MCQ WORKSHEET-I
TRIANGLES

1. If in triangle ABC and DEF, $\frac{AB}{DE}=\frac{BC}{FD}$, then they will be similar when

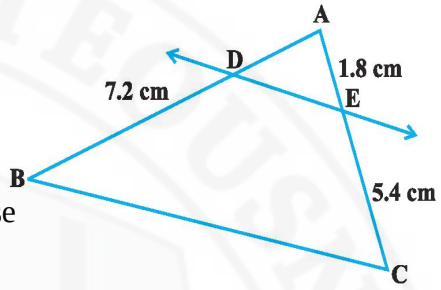
(a) $\angle B=\angle E$ (b) $\angle A=\angle D$ (c) $\angle B=\angle D$ (d) $\angle A=\angle F$

2. It is given that $\Delta ABC \sim \Delta PQR$ with $\frac{BC}{QR}=\frac{1}{3}$, then $\frac{ar(\Delta ABC)}{ar(\Delta PQR)}$ is equal to

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

3. In ΔABC, DE || BC and AD = 4cm, AB = 9cm. AC = 13.5 cm then the value of EC is

(a) 6 cm (b) 7.5 cm (c) 9 cm (d) none of these



4. In figure DE || BC then the value of AD is

(a) 2 cm (b) 2.4 cm (c) 3 cm (d) none of the above

5. ABC and BDE are two equilateral triangles such that $BD=\frac{2}{3}BC$. The ratio of the areas of triangles ABC and BDE are

(a) 2 : 3 (b) 3 : 2 (c) 4 : 9 (d) 9 : 4

6. A ladder is placed against a wall such that its foot is at distance of 2.5 m from the wall and its top reaches a window 6 m above the ground. The length of the ladder is

(a) 6.5 m (b) 7.5 m (c) 8.5 m (d) 9.5 m

7. If the corresponding sides of two similar triangles are in the ratio 4 : 9, then the areas of these triangles are in the ratio is

(a) 2 : 3 (b) 3 : 2 (c) 81 : 16 (d) 16 : 81

8. If $\Delta ABC \sim \Delta PQR$, BC = 8 cm and QR = 6 cm, the ratio of the areas of Δ ABC and Δ PQR is

(a) 8 : 6 (b) 6 : 8 (c) 64 : 36 (d) 9 : 16

9. If $\Delta ABC \sim \Delta PQR$, area of Δ ABC = 81cm^2, area of Δ PQR = 144cm^2 and QR = 6 cm, then length of BC is

(a) 4 cm (b) 4.5 cm (c) 9 cm (d) 12 cm

10. Sides of triangles are given below. Which of these is a right triangle?

(a) 7 cm, 5 cm, 24 cm (b) 34 cm, 30 cm, 16 cm
(c) 4 cm, 3 cm, 7 cm (d) 8 cm, 12 cm, 14 cm

11. If a ladder 10 m long reaches a window 8 m above the ground, then the distance of the foot of the ladder from the base of the wall is

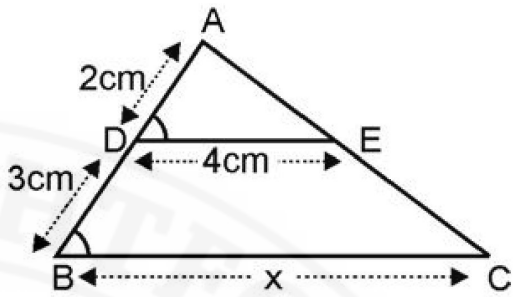
(a) 18 m (b) 8 m (c) 6 m (d) 4 m

12. A girl walks 200 towards East and the she walks 150m towards North. The distance of the girl from the starting point is

(a) 350m (b) 250m (c) 300m (d) 225m

MCQ WORKSHEET-II
TRIANGLES

1. In the given figure, if DE || BC, then x equals



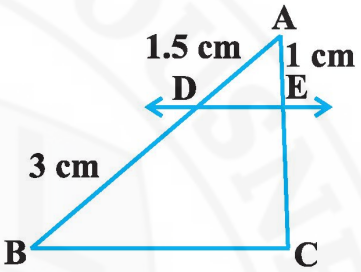
(a) 6 cm (b) 10 cm (c) 8 cm (d) 12.5 cm

2. All _____triangles are similar.
(a) isosceles (b) equilateral (c) scalene
(d) right angled

3. All circles are _____
(a) congruent (b) similar (c) not similar
(d) none of these

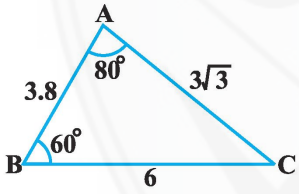
4. All squares are _____
(a) congruent (b) similar (c) not similar (d) none of these

