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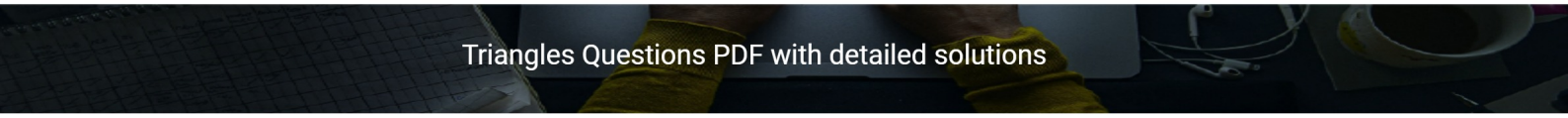

Triangles questions are a major part of geometry asked in competitive exams. These questions carry a weightage of 1-2 questions (2-4 marks) in SSC exams. To get a good rank in competitive exams, you should have a conceptual clarity of questions of triangles as they also are part of mixed geometry questions asked.

Here are some tips for solving Triangles questions: Understand triangle types (e.g., equilateral, isosceles, scalene), the Pythagorean theorem for right triangles, Use the Law of Sines and Cosines for non-right triangles, and the area formula (1/2 × base × height).Practice visualization and diagram drawing for clarity.

So, we have attached 10 questions of Triangles for you to practice with. You should aim to solve these questions in less than half a minute for each.

Practice Questions on Triangles

You can also download the Triangles questions and answers pdf. Just click on the **Download PDF** button. So let's start with the very first question.

Q:1 A scalene triangle ABC is given with sides 15cm, 13cm, and 12cm, and a circle is drawn in the triangle having radius r. Find r.

1. $\frac{\sqrt{47}}{3}$
2. $\frac{\sqrt{42}}{2}$
3. $\frac{\sqrt{15}}{3}$
4. $\frac{\sqrt{29}}{2}$

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) A good question to start with....

Q:2 The perimeter of an isosceles right angle triangle is $(16 + 18\sqrt{2})$ cm. Find the area of the triangle.

1. 34

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3. 43

4. 32

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) You won't get easy questions in exam...

Q:3 In triangle ABC, if AB = 16 cm. AC = 10 cm and $\angle BAC = 60^{o}$, then find the length of the side BC.

1. 12 cm

2. 15 cm

3. 14 cm

4. 18 cm

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) Do you remember the relation.....

Q:4 A triangle is drawn inside a circle such that the sides of a triangle are given as 9 cm, 40 cm, and 41 cm then, find the radius (r) inside the triangle

1. 5

2. 5.85

3. 4

4. 7.6

(**Difficulty:** 2, **Estimated Time:** 15 Seconds) This was quite easy.....

Q:5 A circle is drawn outside a triangle and the sides of the triangle are 12 cm, 35 cm, and 37 cm then, find the radius of the circle.

1. 17.5

2. 18.5

3. 18.7

4. 16.5

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) We're halfway through. Have you got all your questions correct so far?

Q:6 In an equilateral triangle, ABC having side a, three perpendiculars P_1, P_2, and P_3 are drawn to BC, AB, and AC from the center. Also the sum of lengths of perpendiculars equal to 63 cm. Find the value of a. (in cm.)

1. 54

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2. 63

3. $45\sqrt{7}$

4. $42\sqrt{3}$

(**Difficulty:** 4, **Estimated Time:** 25 Seconds) You should have a good practice to solve such.....

Q:7 In a right-angle triangle, two circles are drawn inside and outside the triangle having radius r and R. The relation between Perpendicular and Hypotenuse is given as (P - H) = 17 and (P + H) = 27 and Base = 3. Find the value of (r + 10R).

1. 35

2. 45

3. 25

4. 39

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) Be prepared for such questions in exam!

Q:8 In triangle ABC, AB = 24 cm and AC = 30 cm. In ∠BAC is 60^{o}, then find the area of triangle ABC.

1. $180\sqrt{3}$ cm^2

2. $160\sqrt{3}$ cm^2

3. $150\sqrt{3}$ cm^2

4. None of these

(**Difficulty:** 2, **Estimated Time:** 15 Seconds) This was not a hard question!

Q:9 'K' is a point in the interior of an equilateral triangle. The perpendicular distance from 'K' to the sides are $\sqrt{6}$cm, $4\sqrt{6}$ cm. and $6\sqrt{6}$cm. Then find the ratio between the Perimeter and area of the triangle.

1. $\sqrt{6}$: 12

2. $\sqrt{6}$: 10

3. $\sqrt{6}$: 11

4. $\sqrt{6}$: 19

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) A similar one....

Q:10 If the lengths of two sides of a triangle are x and y such that their product is 30 where x and y are integers, then find the number of such possible triangles.

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1. 10

2. 9

3. 8

4. 7

(**Difficulty:** 3, **Estimated Time:** 20 Seconds) Did you guess them all correctly?

Answer Key

Let's check out your score in this test.

1. (2)	**2.** (4)	**3.** (3)	**4.** (3)	**5.** (2)
6. (4)	**7.** (1)	**8.** (1)	**9.** (3)	**10.** (2)

Comment below your score, considering each question has 1 mark only. If you scored 8 to 10, congratulations! You are one step closer to selection. If you have scored 5 to 8 marks, then you are doing well, keep it up. If you have scored less than 5 marks then you need to work a little harder on this subject. But don't worry, we are here to help you master the subject.

Let's check the answers and solutions and try to find out what went wrong.

