



GRADE 10<sup>TH</sup> MATHS  
CHAPTER 6

# Triangles

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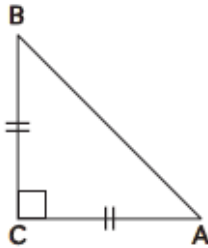
**OBJECTIVE** Type Questions

[ 1 mark ]

**Multiple Choice Questions**

1. In the figure, ABC is an isosceles triangle, right-angled at C. Therefore:

- (a)  $AB^2 = 2AC^2$       (b)  $BC^2 = 2AB^2$   
(c)  $AC^2 = 2AB^2$       (d)  $AB^2 = 4AC^2$



2. In a right-angled triangle ABC, right angled

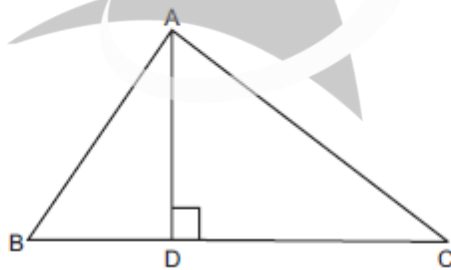
at B,  $AB = \frac{x}{2}$ ,  $BC = x + 2$  and  $AC = x + 3$ . The

value of x is:

- (a) 5                              (b) 10  
(c) 12                             (d) 14

3. In the figure, if  $\angle BAC = 90^\circ$  and  $AD \perp BC$ , then:

- (a)  $BD \cdot CD = BC^2$       (b)  $AB \cdot AC = BC^2$   
(c)  $BD \cdot CD = AD^2$       (d)  $AB \cdot AC = AD^2$



4. The lengths of the diagonals of a rhombus are 16 cm and 12 cm. then, the length of the side of the rhombus is:

- (a) 9 cm                        (b) 10 cm  
(c) 8 cm                        (d) 20 cm      [NCERT]

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5. If D, E and F are the mid-points of sides BC, CA and AB respectively of  $\triangle ABC$ , then the ratio of the areas of  $\triangle DEF$  to the area of  $\triangle ABC$  is:

- (a) 1 : 4                      (b) 1 : 2  
(c) 1 : 3                      (d) 2 : 3

6. If  $\triangle ABC \sim \triangle EDF$  and  $\triangle ABC$  is not similar to  $\triangle DEF$ , then which of the following is not true?

- (a)  $BC \cdot EF = AC \cdot FD$       (b)  $AB \cdot EF = AC \cdot DE$   
(c)  $BC \cdot DE = AB \cdot EF$       (d)  $BC \cdot DE = AB \cdot FD$

[NCERT]

7. If in two triangles ABC and PQR,  $\frac{AB}{QR} = \frac{BC}{PR}$

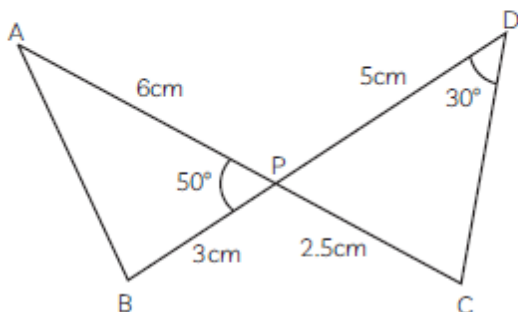
$= \frac{CA}{PQ}$ , then:

- (a)  $\triangle PQR \sim \triangle CAB$       (b)  $\triangle PQR \sim \triangle ABC$   
(c)  $\triangle CBA \sim \triangle PQR$       (d)  $\triangle BCA \sim \triangle PQR$

[NCERT]

8. In the given figure, two line segments AC and BD intersect each other at point P such that  $PA = 6$  cm,  $PB = 3$  cm,  $PC = 2.5$  cm,  $PD = 5$  cm,  $\angle APB = 50^\circ$  and  $\angle CDP = 30^\circ$ . Then,  $\angle PBA$  is equal to:

- (a)  $50^\circ$                       (b)  $30^\circ$   
(c)  $60^\circ$                       (d)  $100^\circ$



[NCERT]

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9. In  $\triangle ABC$  and  $\triangle DEF$ ,  $\angle B = \angle E$ ,  $\angle F = \angle C$  and  $AB = 3DE$ . Then, the two triangles are:

- (a) congruent but not similar
- (b) similar but not congruent
- (c) neither congruent nor similar
- (d) congruent as well as similar

10. If in two triangles  $\triangle DEF$  and  $\triangle PQR$ ,  $\angle D = \angle Q$  and  $\angle R = \angle E$ , then which of the following is not true?