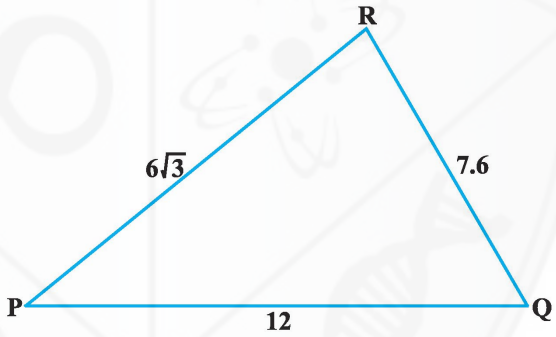
5. In the given fig DE || BC then the value of EC is



(a) 1 cm (b) 2 cm (c) 3 cm (d) 4 cm

6. In the given below figure, the value of $\angle P$ is





(a) 60^0 (b) 80^0 (c) 40^0 (d) 100^0

7. A girl of height 90 cm is walking away from the base of a lamp-post at a speed of 1.2 m/s. If the lamp is 3.6 m above the ground, then the length of her shadow after 4 seconds.
(a) 1.2 m (b) 1.6 m (c) 2 m (d) none of these

8. A vertical pole of length 6 m casts a shadow 4 m long on the ground and at the same time a tower casts a shadow 28 m long. Find the height of the tower.
(a) 42 m (b) 48 m (c) 54 m (d) none of these

9. $\Delta ABC \sim \Delta DEF$ and their areas be, respectively, 64 cm^2 and 121 cm^2. If EF = 15.4 cm, the value of BC is.
(a) 11.2 cm (b) 15.4 cm (c) 6.4 cm (d) none of these

10. ABC and BDE are two equilateral triangles such that D is the midpoint of BC. Ratio of the areas of triangles ABC and BDE is
(a) 2 : 1 (b) 1 : 2 (c) 4 : 1 (d) 1 : 4

11. Areas of two similar triangles are in the ratio 4 : 9. Sides of these triangles are in the ratio
(a) 2 : 3 (b) 4 : 9 (c) 81 : 16 (d) 16 : 81

MCQ WORKSHEET-IV
TRIANGLES

1. A vertical pole of length 20 m casts a shadow 10 m long on the ground and at the same time a tower casts a shadow 50 m long, then the height of the tower.
(a) 100 m (b) 120 m (c) 25 m (d) none of these

2. The areas of two similar triangles are in the ratio 4 : 9. The corresponding sides of these triangles are in the ratio
(a) 2 : 3 (b) 4 : 9 (c) 81 : 16 (d) 16 : 81

3. The areas of two similar triangles ΔABC and ΔDEF are 144 cm^2 and 81 cm^2, respectively. If the longest side of larger ΔABC be 36 cm, then the longest side of the similar triangle ΔDEF is
(a) 20 cm (b) 26 cm (c) 27 cm (d) 30 cm

4. The areas of two similar triangles are in respectively 9 cm^2 and 16 cm^2. The ratio of their corresponding sides is
(a) 2 : 3 (b) 3 : 4 (c) 4 : 3 (d) 4 : 5

5. Two isosceles triangles have equal angles and their areas are in the ratio 16 : 25. The ratio of their corresponding heights is
(a) 3 : 2 (b) 5 : 4 (c) 5 : 7 (d) 4 : 5

6. If ΔABC and ΔDEF are similar such that 2AB = DE and BC = 8 cm, then EF =
(a) 16 cm (b) 112 cm (c) 8 cm (d) 4 cm

7. XY is drawn parallel to the base BC of a ΔABC cutting AB at X and AC at Y. If AB = 4BX and YC = 2 cm, then AY =
(a) 2 cm (b) 6 cm (c) 8 cm (d) 4 cm

8. Two poles of height 6 m and 11 m stand vertically upright on a plane ground. If the distance between their foot is 12 m, the distance between their tops is
(a) 14 cm (b) 12 cm (c) 13 cm (d) 11 cm

