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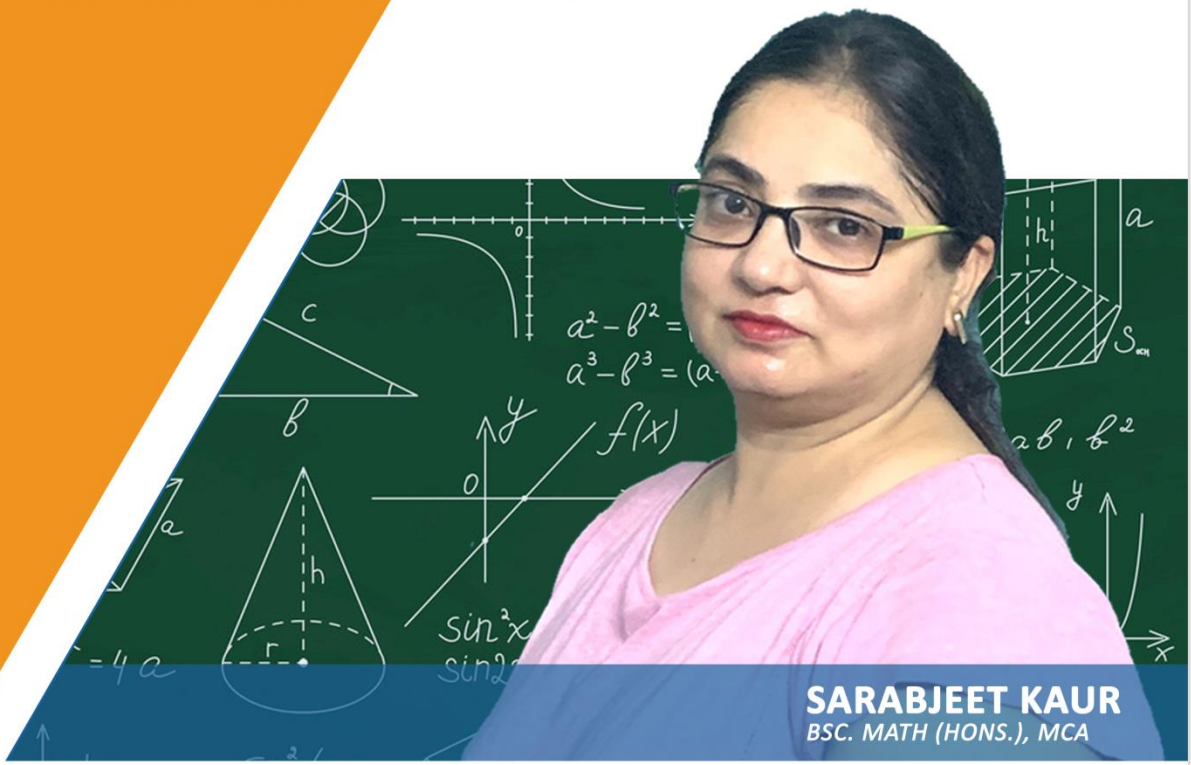

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GRADE 10TH MATHS

CHAPTER 6

TRIANGLES

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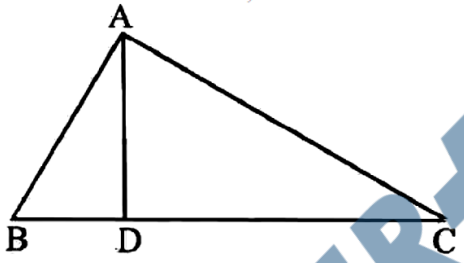
MCQ QUESTIONS (1 mark)

1. In the below, $\angle BAC = 90°$ and $AD \perp BC$. Then,

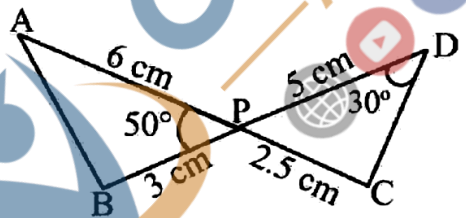


(a) $BD \cdot CD = BC^2$ (b) $AB \cdot AC = BC^2$ (c) $BD \cdot CD = AD^2$ (d) $AB \cdot AC = AD^2$