Answers and Solutions

Q:1 The correct answer is **Option 2** i.e. $\frac{\sqrt{42}}{2}$

We know that,

r = area/s (s = semi-perimeter)

s = (a + b + c)/2

Here, a, b, and c are sides of the triangle

s = (15 + 13 + 12)/2 = 40/2 = 20

Area = $\sqrt{s(s-a)(s-b)(s-c)}$

Area = $\sqrt{20(20-15)(20-13)(20-12)}$

Area = $\sqrt{20 \times 5 \times 7 \times 6}$

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Area = $10\sqrt{42}$

Hence,

r = $\frac{10\sqrt{42}}{20} = \frac{\sqrt{42}}{2}$

Q:2 The correct answer is **option 4** i.e. **32.**

We know that the perimeter of an isosceles right angle triangle is = $(2a + \sqrt{2}a)$ or $\sqrt{2}a(\sqrt{2} + 1)$

Comparing with the given value of the perimeter

⇒ $(16 + 18\sqrt{2}) = (2a + \sqrt{2}a)$

⇒ $(8 \times 2 + 18\sqrt{2}) = (2a + \sqrt{2}a)$

So, a = 8 cm

Area = 1/2 a^2

Area = 1/2 × 8 × 8 = 32 cm^2

Q:3 The correct answer is **option 3** i.e. **14 cm**

Using cosine rule,

We have, $BC^2 = AB^2 + AC^2 - 2 \times AB \times AC \times \cos 60^o$

Or, $BC^2 = 16^2 + 10^2 - 2 \times 16 \times 10 \times (1/2)$

$BC^2 = 256 + 100 - 160$

BC = $\sqrt{196}$

BC = 14 cm {Since, length cannot be negative}

Q:4 The correct answer is **option 3** i.e. **4.**

The sides of a triangle are given as 9, 40, and 41

So, it is a right-angle triangle

H = 41, B = 9, and P = 40

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Formulae for the radius of the circle inside the triangle

⇒ r = (P + B - H)/2

⇒ r = (40 + 9 - 41)/2

⇒ r = (49 - 41)/2 = 8/2 = 4

Q:5 The correct answer is **option 2** i.e. **18.5.**

The sides of a triangle are 12,35 and 37 and its forms a triplet

Hence, it is right angle triangle

⇒ H = 37, B = 35 and P = 12

The radius of the circle outside the triangle

⇒ R = H/2

⇒ R = 37/2 = 18.5

Q:6 The correct answer is **option 4** i.e. $42\sqrt{3}$

We know that, in an equilateral triangle

⇒ $a = \frac{2}{\sqrt{3}}(P_1 + P_2 + P_3)$

⇒ $a = \frac{2}{\sqrt{3}} \times 63$

⇒ $a = \frac{2}{\sqrt{3}} \times 63 \times \frac{\sqrt{3}}{\sqrt{3}}$

⇒ $a = \frac{2 \times 63\sqrt{3}}{3}$

⇒ $a = 2 \times 21\sqrt{3}$

⇒ $a = 42\sqrt{3}$ cm

Q:7 The correct answer is **option 1** i.e. **35.**

Here, P = perpendicular, H = Hypotenuse and B = base

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⇒ r = (P + B - H)/2

⇒ r = (17 + 3)/2 = 10

Given,

⇒ (P - H) = 17.....(1) and,

⇒ (P + H) = 27.....(2)

Solving equations (1) and (2)

⇒ 2P = 44

⇒ P = 22 so H = 5

⇒ R = H/2 = 5/2

Now, ⇒ (r + 10R) = (10 + 10 × 5/2)

⇒ (10 + 25) = 35

Q:8 The correct answer is **option 1** i.e. **$180\sqrt{3}$ cm^2.**

Area of triangle = (1/2) × sin θ × product of adjacent sides

Area of triangle = (1/2) × sin 60^o × 24 × 30

⇒ (1/2) × ($\sqrt{3}$/2) × 24 × 30 = $180\sqrt{3}$ cm^2

Q:9 The correct answer is **option 3** i.e. $\sqrt{6}$: 11.

We know that

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Height of the equilateral triangle = $h_1 + h_2 + h_3$

$\Rightarrow H = \sqrt{6}$ cm + $4\sqrt{6}$ cm + $6\sqrt{6}$ cm = $11\sqrt{6}$ cm

$\Rightarrow H = \frac{\sqrt{3}}{2}a$

$\Rightarrow 11\sqrt{6} = \frac{\sqrt{3}}{2}a$

$\Rightarrow a = 22\sqrt{2}$ cm

So, the required ratio = $\frac{3 \times a}{\frac{\sqrt{3}a^2}{4}} = \frac{12}{\sqrt{3} \times 22\sqrt{2}} = \sqrt{6}/11$

Q:10 The correct answer is **option 2** i.e. **9**.

The possible sides of the triangle:

x	y
1	30
2	15
3	10

The possible number of triangle:

Let's assume the third side is z.

$|x - y| < z < |x + y|$

$29 < z < 31$ = 1 triangle

Here, the possible value of z is 30.

$13 < z < 17$ = 3 triangles

Here, the possible value of z is 14, 15, 16.

$7 < z < 13$ = 5 triangles

Here, the possible value of z is 8, 9, 10, 11, 12.

So, the total number of triangles = 1 + 3 + 5 = **9**

So, this is it for today. We will meet again with another new topic. Till then, you can practice the questions again by

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