a) 9:25
b) 3:5
c) 2:5
d) 15:25

ANS: a) 9:25

Explanation:

side -----1 times

area------- 2 times

volume------3 times

sides 3 : 5

area 3x3 : 5 x5= 9:25

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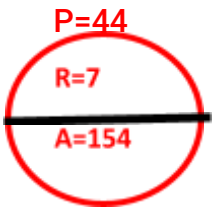
10) Find the perimeter of a circle of radius 7 cm.

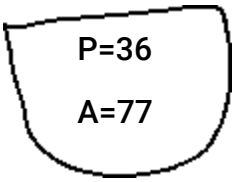
a) 28cm
b) 66cm
c) 44cm
d) 56cm

ANS: c) 44cm

Explanation:

Radius	perimeters	area	
7	44	154	---------- circle
7	36	77	---------- semi-circle
7	25	38.5	---------- tri-quarter circle





Perimeter of circle = Circumference of circle

= 2×pi×r

= 2×22/7×7 = 44 cm

Perimeter of the circle is 44 cm.

Alternatively:

Radius	perimeters	area	
7	44	154	---------- circle
7	P= 44		

Name of the Bundle	Proficient Bundle V1	Subject	Aptitude
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11) Find the area of a circle of radius 14 cm.

a) $128cm^2$
b) $616cm^2$
c) $154cm^2$
d) $560cm^2$

ANS: b) $616cm^2$

Explanation:

Radius perimeters area

7 X 2 → 14 : 44

154 ---------- circle → x 2x2 → area=616

12) Find the area of a semicircle of radius 14 cm.

a) $208cm^2$
b) $266cm^2$
c) $144cm^2$
d) $308cm^2$

ANS: d) $308cm^2$

Explanation:

Radius perimeters area

7 X 2 → 14 : 36

77 ---------- circle → x 2x2 → area=308

Name of the Bundle	Proficient Bundle V1	Subject	Aptitude
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13) Find the area of a quarter circle of radius 14 cm.

a) 208cm^2
b) 266cm^2
c) 154cm^2
d) 308cm^2

ANS:c) 154cm^2

Explanation:

Radius **perimeters** **area**

7 X 2 14 — 25 — 77/2 ---------- circle x 2x2 — area=154

14) Find the perimeter of a quarter circle of radius 14 cm.

a) 25cm
b) 50cm
c) 44cm
d) 36cm

ANS:b) 50cm

Explanation:

Radius **perimeters** **area**

7 X 2 14 — 25 x 2 area=50 — 77/2 ---------- circle

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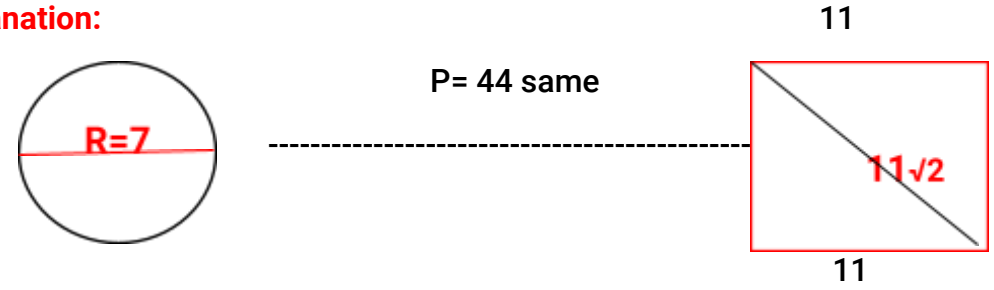
15) A wire in the form of a circle of radius 7cm is bent to form a square. Find the length of the diagonal of the square.

a) 44 cm
b) 22√2 cm
c) 11√2 cm
d) 22 cm

ANS:c) 11√2 cm

Explanation:



16) The radius of the cart wheel is 35cm. How many revolutions does it make in travelling a distance of 154m.

a) 70 revolutions
b) 189 revolutions
c) 119 revolutions
d) 220 revolutions

ANS:a) 70 revolutions

Explanation:

Radius perimeters area

7 X 5 44 X 5 154 ---------- circle

35 ?= 220

220m =15400 cm

=>15400 cm/220 cm = 70

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17) A chord of length 24 cm is at a distance of 5 cm from the centre of a circle. The radius of the circle is …… cm.

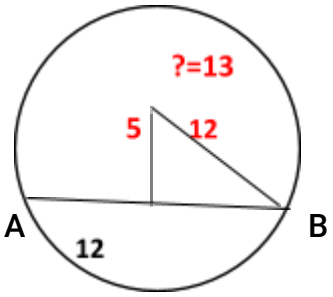
a) 13cm
b) 10cm
c) 14cm
d) 12cm

ANS:a) 13cm

Explanation:

TRIPLETS VALUES

5 12 13



18) What is the ratio of the surface areas of two spheres, if their volumes are in the ratio 8 : 27

a) 2 : 3
b) 4 : 9
c) 8 : 27
d) 4 : 3

ANS:b) 4 : 9

Explanation:

Volumes 8 : 27

Side 2 : 3

X 3

Area 4 : 9

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19) If the radius of a sphere is tripled, then its surface area is increased by:

a) 900%
b) 1000%
c) 700%
d) 800%

ANS:d) 800%

Explanation:

SIDE AREA

3 3X3 = 9

9-1 = 8

= 800%

20) in a quadrilateral, the length of one of its diagonals is 23cm and the perpendicular drawn on this diagonal from other two vertices measures 17cm and 7cn respectively. Find the area of the quadrilateral.

a) 276 cm^2
b) 376 cm^2
c) 300 cm^2
d) 286 cm^2

ANS:a) 276 cm^2

Explanation:

area =1/2 x 23(17+7)

=23x12

=276 cm^2