2. 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

3. If $\Delta ABC \sim \Delta EDF$ and ΔABC is not similar to ΔDEF, 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) $BC \cdot DE = AB \cdot FD$

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



(a) 50° (b) 30° (c) 60° (d) 100°

5. If in two triangles DEF and 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) $\frac{EF}{RP} = \frac{DE}{QR}$

6. In triangles ABC and DEF, $\angle B = \angle E$, $\angle F = \angle C$ and AB = 3 DE. 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

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

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

8. It is given that $\Delta ABC \sim \Delta DFE$, $\angle A = 30°$, $\angle C = 50°$, AB = 5 cm, AC = 8 cm and DF= 7.5 cm. Then, the following is true:
(a) DE = 12 cm, $\angle F = 50°$ (b) DE = 12 cm, $\angle F = 100°$
(c) EF = 12 cm, $\angle D = 100°$ (d) EF = 12 cm, $\angle D = 30°$

9. If in triangles 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) $\angle A = \angle F$

10. If $\Delta ABC \sim \Delta QRP$, $\frac{ar(ABC)}{ar(PQR)} = \frac{9}{4}$, AB = 18 cm and BC = 15 cm, then PR is equal to
(a) 10 cm (b) 12 cm (c) 20/3 cm (d) 8 cm

11. If S is a point on side PQ of a ΔPQR such that PS = QS = RS, then
(a) PR . QR = RS^2 (b) $QS^2 + RS^2 = QR^2$
(c) $PR^2 + QR^2 = PQ^2$ (d) $PS^2 + RS^2 = PR^2$

12. 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

13. 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

14. 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

15. 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

16. 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

17. 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

18. 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

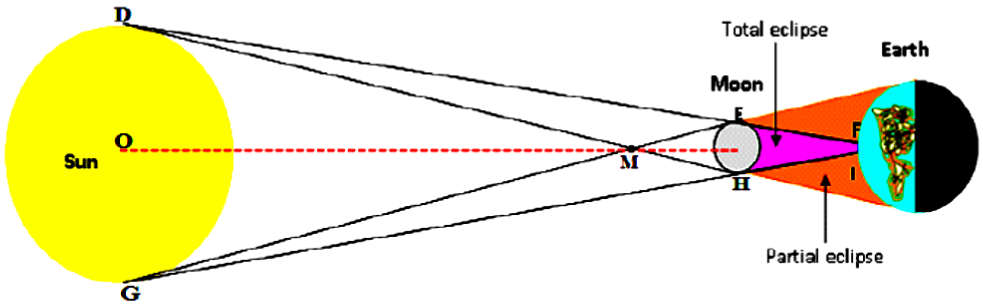
19. Two poles of height 6 m and 11 m stand vertically upright on a plane ground. If the distance between their foot is 12 m, the distance between their tops is
(a) 14 cm (b) 12 cm (c) 13 cm (d) 11 cm

20. 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

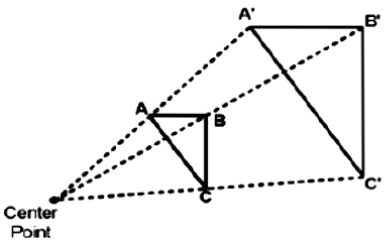
21. If ΔABC and ΔDEF are two triangles such that $\frac{AB}{DE}=\frac{BC}{EF}=\frac{CA}{FD}=\frac{2}{5}$, then $\frac{ar(\Delta ABC)}{ar(\Delta DEF)}=$
(a) 2 : 5 (b) 4 : 25 (c) 4 : 15 (d) 8 : 125

