RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.3: RS Aggarwal's Solutions for Class 10 Maths, Chapter 4 on triangles, Exercise 4.3 covers advanced topics related to triangles such as theorems, proofs, and applications of geometrical concepts.

This exercise likely includes problems that challenge students to apply their understanding of triangle properties, angle theorems, and geometric proofs. It aims to strengthen their grasp of fundamental concepts in geometry, preparing them thoroughly for examinations and further studies in mathematics.

RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.3 Overview

RS Aggarwal Solutions for Class 10 Maths, Chapter 4, Exercise 4.3 are prepared by subject experts of Physics Wallah to help students understand triangles better. These solutions explain concepts clearly and provide step-by-step methods to solve problems.

They cover theorems, proofs, and practical applications, making geometry easier to grasp. By using these solutions, students can strengthen their math skills and prepare effectively for exams.

RS Aggarwal Solutions for Class 10 Maths Chapter 4 Triangles Exercise 4.3 PDF

Here we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.3 for the ease of students so that they can prepare better for their upcoming exams -

RS Aggarwal Solutions for Class 10 Maths Chapter 4 Triangles Exercise 4.3 PDF

Triangles

Triangles are fundamental geometric shapes defined by three sides and three angles. They play a crucial role in geometry and everyday life, characterized by properties such as:

Types based on Sides:

- **Equilateral:** All three sides are equal in length.
- **Isosceles:** Two sides are equal in length.
- **Scalene:** All three sides have different lengths.

Types based on Angles:

- **Acute:** All angles are less than 90 degrees.
- **Right:** One angle is exactly 90 degrees.

- **Obtuse:** One angle is greater than 90 degrees.

Properties:

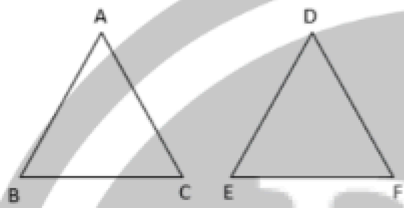
The sum of interior angles is always 180 degrees.
The longest side in a triangle is opposite the largest angle.
The shortest side is opposite the smallest angle.

RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.3

Below we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.3 for the ease of the students :

Question 1 .

Solution:



We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding sides.

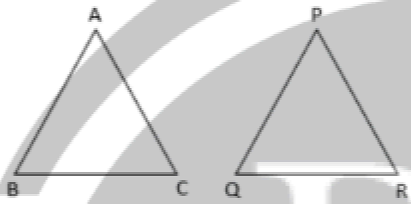
$$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{64}{121} = \frac{BC^2}{EF^2} = \frac{BC^2}{(15.4)^2}$$

$$\Rightarrow BC^2 = \frac{64}{121} \times (15.4)^2$$

$$\Rightarrow BC = \sqrt{\frac{64}{121} \times (15.4)^2} = \frac{8}{11} \times 15.4 = 8 \times 1.4 = 11.2 \text{ cm}$$

Question 2.

Solution:



We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding sides.

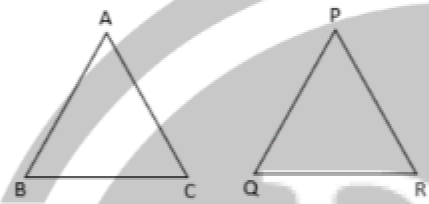
$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \frac{9}{16} = \frac{BC^2}{QR^2} = \frac{(4.5)^2}{QR^2}$

$\Rightarrow QR^2 = \frac{16}{9} \times (4.5)^2$

$\Rightarrow QR = \sqrt{\frac{16}{9} \times (4.5)^2} = \frac{4}{3} \times 4.5 = 1.5 \times 4 = 6 \text{ cm}$

Question 3.

Solution:



Given that $\frac{ar\,(\Delta ABC)}{ar\,(\Delta\,PQR)} = \frac{4}{1}$

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding sides.