- (a)  $\frac{EF}{PR} = \frac{DF}{PQ}$
- (b)  $\frac{DE}{PQ} = \frac{EF}{RP}$
- (c)  $\frac{DE}{QR} = \frac{DF}{PQ}$
- (d)  $\frac{EF}{RP} = \frac{DE}{QR}$

[NCERT]

11. It is given that  $\triangle ABC \sim \triangle PQR$ , with  $\frac{BC}{QR} = \frac{1}{3}$ ,

then  $\left\{ \frac{\text{ar}(\text{PRQ})}{\text{ar}(\text{BCA})} \right\}$  is equal to:

- (a) 9
- (b) 3
- (c)  $\frac{1}{3}$
- (d)  $\frac{1}{9}$

[CBSE 2018]

12. If in triangles  $\triangle ABC$  and  $\triangle DEF$ ,  $\frac{AB}{DE} = \frac{BC}{FD}$ , then

they will be similar when:

- (a)  $\angle B = \angle E$
- (b)  $\angle A = \angle D$
- (c)  $\angle B = \angle D$
- (d)  $\angle A = \angle F$

[NCERT]

13. If  $\triangle ABC \sim \triangle QRP$ ,  $\left\{ \frac{\text{ar}(\text{ABC})}{\text{ar}(\text{PQR})} \right\} = \frac{9}{4}$ ,  $AB = 18$  cm

and  $BC = 15$  cm, then  $PR$  is equal to:

- (a) 10 cm
- (b) 12 cm
- (c)  $\frac{20}{3}$  cm
- (d) 8 cm

[NCERT]

14. If  $S$  is a point on side  $PQ$  of a  $\triangle PQR$  such that  $PS = QS = RS$ , then:

- (a)  $PR \cdot QR = RS^2$
- (b)  $QS^2 + RS^2 = QR^2$
- (c)  $PR^2 + QR^2 = PQ^2$
- (d)  $PS^2 + RS^2 = PR^2$

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## Fill in the Blanks

Fill in the blanks/tables with suitable information:

15. Let  $\triangle ABC \sim \triangle DEF$  and their areas be  $81 \text{ cm}^2$  and  $144 \text{ cm}^2$ . If  $EF = 24 \text{ cm}$ , then length of side  $BC$  is ..... cm. [CBSE 2020]

16. In the figure,  $MN \parallel BC$  and  $AM : MB = 1 : 3$ ,

then  $\frac{\text{ar}(\triangle AMN)}{\text{ar}(\triangle ABC)} = \dots\dots\dots$

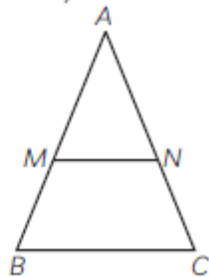


Fig 1. [CBSE 2020]

17. In  $\triangle ABC$ ,  $AB = 6\sqrt{3} \text{ cm}$ ,  $AC = 12 \text{ cm}$  and  $BC = 6 \text{ cm}$ , then  $\angle B = \dots\dots\dots$

[CBSE 2020]

18. Two triangles are similar if their corresponding sides are ..... [CBSE 2020]

19. A ladder 10 m long reaches a window 8 m above the ground. The distance of the foot of the ladder from the base of the wall is ..... m. [CBSE 2020]

20. If  $\triangle ABC$  is an equilateral triangle of side  $2a$ , then length of one of its altitude is ..... [CBSE 2020]

[CBSE 2020]

21. The perimeters of two similar triangles  $\triangle ABC$  and  $\triangle PQR$  are 35cm and 45cm respectively, then the ratio of the areas of the two triangles is ..... .

