RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.2: RS Aggarwal Solutions for Class 10 Maths Chapter 4 Triangles, Exercise 4.2, help students understand triangles better. These solutions are made by experts and give step-by-step explanations for each problem. They cover important concepts like similarity and congruence of triangles.

By practicing with these solutions, students can improve their problem-solving skills and do well in their exams. The clear and simple explanations make it easy for students to learn and understand geometry.

RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.2 Overview

The RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.2, prepared by the experts at Physics Wallah, provide clear and detailed explanations for solving triangles.

By following these solutions, students can understand the concepts better, improve their problem-solving skills, and do well in exams. The easy-to-understand explanations make learning simpler and more effective.

RS Aggarwal Solutions for Class 10 Maths Chapter 4 Triangles Exercise 4.2 PDF

Here we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 4 Triangles Exercise 4.2 for the ease of students so that they can prepare better for their upcoming exams –

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Triangles

A triangle is a polygon with three edges and three vertices. It is one of the most fundamental shapes in geometry. The sum of the interior angles of a triangle is always 180 degrees.

Types of Triangles:

Based on Sides:

- **Scalene Triangle: All three sides are of different lengths.**
- **Isosceles Triangle: Two sides are of equal length.**

- **Equilateral Triangle: All three sides are of equal length and each angle is 60 degrees.**

Based on Angles:

- **Acute Triangle: All three interior angles are less than 90 degrees.**
- **Right Triangle: One of the interior angles is exactly 90 degrees.**
- **Obtuse Triangle: One of the interior angles is greater than 90 degrees.**

RS Aggarwal Solutions for Class 10 Maths Chapter 4 Triangles Exercise 4.2

Below we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 4 Triangles Exercise 4.2 for the ease of the students –

Question 1 A .

Solution:

In these triangles ABC and PQR, observe that

∠BAC = ∠PQR = 50°

∠ABC = ∠QPR = 60°

∠ACB = ∠PRQ = 70°

Thus, by angle-angle-angle similarity, i.e., AAA similarity,

ΔABC ~ ΔPQR

Question 1 B.

Solution:

In triangles ABC & EFD,

∠ABC ≠ ∠EDF

$\frac{AB}{DF} = \frac{3}{6} = \frac{1}{2}$

$\frac{BC}{DE} = \frac{4.5}{9} = \frac{1}{2}$

So, clearly, since no criteria satisfies, ΔABC is not similar to ΔEFD.

Question 1 C.

Solution:

In triangles ABC & PQR,

∠ACB = ∠PQR

$\frac{CA}{QR} = \frac{8}{6} = \frac{4}{3}$

$\frac{BC}{PQ} = \frac{6}{4.5} = \frac{4}{3}$

By SAS criteria, we can say

ΔABC ~ ΔPQR

Question 1 D .

Solution:

In triangles DEF & PQR,

$\frac{DE}{QR} = \frac{2.5}{5} = \frac{1}{2}$

$\frac{EF}{PQ} = \frac{2}{4} = \frac{1}{2}$

$\frac{DF}{PR} = \frac{3}{6} = \frac{1}{2}$

By SSS criteria, we can write

ΔDEF ~ ΔPQR

Question 1 E .

Solution:

In ΔABC, we can find $\angle ABC$.

$\angle ABC + \angle BCA + \angle CAB = 180°$ [$\because$ sum of all the angles of a triangle is 180°]

$\Rightarrow \angle ABC + 70° + 80° = 180°$

$\Rightarrow \angle ABC + 150° = 180°$

$\Rightarrow \angle ABC = 180° - 150°$

$\Rightarrow \angle ABC = 30°$

We can observe from triangles ABC & MNR,

$\angle ABC = \angle MNR$

$\angle CAB = \angle RMN$

Hence, by AA similarity we can say, $\Delta ABC \sim \Delta MNR$

Question 2 .

Solution:

(i) To find ∠DOC, we can observe the straight line DB.