22. 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

23. 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

19.	 A **tangent line** to a circle is a line that intersects the circle at exactly one point. (It appears to brush the edge of a circle). A **point of tangency** is the point where a tangent line intersects with a circle. **Common external tangents** do not intersect the segment that has its endpoints on the centers of the two circles. **Common internal tangents** intersect the segment that has its endpoints on the centers of the two circles.The dotted line represent the line segment that has its endpoints on the centres of the sun and the moon.	
(a)	The drawing above shows how the sun, moon, and earth are aligned for a solar eclipse. Identify the tangents lines which partition an area on the earth that experiences a total solar eclipse. (i) $\overline{EF}$ and $\overline{DE}$ (ii) $\overline{GH}$ and $\overline{HI}$ (iii) $\overline{EF}$ and $\overline{HI}$ (iv) $\overline{DH}$ and $\overline{GE}$	1
(b)	From the above drawing, identify the common external tangents between the sun and the moon. (i) $\overline{HI}$ and $\overline{EF}$ (ii) $\overline{DH}$ and $\overline{GE}$ (iii) $\overline{EF}$ and $\overline{DE}$ (iv) $\overline{DE}$ and $\overline{GH}$	1
(c)	From the above drawing, identify the common internal tangents between the sun and the moon. (i) $\overline{DH}$ and $\overline{GE}$ (ii) $\overline{EF}$ and $\overline{HI}$ (iii) $\overline{DH}$ and $\overline{HI}$ (iv) $\overline{GE}$ and $\overline{EF}$	1
(d)	What is the length of DM in the given picture, if EM = y units, HM = 10 units, GM = (y + 10) units. (i) 15 units (ii) 20 units iii) 10.5 units (iv) 10 units	1
(e)	What is the measure of $\angle DOG$ in the given picture, if $\angle DMG = x°$. (i) 180 ° (ii) $(180 - x)°$ (iii) $(180 + x)°$ (iv) 90°	1

20. A **dilation** stretches or shrinks a figure. The image created by a dilation is similar to the original figure. The scale factor (k) of a dilation is the ratio of corresponding side lengths. The center of a dilation is a fixed point in the plane about which all points are expanded or contracted.



$$\frac{image}{pre-image} : \frac{A'C'}{AC} = \frac{C'B'}{CB} = \frac{A'B'}{AB} = \frac{2}{1} = k \text{ (say)}$$

Scale Factor, *k*:

- If $k > 1$, enlargement.
- If $0 < k < 1$, reduction.
- If $k = 1$, congruence.

(a) From the above given information, triangles ABC and A' B' C ' are similar. Which of the following options will hold good? **1**

(i) **Δ BAC ~ Δ A' B' C '** (ii) **Δ BCA ~ Δ C' B' A '**

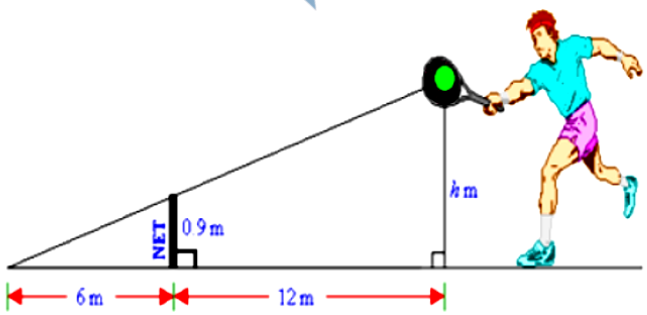
(iii) **Δ CBA ~ Δ B' C' A '** (iv) **Δ CAB ~ Δ C' A' B '**

(b) The dimensions of the model of a multi-storey building are 1.2 m x 75 cm x 2 m. If the scale factor is 1 : 30, what is the actual dimensions of the building. **1**