22. The length of an altitude in an equilateral triangle of side ' $a$ ' cm is ..... .

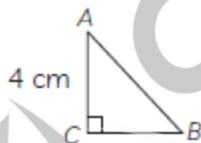
23. If areas of two similar triangles are equal, then these triangles are ..... .

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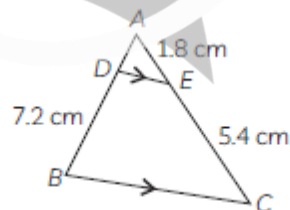
25. If S is a point on side PQ of a  $\Delta PQR$  such that  $PS = QS = RS$ , then  $PR^2 + QR^2 = \dots\dots\dots$

### Very Short Questions

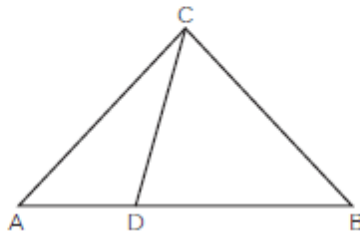
26.  $BC$  and  $BDE$  are two equilateral triangles such that  $D$  is the mid-point of  $BC$ . Find the ratio of the areas of triangle  $ABC$  and  $BDE$ .  
.....  
[CBSE 2020]
27. It is given that  $\Delta DEF \sim \Delta RPQ$ . Is it true to say that  $\angle D = \angle R$  and  $\angle F = \angle P$ ? Why? [NCERT]
28. In the given figure,  $\Delta ABC$  is an isosceles triangle right angled at  $C$  with  $AC = 4$  cm. Find the length of  $AB$ . [CBSE 2015]



29. In the given figure,  $DE \parallel BC$ . Find the length of side  $AD$ , given that  $AE = 1.8$  cm,  $BD = 7.2$  cm and  $CE = 5.4$  cm. [CBSE 2019]



30. Is the following statement true? Why?  
"Two quadrilaterals are similar, if their corresponding angles are equal". [NCERT]
31. In the figure, if  $\angle ACB = \angle CDA$ ,  $AC = 6$  cm and  $AD = 3$  cm, then find the length of  $AB$



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32. The ratio of the corresponding altitudes of two similar triangles is  $\frac{3}{5}$ . Is it correct to say

that the ratio of their areas is  $\frac{6}{5}$ ? Why?

[CBSE 2011]

33. For a rhombus ABCD, prove the following:  
 $4AB^2 = AC^2 + BD^2$

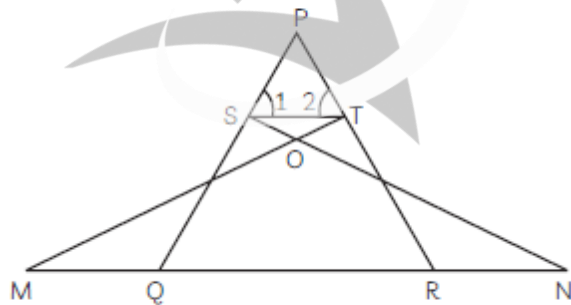
34. The area of two similar triangles are 25 sq. m and 121 sq. cm. Find the ratio of their corresponding sides. [CBSE 2019]

35. In the given figure, if  $\angle D = \angle C$ , then it is true that  $\triangle ADE \sim \triangle ACB$ ? Why?



[NCERT]

In the given figure, if  $\angle 1 = \angle 2$  and  $\triangle NSQ \cong \triangle MTR$ , then prove that  $\triangle PTS \sim \triangle PRQ$ .



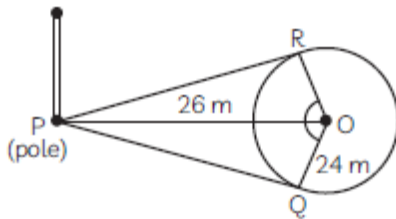
[CBSE 2013]

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There is a circular park of radius 24 m and there is a pole at a distance of 26 m from the centre of the park as shown in the figure. It is planned to enclose the park by planting trees along line segments PQ and PR tangential to the park.



- (A) Find the length of PQ and PR;  
(B) If six trees are to be planted along each tangential line segments at equal distances, find the distance between any two consecutive trees.