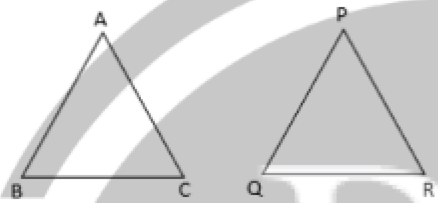
$$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \frac{4}{1} = \frac{BC^2}{QR^2} = \frac{(12)^2}{QR^2}$$

$$\Rightarrow QR^2 = \frac{1}{4} \times (12)^2$$

$$\Rightarrow QR = \sqrt{\frac{1}{4} \times (12)^2} = \frac{1}{2} \times 12 = 6\text{ cm}$$

Question 4 .

Solution:



Let the two triangles be ABC and PQR and their longest sides are BC and QR.

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their longest sides.

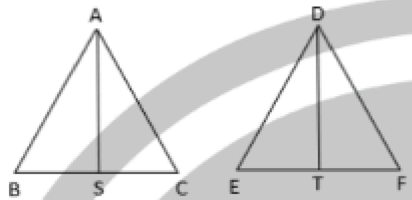
$$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta PQR)} = \frac{169}{121} = \frac{BC^2}{QR^2} = \frac{(26)^2}{QR^2}$$

$$\Rightarrow QR^2 = \frac{121}{169} \times (26)^2$$

$$\Rightarrow QR = \sqrt{\frac{121}{169} \times (26)^2} = \frac{11}{13} \times 26 = 22 \text{ cm}$$

Question 5.

Solution:



Let the two triangles ABC and DEF have their altitudes as AS and DT.

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding altitudes.

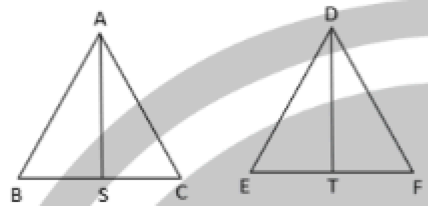
$\Rightarrow \dfrac{ar(\Delta ABC)}{ar(\Delta DEF)} = \dfrac{100}{49} = \dfrac{AS^2}{DT^2} = \dfrac{5^2}{DT^2}$

$\Rightarrow DT^2 = \dfrac{49}{100} \times (5)^2$

$\Rightarrow DT = \sqrt{\dfrac{49}{100} \times (5)^2} = \dfrac{7}{10} \times 5 = 3.5 \text{ cm}$

Question 6.

Solution:



Let the two triangles ABC and DEF have their altitudes as AS and DT.

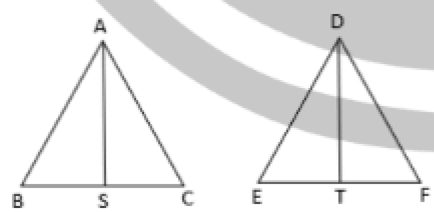
We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding altitudes.

$$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{AS^2}{DT^2} = \frac{6^2}{9^2}$$

$$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{36}{81} = \frac{4}{9}$$

Question 7.

Solution:



Let the two triangles ABC and DEF have their altitudes as AS and DT.

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding altitudes.

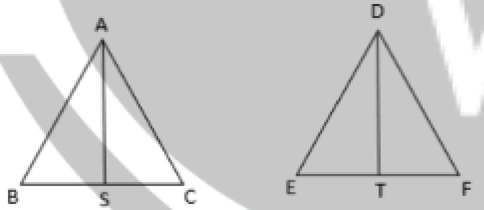
$$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{81}{49} = \frac{AS^2}{DT^2} = \frac{(6.3)^2}{DT^2}$$

$$\Rightarrow DT^2 = \frac{49}{81} \times (6.3)^2$$

$$\Rightarrow DT = \sqrt{\frac{49}{81} \times (6.3)^2} = \frac{7}{9} \times 6.3 = 4.9 \text{ cm}$$

Question 8 .

Solution:



Let the two triangles ABC and DEF have their medians as AS and DT.

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding medians.

$$\Rightarrow \frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \frac{100}{64} = \frac{AS^2}{DT^2} = \frac{AS^2}{(5.6)^2}$$

$$\Rightarrow AS^2 = \frac{100}{64} \times (5.6)^2$$

$$\Rightarrow DT = \sqrt{\frac{100}{64} \times (5.6)^2} = \frac{10}{8} \times 5.6 = 7 \text{ cm}$$

Question 9.

