RS Aggarwal Solutions for Class 10 Maths Chapter 17 Exercise 17.1: RS Aggarwal Solutions for Class 10 Maths Chapter 17, Exercise 17.1 provide a detailed approach to solving problems related to the perimeter and area of plane figures. This exercise includes a range of problems designed to help students apply the formulas for various shapes such as rectangles, squares, and triangles.

Each solution is presented with clear, step-by-step explanations, making it easier for students to understand the methods and concepts involved. By working through these solutions, students can reinforce their understanding of how to calculate perimeters and areas, which is essential for mastering geometry and preparing for exams.

RS Aggarwal Solutions for Class 10 Maths Chapter 17 Exercise 17.1 Overview

RS Aggarwal Solutions for Class 10 Maths Chapter 17, Exercise 17.1 are created by the subject experts from Physics Wallah.

The solutions are explained clearly and step-by-step, helping students understand each method and apply it effectively. With these expert solutions students can build a strong grasp of the concepts, practice solving different types of problems and be well-prepared for their exams.

RS Aggarwal Solutions for Class 10 Maths Chapter 17 Exercise 17.1 PDF

RS Aggarwal Solutions for Class 10 Maths Chapter 17, Exercise 17.1 PDF is a valuable resource for students looking to improve their skills in calculating perimeters and areas of plane figures. This PDF provides clear, step-by-step solutions to the problems in Exercise 17.1, making it easier for students to understand and practice the concepts.

By using this PDF students can effectively work through the problems and strengthen their grasp of important geometry concepts. You can download the PDF using the link provided below to enhance your study and exam preparation.

RS Aggarwal Solutions for Class 10 Maths Chapter 17 Exercise 17.1 PDF

RS Aggarwal Solutions for Class 10 Maths Chapter 17 Exercise 17.1

Below we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 17 Exercise 17.1 for the ease of the students –

Q. Find the area of the triangle whose base measures 24 cm and the corresponding height measures 14.5 cm.

Solution:

Given,

Base=24cm

Height=14.5cm

Area of triangle=?

Area of triangle =12×base×height

=12×24×14.5=174cm2

Q. Find the area of the triangle whose sides are 42 cm, 34 cm and 20 cm. Also, find the height corresponding to the longest side.

Solution:

Semi perimeter (s) = (42+34+20)2=962=48 cm.

Using herons formula Area =√s(s−a)(s−b)(s−c)

By substituting s and a, b , c i.e the given sides.

We have Area=√48×6×14×28=√(4×6×2)×6×(7×2)×(7×4)=4×6×2×7=336 cm2

Hence area is 336 cm2

Now height corresponding to longest side implies that base is 42 cm and the area remains same

So Area of triangle = 12×base×height

336=12×42×H

hence H = 16 cm

So height is 16 cm.

Q. Find the area for the triangle whose sides are 18 cm, 24 cm and 30 cm Also, find the height corresponding to the smallest side.

Solution:

Given
a = 18 cm,
b = 24 cm,
c = 30 cm.

Semi perimeters=a+b+c2=18+24+30/2=72/2=36

Using heron's formula, Area =√s(s−a)(s−b)(s−c)

=√36(36−18)(36−24)(36−30)

=√36×18×12×6

=√2×2×3×3×3×3×2×2×2×3×2×3

=2×2×2×3×3×3=216cm2

Q. The sides of a triangle are in the ratio 5:12:13, and its perimeter is 150m. Find the area of the triangle.

Solution:

Let the sides of the triangle be 5x,12x,13x where x is a positive rational number.

∴ Perimeter =5x+12x+13x=150

⇒30x=150

⇒x=15030

⇒x=5

Hence, the sides of the triangle are 25m,60m,65m

Also, these sides form a Pythagoras Triplet, as

252+602=625+3600=4225=652

Hence, the triangle is a right angles triangle whose hypotenuse is 65m.

So, area of triangle =12×base×height

=12×25×60

=750 sq.units

Q. The perimeter of a triangular field is 540 m, and its sides are in the ratio 25:17:12. Find the area of the field. Also, find the cost of ploughing the field at Rs. 40 per 100 m2.