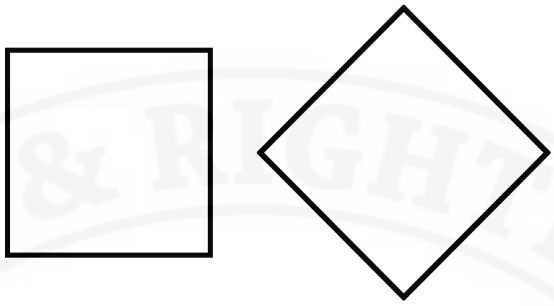
9. If D, E, F are midpoints of sides BC, CA and AB respectively of ΔABC, then the ratio of the areas of triangles DEF and ABC is
(a) 2 : 3 (b) 1 : 4 (c) 1 : 2 (d) 4 : 5

10. If ΔABC and ΔDEF are two triangles such that $\frac{AB}{DE}=\frac{BC}{EF}=\frac{CA}{FD}=\frac{2}{5}$, then $\frac{ar(\Delta ABC)}{ar(\Delta DEF)}=$
(a) 2 : 5 (b) 4 : 25 (c) 4 : 15 (d) 8 : 125

11. In triangles ABC and DEF, $\angle A = \angle E = 40^0$, AB : ED = AC : EF and $\angle F = 65^0$, then $\angle B$ =
(a) 35^0 (b) 65^0 (c) 75^0 (d) 85^0

12. If ABC and DEF are similar triangles such that $\angle A = 47^0$ and $\angle E = 83^0$, then $\angle C$=
(a) 50^0 (b) 60^0 (c) 70^0 (d) 80^0

1. State whether the following pairs of polygons are similar or not:



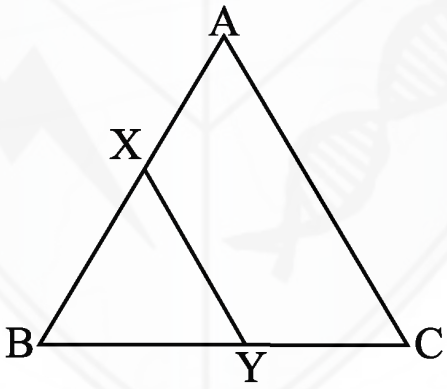
2. In triangle ABC, DE || BC and $\frac{AD}{DB} = \frac{3}{5}$. If AC = 4.8 cm, find AE.

3. A girl of height 90 cm is walking away from the base of a lamp post at a speed of 1.2m/s. If the lamp is 3.6 m above the ground, find the length of her shadow after 4 seconds.

4. Diagonals of a trapezium ABCD with AB || CD intersects at O. If AB = 2CD, find the ratio of areas of triangles AOB and COD.

5. Prove that the areas of two similar triangles are in the ratio of squares of their corresponding altitudes.

6. In the below figure, the line segment XY is parallel to side AC of ΔABC and it divides the triangle into two equal parts of equal areas. Find the ratio $\frac{AX}{AB}$.



7. In a triangle, if square of one side is equal to the sum of the squares of the other two sides, then the angle opposite the first side is a right angle. Prove it.

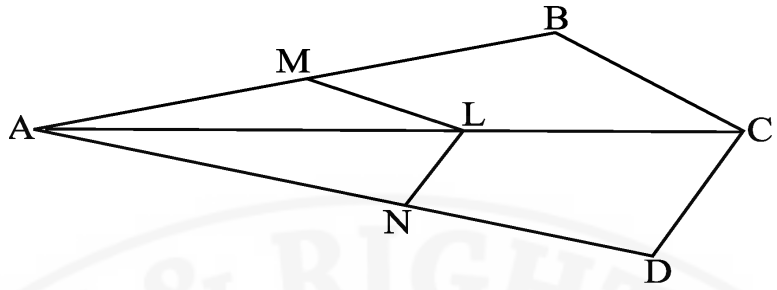
8. E is a point on the side AD produced of a ||gm ABCD and BE intersects CD at F. Show that ΔABE ~ ΔCFB.

9. Complete the sentence: Two polygons of the same number of sides are similar if…….

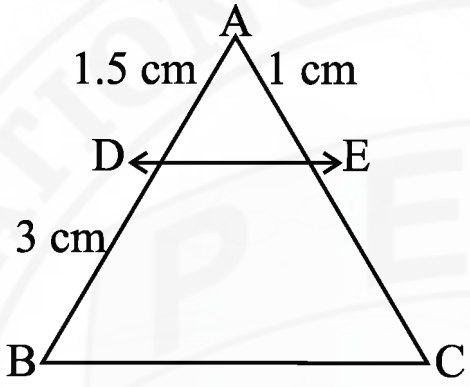
10. In ΔABC, AD ⊥ BC. Prove that $AB^2 - BD^2 = AC^2 - CD^2$.