Solution:

We have

$$\frac{AP}{AB} = \frac{1}{4} \text{ and } \frac{AQ}{AC} = \frac{1.5}{6} = \frac{1}{4}$$

Also ∠ A = ∠ A

So, by SAS similarity criterion ΔAPQ ~ ΔABC

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding sides.

$$\Rightarrow \frac{ar(\Delta APQ)}{ar(\Delta ABC)} = \frac{AP^2}{AB^2} = \frac{1^2}{4^2} = \frac{1}{16}$$

$$\Rightarrow ar(\Delta APQ) = \frac{1}{16} \times ar(\Delta ABC)$$

Hence, proved.

Question 10.

Solution:

It is given that DE || BC

∴∠ ADE = ∠ ABC (Corresponding angles)

∠ AED = ∠ ACB (Corresponding angles)

So, by AA similarity criterion ΔADE ~ ΔABC

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding sides.

$\Rightarrow \frac{ar(\Delta ADE)}{ar(\Delta ABC)} = \frac{DE^2}{BC^2}$

$\Rightarrow ar(\Delta ABC) = \frac{6^2}{3^2} \times ar(\Delta ADE)$

$\Rightarrow ar(\Delta ABC) = 4 \times 15 = 60cm^2$

Hence, proved.

Question 11.

Solution:

In ΔABC and ΔADC

∴∠ BAC = ∠ ADC (90° angle)

∠ ACB = ∠ ACD (Common)

So, by AA similarity criterion ΔADC ~ ΔABC

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding sides.

$$\Rightarrow \frac{\text{ar}(\Delta \text{ABC})}{\text{ar}(\Delta \text{ADC})} = \frac{\text{BC}^2}{\text{AC}^2}$$

$$\Rightarrow \frac{\text{ar}(\Delta \text{ABC})}{\text{ar}(\Delta \text{ADC})} = \frac{13^2}{5^2} = \frac{169}{25} = 169:25$$

Question 12 .

Solution:

It is given that DE || BC

$\therefore \angle$ ADE = $\angle$ ABC (Corresponding angles)

$\angle$ AED = $\angle$ ACB (Corresponding angles)

So, by AA similarity criterion ΔADE ~ ΔABC

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding sides.

$$\Rightarrow \frac{\text{ar}(\Delta \text{ADE})}{\text{ar}(\Delta \text{ABC})} = \frac{\text{DE}^2}{\text{BC}^2}$$

$$\Rightarrow \frac{\text{ar}(\Delta \text{ADE})}{\text{ar}(\Delta \text{ABC})} = \frac{3^2}{5^2} = \frac{9}{25}$$

$$\Rightarrow \frac{\text{ar}(\Delta \text{ADE})}{\text{ar}(\text{BCED})} = \frac{9}{25-9} = \frac{9}{16} = 9:16$$

Hence, proved.

Question 13.

Solution:

In ΔABC and ΔADE

It is given that AD = DB and AE = EC

$\therefore \frac{AD}{AB} = \frac{1}{2}$ and $\frac{AE}{AC} = \frac{1}{2}$

Also ∠ A = ∠ A

So, by SAS similarity criterion ΔADE ~ ΔABC

We know that if two triangles are similar then the ratio of their areas is equal to the ratio of the squares of their corresponding sides.

$\Rightarrow \frac{ar(\Delta ADE)}{ar(\Delta ABC)} = \frac{AE^2}{AC^2}$

$\Rightarrow \frac{ar(\Delta ADE)}{ar(\Delta ABC)} = \frac{1^2}{2^2} = \frac{1}{4} = 1:4$

$\frac{1}{2}$

Benefits of RS Aggarwal Solutions for Class 10 Maths Chapter 4 Exercise 4.3

- **Comprehensive Coverage:** They provide thorough explanations and solutions to all problems in the exercise, ensuring a complete understanding of triangle-related concepts.
- **Clarity and Guidance:** The solutions provide clear steps and methods to solve complex geometrical problems, helping students navigate through difficult concepts with ease.

- **Enhanced Understanding:** They help in mastering theorems, proofs, and applications of geometry, laying a strong foundation for advanced studies in mathematics.
- **Convenient Access:** The solutions are available in PDF format, making it easy for students to access and study anytime, anywhere.
- **Expert Guidance:** Prepared by subject experts, these solutions provide reliable and accurate answers, ensuring students learn the correct methods and techniques.