Solution:

The perimeter of a triangular field = 540 m

Let the sides are 25x, 17x, 12 x

The perimeter of a △ = sum of three sides

25x + 17x + 12x = 540

54x = 540

x = 10

1st side (a) - 25x = 25×10= 250 m

2nd side(b)= 17x = 17×10= 170 m

3rd side (c)= 12x = 12 × 10 =120 m

Semi - perimeter (S) = a+b+c2=(250+170+120)2=5402=270 m

Area of the Δ=√s(s−a)(s−b)(s−c)

[By Heron's Formula]

=√S(S−250)(S−170)(S−120)=√270(270−250)(270−170)(270−120)=√270×20×100×150=√81000000=9000m2

Area of the Δ=9000m2

Cost of ploughing the field at Rs. 40 per 100 m2=9000×40100=Rs.3600

Q. The perimeter of a right triangle is 40 cm and its hypotenuse measures 17 cm. Find the area of the triangle.

Solution:

Let the base and height of right triangle is x and y respectively

Given: hypotenuse = 17 cm

So, x+y+17=40cmx+y=23 cmx=23−y.....(1) and x2+y2=z2.....(2)

⇒(23−y)2+y2=172

⇒529−46y+y2+y2=289

⇒2y2−46y+240=0⇒y2−23y+120=0⇒(y−8)(y−15)=0⇒y=15 or 8

⇒x=8 or 15,So,Area=12×b×h=12×8×15=60 cm

Q. The difference between the sides at right angles in a right-angled triangle is 7 cm, The area of the triangle is 60 cm2. Find its perimeter.

Solution:

Let base = x and altitude be x + 7

Now area = 60 cm2

i.e,
12×base×altitude=6012×x×(x+7)=60x2+7x=120x2+7x−120=0x2−8x+15x−120=0x(x−8)+15(x−8)=0(x−8)(x+15)=0x=8 or −15

Length annot be negative.

So base = 8 cm and altitude = 8 + 7 = 15 cm

Hypotenuse =√82+152=√64+225=√289=17 cm

Perimeter =8+15+17=40 cm

Q. The lengths of the two sides of a right triangle containing the right angle differ by 2 cm. If the area of the triangle is 24 cm2, find the perimeter of the triangle.

Solution:

Let the base of the triangle be b cm and its height or perpendicular be p cm.

Given, p - b = 2 ... (1)

and area of triangle = 24 cm2

⇒12×b×p=24

⇒ b×p=48

⇒ b=48p

On putting the value of b in (1), we get

p−48p=2

⇒p2−2p−48=0

⇒ p2−8p+6p−48=0

⇒ (p−8)(p+6)=0

⇒ p=8,−6

p ≠ -6. So, p = 8 cm

On putting p in (1), we get

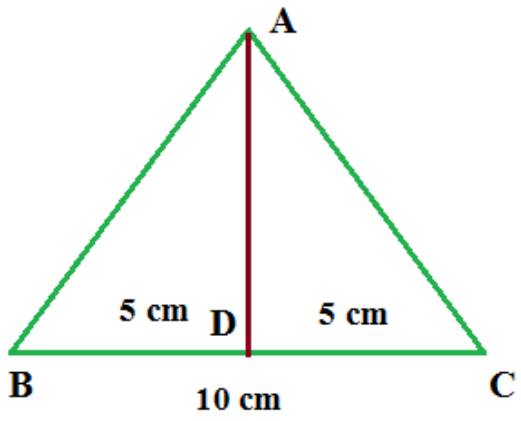
⇒ b = 6 cm

So, Hypotenuse (h) =√p2+b2=√82+62=√64+36=√100=10

Hence, perimeter of triangle = p + b + h = 8 cm + 6 cm + 10 cm = 24 cm

Q. Each side of an equilateral triangle is 10 cm. Find (i) the area of the triangle and (ii) the height of the triangle.

Solution:



In the above triangle, the measurement of the side DC is 5 cm. In the triangle ADC , the side AC is called hypotenuse side whose length is 10 cm.

So we can say AC2=AD2+DC2102=AD2+52100=AD2+25100−25=AD2AD2=75AD=√75AD=5√3

Now we can apply the formula to find the area of triangle = 12×base×height

Here base is 10 cm and height is 5√3 cm

Area of the given triangle = 12×10×5√3=5×5√3=25√3 cm2

Q. The height of an equilateral triangle is 6 cm. Find its area. [Take √3 = 1.73.]

Solution:

Altitude = Height = 6 cm
Let length of side be 'a'

So , = 6

So a =
So a = 4√3 cm

This 'a' is the length of the side

Now, Area=√34×a2

Area=√34×(4√3)2

Area=√34×16×3

So, Area=√3×4×3

So, Area=12√3

So, Area=12×1.732

So, Area=20.784cm2

Q. If the area of an equilateral triangle is 36 √3 cm2, find its perimeter.

Solution:

Area of equilateral triangle of side a =√34×a2
√34×a2=36√3
a2=36×4
a = 12
perimeter of equilateral triangle = 3a = 3 × 12 = 36 cm.