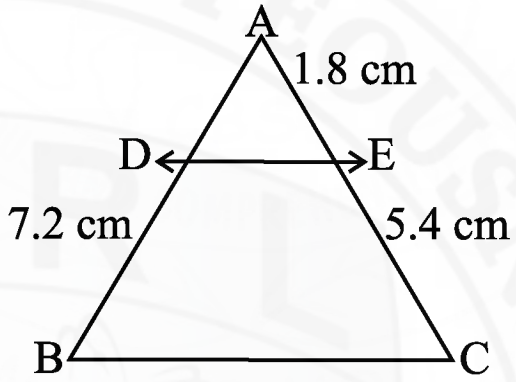
11. AD is a median of ΔABC. The bisector of ∠ADB and ∠ADC meet AB and AC in E and F respectively. Prove that EF || BC.

12. State and prove the Basic Proportionality theorem. In the below figure, if LM || CB and LN || CD, prove that $\frac{AM}{AB} = \frac{AN}{AD}$.



13. In the below figure, DE || BC, find EC





14. In the above right sided figure, DE || BC, find AD.

15. In given figure $\frac{AD}{DB} = \frac{AE}{EC}$ and $\angle AED = \angle ABC$. Show that AB = AC

16. $\Delta ABC \sim \Delta DEF$, such that ar($\Delta ABC$) = 64 cm^2 and ar(ΔDEF) = 121 cm2. If EF = 15.4 cm, find BC.

17. ABC and BDE are two equilateral triangles such that D is the midpoint of BC. What is the ratio of the areas of triangles ABC and BDE.

18. Sides of 2 similar triangles are in the ratio 4 : 9. What is the ratio areas of these triangles.

19. Sides of a triangle are 7cm, 24 cm, 25 cm. Will it form a right triangle? Why or why not?

20. Find $\angle B$ in ΔABC , if AB = $6\sqrt{3}$ cm, AC = 12 cm and BC = 6 cm.

21. Prove that "If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio".

22. Prove that "If a line divides any two sides of a triangle in the same ratio, then the line is parallel to the third side."

23. If a line intersects sides AB and AC of a ΔABC at D and E respectively and is parallel to BC, prove that $\frac{AD}{AB} = \frac{AE}{AC}$

24. ABCD is a trapezium in which AB || DC and its diagonals intersect each other at the point O. Show that $\frac{AO}{BO} = \frac{CO}{DO}$

25. Prove that "If in two triangles, corresponding angles are equal, then their corresponding sides are in the same ratio (or proportion) and hence the two triangles are similar.

26. Prove that "If one angle of a triangle is equal to one angle of the other triangle and the sides including these angles are proportional, then the two triangles are similar.

27. Prove that "If in two triangles, sides of one triangle are proportional to (i.e., in the same ratio of) the sides of the other triangle, then their corresponding angles are equal and hence the two triangles are similar.

28. D is a point on the side BC of a triangle ABC such that $\angle ADC = \angle BAC$. Show that $CA^2 = CB.CD$.

29. Sides AB and BC and median AD of a triangle ABC are respectively proportional to sides PQ and QR and median PM of ΔPQR. Show that $\Delta ABC \sim \Delta PQR$.

30. Sides AB and AC and median AD of a triangle ABC are respectively proportional to sides PQ and PR and median PM of another triangle PQR. Show that $\Delta ABC \sim \Delta PQR$.

31. If AD and PM are medians of triangles ABC and PQR, respectively where $\Delta ABC \sim \Delta PQR$, prove that $\frac{AB}{PQ} = \frac{AD}{PM}$

32. A vertical pole of length 6 m casts a shadow 4 m long on the ground and at the same time a tower casts a shadow 28 m long. Find the height of the tower.

33. Prove that "The ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides."

34. If the areas of two similar triangles are equal, prove that they are congruent.

35. D, E and F are respectively the mid-points of sides AB, BC and CA of ΔABC. Find the ratio of the areas of ΔDEF and ΔABC.

36. Prove that the ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding medians.

37. Prove that the area of an equilateral triangle described on one side of a square is equal to half the area of the equilateral triangle described on one of its diagonals.

38. Prove that "If a perpendicular is drawn from the vertex of the right angle of a right triangle to the hypotenuse then triangles on both sides of the perpendicular are similar to the whole triangle and to each other."

39. Prove that "In a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

40. O is any point inside a rectangle ABCD. Prove that $OB^2 + OD^2 = OA^2 + OC^2$.

41. Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares of its diagonals.