(i) 36 m x 22. 5 m x 60 m (ii) 10.2 m x 2 m x 15 m

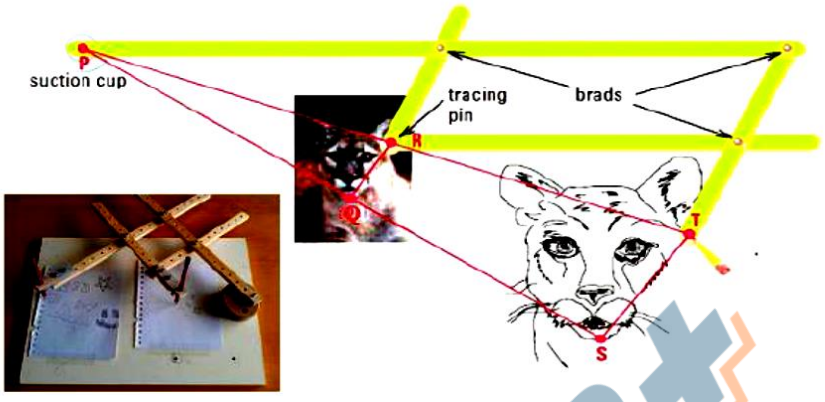
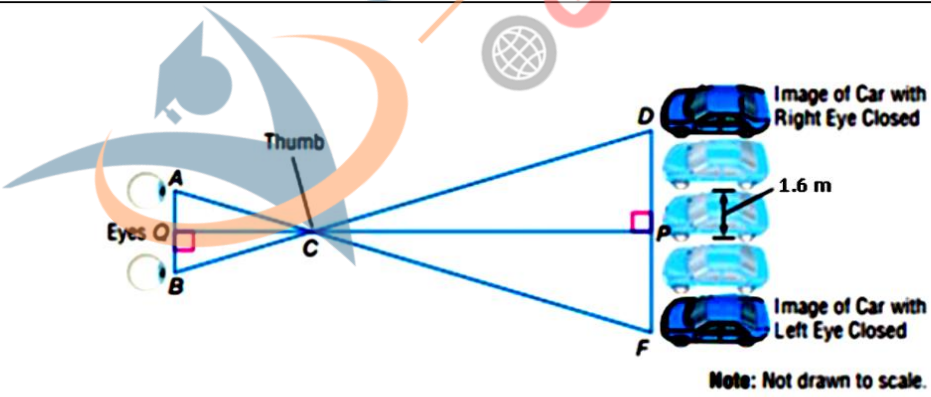
(iii) 120 cm x 150 cm x 200 cm (iv) 24 m x 14.4 m x 80 m

(c) **1**



With what scale factor 0.9 m is to be multiplied to get the value of ' **h**' in the above given real life situation.

(i) 3 : 1 (ii) 1 : 2 (iii) 1 : 3 (iv) 2 : 1

(d)	 **A pantograph** is a mechanical linkage connected in a manner based on parallelograms so that the movement of one pen, in tracing an image, produces identical movements in a second pen. As we move the tracing pin of a pantograph along a figure, the pencil attached to the far end draws an enlargement. As the pantograph expands and contracts, the three brads and the tracing pin always form the vertices of a parallelogram. The ratio of PR to PT is always equal to the ratio of PQ to PS. Also, the suction cup, the tracing pin, and the pencil remain collinear. In the picture given above, , PR is 25.4 cm and RT is 50.8 cm. The length of the cat RQ, in the original print is 6.1 cm . What is the length of TS in the enlargement. (i) 14.3 cm (ii) 12.2 cm (iii) 6.1 cm (iv) 11 cm	1
(e)	 In the above picture, what is the height of PC if QC = 3m where QC is 10 times of AB and DF is 4 times the width of a car where width of the car is 1.6 m. (i) 33 m (ii) 64 m (iii) 44 m (iv) 11 m	1

1. In an equilateral triangle ABC, if AD⊥BC,then

(a) $5AB^2 = 4AD^2$.

(b) $4AB^2 = 3AD^2$.

(c) $3AB^2 = 4AD^2$.

(d) $2AB^2 = 3AD$

2. In a triangle ABC, AC= √180, AB = 6, BC = 12. What is ∠B = ?

(a) 90°

(b) 30°

(c) 45°

(d) 60°

3. In right triangled ABC right angled at B, a line DE is drawn through the mid point D of AB and parallel to BC. If AB = 9 cm, BC = 12 cm. AE = ?

(a) 13 cm

(b) 10 cm

(c) 8.5 cm

(d) 7.5 cm

4. If the legs of an isosceles right triangle are 5 cm long, approximate the length of the hypotenuse to the nearest whole number.

(a) 9 cm

(b) 7 cm

(c) 70 cm

(d) 90 cm

5. A semicircle is drawn on AC. Two chords AB and BC of length 8 cm and 6 cm respectively are drawn in the semicircle. What is the measure of the diameter of the circle?

(a) 14 cm.

(b) 10 cm.

(c) 12 cm.