∠DOC + ∠COB = 180° [∵ sum of all angles in a straight line is 180°]

⇒ ∠DOC + 115° = 180°

⇒ ∠DOC = 180° - 115°

⇒ ∠DOC = 65°

(ii) In ΔDOC,

And given that, ∠CDO = 70°, ∠DOC = 65° (from (i))

∠DOC + ∠DCO + ∠CDO = 180°

⇒ 65° + ∠DCO + 70° = 180°

⇒ ∠DCO + 135° = 180°

⇒ ∠DCO = 180° - 135°

⇒ ∠DCO = 45°

(iii) We have derived ∠DCO from (ii), ∠DCO = 45°

Thus, ∠OAB = 45° [∵ ∠OAB = ∠DCO as ΔODC ~ ΔOBA]

(iv) It's given that, ∠CDO = 70°

Thus, ∠OBA = 70° [∵ ∠OBA = ∠CDO as ΔODC ~ ΔOBA]

Question 3.

Solution:

(i). Given that, AB = 8 cm

BO = 6.4 cm,

OC = 3.5 cm

& CD = 5 cm

$\Delta OAB \sim \Delta OCD$

When two triangles are similar, they can be written in the ratio as

$$\frac{OA}{OC} = \frac{AB}{CD}$$

Substitute gave values in the above equations,

$$\frac{OA}{3.5} = \frac{8}{5}$$

$$\Rightarrow OA = \frac{8 \times 3.5}{5}$$

$\Rightarrow$ OA = 5.6

Thus, OA = 5.6 cm

(ii). Given that, AB = 8 cm

BO = 6.4 cm,

OC = 3.5 cm

& CD = 5 cm

ΔOAB ~ ΔOCD

When two triangles are similar, they can be written in the ratio as

$$\frac{BO}{DO} = \frac{AB}{CD}$$

Substitute gave values in the above equations,

$$\frac{6.4}{DO} = \frac{8}{5}$$

$$\Rightarrow DO = \frac{5 \times 6.4}{8}$$

⇒ DO = 4

Thus, DO = 4 cm

Question 4.

Solution:

Given is that ∠ADE = ∠B

From the diagram clearly, ∠EAD = ∠BAC [∵ they are common angles]

Now, since two of the angles are correspondingly equal. Then by AA similarity criteria, we can say

ΔADE ~ ΔABC

Further, it's given that

AD = 3.8 cm

AE = 3.6 cm

BE = 2.1 cm

BC = 4.2 cm

DE =?

To find AB, we can express it in the form AB = AE + BE = 3.6 + 2.1

⇒ AB = 5.7

So for the condition that ΔADE ~ ΔABC,

$$\frac{DE}{BC} = \frac{AD}{AB}$$

Substituting given values in the above equation,

$\Rightarrow \frac{DE}{4.2} = \frac{3.8}{5.7}$

$\Rightarrow DE = \frac{3.8 \times 4.2}{5.7}$

⇒ DE = 2.8

Thus, DE = 2.8 cm

Question 5.

Solution:

Given that, ΔABC ~ ΔPQR

And perimeter of ΔABC = 32 cm & perimeter of ΔPQR = 24 cm

We can write relationship as,

$$\frac{\text{perimeter of } \Delta ABC}{\text{perimeter of } \Delta PQR} = \frac{AB}{PQ}$$

$\Rightarrow \frac{32}{24} = \frac{AB}{12}$

$\Rightarrow AB = \frac{32 \times 12}{24}$

⇒ AB = 16

Thus, AB = 16 cm.

Question 6 .

Solution:

Given that, ΔABC ~ ΔDEF

Also, BC = 9.1 cm & EF = 6.5 cm

And perimeter of ΔDEF = 25 cm

We need to find perimeter of ΔABC = ?