Q. If the area of an equilateral triangle is 81√3 cm2, find its height.

Solution:

Given that
we know that Area=√34×a2
area of the equilateral triangle = 81√3 cm2

√34×a2=81√3
14a2=81
a2=81(4)
a2=324
a = 18cm

Then the height of the equilateral triangle =√3a2
=√32×18=9√3 cm

Q. The base of a right-angled triangle measures 48 cm and its hypotenuse measures 50 cm. Find the area of the triangle.

Solution:

base = 48 cm
hypotenuse= 50 cm .

By Pythagoras theorem, we get

h2=b2+p2So,p2=h2−b2

⇒p2=502−482

⇒p2=2500−2304

⇒p2=196

⇒p=√196

⇒p=14So,Perpendicular=14 cm.Now area of triangle=12×base×height=12×48×14=48×7=336 cm2

Q. The hypotenuse of a right-angled triangle is 65 cm and its base is 60 cm. Find the length of perpendicular and the area of the triangle.

Solution:

Hypotenuse = 65 cm

Base = 60 cm

According to Pythagoras theorem,

(Hypotenuse)2=(Base)2+(Altitude)2652=602+(Altitude)2(Altitude)2=652−602Altitude=√4225−3600=√625=25 cm

Area of triangle = 12×base×height=12×60×25=750 cm2

Q. Find the area of a right-angled triangle, the radius of whose circumcircle measures 8 cm and the altitude drawn to the hypotenuse measures 6 cm.

Solution:

Let ABC be a right-angled triangle inside a circle having centre 'O'

Given, OA = OB = CC = 8 cm [OA, 0B and OC be the radius of circle]

Let AD be the altitude drawn from the opposite vertex to the hypotenuse

AD = 6 cm

Since, △ABC is a right triangle right angled at A

A circle can be drawn which passes the vertices of △ ABC (Angle in a semi-circle is 90o)

Now, the Area of △ABC = 12×base×height=12×BC×AD=12×(OB+OC)×AD=12×(8+8)×6=12×16×6=48 cm2

Q. Find the lenght of the hypotenuse of an isosceles right-angled triangle whose area is 200 cm2. Also, find its perimeter. [Given, √2 = 1.41.]

Solution:

In an isosceles triangle,any two sides are equal.So,in this question, base=height or (b=h)

Area of ∆ =12×b×h

200=12×b2

400=b2

b=√400=20

So, b=h=20

Hypotenuse =√400+400=20√2=20×1.414=28.28

Perimeter = 20 + 20 + 28.28 = 68.28 cm

Q. The base of an isosceles triangle measures 80 cm and its area is 360 cm2 Find the perimeter of the triangle.

Solution:

Solution

Area of triangle = $\frac{1}{2}$× base × height

360 = $\frac{1}{2}$× 80 × h

720 = 80 × h

h = 9 cm

Now in △ADB,

$x^2 = 40^2 + h^2$

$= 40^2 + 9^2$

1600 + 81

1681

∴ x = $\sqrt{1681}$ = 41

Perimeter = x + x + 80 = 41 + 41 + 80 = 162 cm

Q. Each side of an equilateral triangle is 8 cm. Its area is(a) 24 cm2

(b) 24√3 cm2

(c) 16√3 cm2

(d) 8√3 cm2

Solution:

Area of equilateral triangle =√34a2 sq. units

Given:

Each side of an equilateral triangle is (a)=8 cm

⇒ Area of equilateral triangle =√34(8 cm)2

=√34×8 cm×8 cm

=√3×2 cm×8 cm

=16√3 cm2

Hence, Option C is correct.

Benefits of RS Aggarwal Solutions for Class 10 Maths Chapter 17 Exercise 17.1

- **Detailed Explanations:** Each solution is broken down step-by-step, making it easy for students to follow and understand the process of calculating perimeters and areas.
- **Expert Guidance:** The solutions are prepared by subject experts ensuring that the methods and explanations are accurate and reliable.
- **Improved Understanding:** Working through these solutions helps students grasp important geometric concepts and apply the correct formulas to various problems.
- **Confidence Building:** By practicing with these solutions, students can build confidence in their ability to solve geometry problems, leading to better performance in their exams.