(d) 11 cm.

6. Three numbers form a Pythagorean triplet. Two of them are 15 and 17 where 17 is the largest of them. The third number is

(a) 8

(b) 12

(c) 13

(d) 5

7. D and E are respectively the points on the sides AB and AC of a triangle ABC such that AD = 3 cm, BD = 5 cm, BC = 12.8 cm and DE || BC. Then length of DE (in cm) is

(a) 4.8 cm

(b) 7.6 cm

(c) 19.2 cm

(d) 2.5 cm

8. In triangle PQR length of the side QR is less than twice the length of the side PQ by 2 cm. Length of the side PR exceeds the length of the side PQ by 10 cm. The perimeter is 40 cm. The length of the smallest side of the triangle PQR is :

(a) 6 cm

(b) 8 cm

(c) 7 cm

(d) 10 cm

9. Which of the following is a Pythagorean triplet ?

(a) (36,18,43)

(b) (15,20,25)

(c) (3,12,13)

(d) (24,25,26)

10. If the sum of the length of the legs of a right triangle is 49 cm and the hypotenuse is 41 cm, find its shortest side.

(a) 19 cm

(b) 40 cm

(c) 4 cm

(d) 9 cm

11. A boy is trying to catch fish sitting at a height of 12 m from the surface of the water. A big fish is at a horizontal distance of 5 m from him. What should be the length of his string to get the fish?

(a) 10

(b) 13

(c) 7

(d) 15

12. The length of the side of a rhombus whose diagonals are of lengths 24 cm and 10 cm is

(a) 17 cm.

(b) 14 cm.

(c) 13 cm.

(d) 16 cm.

13. In ΔABC, AB = 5 cm, AC = 7 cm. If AD is the angle bisector of ∠A. Then BD : CD is:

(a) 25 : 49

(b) 49 : 25

(c) 6 : 1

(d) 5 : 7

14. The monitors of computers are measured along the diagonal. What is the size of the largest monitor that can be placed in a space measuring 17″ x 21″?

(a) 28″

(b) 25″

(c) 26″

(d) 27″

15. Two isosceles triangles have equal angles and their areas are in the ratio 16 : 25. Then, the ratio of their corresponding heights is

(a) 3/5

(b) 5/4

(c) 5/7

(d) 4/5

16. Triangle ABC is such that AB = 3 cm, BC = 2 cm and CA = 2.5 cm. Triangle DEF is similar to ΔABC. If EF = 4 cm, then the perimeter of ΔDEF is :

(a) 7.5 cm

(b) 15 cm

(c) 22.5 cm

(d) 30 cm

17. Three squares are based on the sides of a right angled triangle. The area of the two smaller ones are 144 sq. cm and 256 sq. cm. What is the area of the third one?

(a) 625 sq. cm

(b) 361 sq. cm

(c) 400 sq. cm

(d) 900sq. cm

18. The line segments joining the mid points of the sides of a triangle form four triangles each of which is :

(a) Similar to the original triangle

(b) Congruent to the original triangle

(c) An equilateral triangle

(d) An isosceles triangle

19. Two friends A and B start from the same point in the Eastern and Northern directions at the same time. How far are they from each other when A has travelled 5 km and B has travelled 12 km. distance?

(a) 8 km

(b) 17 km

(c) 10 km

(d) 13 km

20. ABC is a triangle and DE is drawn parallel to BC cutting the other sides at D and E. If AB = 3.6 cm, AC = 2.4 cm and AD = 2.1 cm, then AE is equal to :

(a) 1.4 cm

(b) 1.8 cm

(c) 1.2 cm

(d) 1.05 cm

21. If ΔABC ~ ΔEDF and ΔABC is not similar to ΔDEF, then which of the following is not true?

(a) BC . DE = AB .EF.

(b) AB . EF = AC . DE.

(c) BC . EF = AC . FD.

(d) BC . DE = AB .FD.

22. Triangle ABC is such that AB = 9 cm, BC = 6 cm, AC = 7.5 cm. Triangle ΔDEF is similar to ABC, If EF = 12 cm then DE is :

(a) 6 cm

(b) 16 cm

(c) 18 cm

(d) 15 cm