We can write relationship as,

$$\frac{\text{the perimeter of } \Delta ABC}{\text{the perimeter of } \Delta DEF} = \frac{BC}{EF}$$

$$\Rightarrow \frac{\text{the perimeter of } \Delta ABC}{25} = \frac{9.1}{6.5}$$

$$\Rightarrow \text{perimeter of } \Delta ABC = \frac{9.1 \times 25}{6.5}$$

⇒ perimeter of ΔABC = 35

Thus, perimeter of ΔABC = 35 cm

Question 7.

Solution:

Given that, ∠CAB = 90°

AC = 75 cm

AB = 1 m

BC = 1.25 m

To show that, ΔBDA ~ ΔBAC

In the diagram, we can see

∠BDA = ∠BAC = 90°

∠DBA = ∠CBA [They are common angles]

So by AA-similarity theorem,

ΔBDA ~ ΔBAC

Thus, now since ΔBDA ~ ΔBAC, we can write as

$\frac{AD}{AC} = \frac{AB}{BC}$

$\Rightarrow \frac{AD}{75} = \frac{100}{125}$ [∵ AC = 75 cm, AB = 1 m = 100 cm & BC = 1.25 m = 125 cm]

$\Rightarrow AD = \frac{100 \times 75}{125}$

⇒ AD = 60 cm

Hence, AD = 60 cm or 0.6 m

Question 8.

Solution:

Given that, ∠ABC = 90°

AB = 5.7 cm

BD = 3.8 cm

CD = 5.4 cm

In order to find BC, we need to prove that ΔBDC and ΔABC are similar.

∠BDC = ∠ABC = 90°

∠ACB = ∠DCB [They are common angles]

By this we have proved ΔBDC ~ ΔABC, by AA-similarity criteria.

So we can write,

$\frac{BD}{AB} = \frac{DC}{BC}$

$\Rightarrow \frac{3.8}{5.7} = \frac{5.4}{BC}$

$\Rightarrow BC = \frac{5.4 \times 5.7}{3.8}$

⇒ BC = 8.1

Hence, BC = 8.1 cm.

Question 9.

Solution:

Given that, ∠ABC = 90°

AD = 4 cm

BD = 8 cm

In order to find CD, we need to prove that ΔBDC and ΔABC are similar.

∠BDC = ∠ADB = 90°

∠DBA = ∠DCB

We have proved ΔDBA ~ ΔDCB, by AA-similarity criteria.

So we can write,

$\frac{BD}{CD} = \frac{AD}{BD}$

$\Rightarrow \frac{8}{CD} = \frac{4}{8}$

$\Rightarrow CD = \frac{8 \times 8}{4}$

⇒ CD = 16

Hence, CD = 16 cm.

Question 10.

Solution:

There are two triangles here, ΔAPQ and ΔABC. We shall prove these triangles to be similar.

$\frac{AP}{AB} = \frac{2}{4+2} = \frac{2}{6} = \frac{1}{3}$

& $\frac{AQ}{AC} = \frac{3}{6+3} = \frac{3}{9} = \frac{1}{3}$

$\Rightarrow \frac{AP}{AB} = \frac{AQ}{AC}$

Also, ∠A = ∠A [common angle]

So by AA-similarity criteria,

ΔAPQ ~ ΔABC

Thus,

$\frac{PQ}{BC} = \frac{AQ}{AC}$

And we know $\frac{PQ}{BC} = \frac{1}{3}$

⇒ BC = 3×PQ

Hence, proved.

Benefits of RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.2

1. **Detailed Explanations: Each solution is broken down into simple steps, making it easier for students to understand the process of solving triangles.**
2. **Improved Problem-Solving Skills: By practicing these solutions, students can enhance their ability to tackle different types of triangles efficiently.**

3. **Exam Preparation: The solutions help students prepare effectively for exams by providing a thorough understanding of the concepts and types of questions that may appear.**
4. **Clarity and Accuracy: Prepared by subject experts, these solutions are accurate and clear, ensuring that students learn the correct methods and techniques.**
5. **Confidence Building: Regular practice with these solutions boosts students' confidence in their ability to solve traingles and perform well in their exams.**