



SECTION A

1. In $\triangle ABC$, D and E are points on side AB and AC respectively such that $DE \parallel BC$. If $AE=2$ cm, $AD=3$ cm and $BD=4.5$ cm, then find CE.
2. Find the distance between the points A (7, 3) and B (6, 5).
3. ABC is an isosceles triangle with $AC=BC$. If $AB^2 = 2AC^2$, prove that ABC is a right angled triangle.
4. Find the coordinate of a point A, where AB is diameter of a circle whose center is (2, 3) and B (1, 4)
5. 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) $\triangle CDA \sim \triangle PQR$
 - d) $\triangle BCA \sim \triangle PQR$
6. It is given that $\triangle ABC \sim \triangle DEF$, $\angle A = 30^\circ$, $\angle C = 50^\circ$, $AB=5$ cm, $AC=8$ cm and $DF=7.5$ cm, then, which of the following is true.
 - a) $DE=12$ cm, $\angle F = 50^\circ$
 - b) $DE=12$ cm, $\angle F = 100^\circ$
 - c) $EF=12$ cm, $\angle D = 100^\circ$
 - d) $EF=12$ cm, $\angle D = 30^\circ$
7. Two circles are always
 - a) Congruent
 - b) neither similar nor congruent
 - c) Similar but may not be congruent
 - d) none of these
8. The mid-point of the line segment joining the points A(-2, 8) and B(-6, -4) is
 - a) (-4, -6)
 - b) (2, 6)
 - c) (-4, 2)
 - d) (4, 2)
9. The distance of the point P(2, 3) from the x axis is
 - a) 2
 - b) 3
 - c) 1
 - d) 5

10. **Statement A (Assertion):** If the co-ordinates of the mid-points of the sides AB and AC of $\triangle ABC$ are D (3, 5) and E (-3, -3) respectively, then BC=20 units.
Statement R (Reasoning): The line joining the mid-points of two sides of a triangle is parallel to the third side and equal to half of it.
- Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)
 - Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A)
 - Assertion (A) is true but reason (R) is false
 - Assertion (A) is false but reason (R) is true

SECTION B

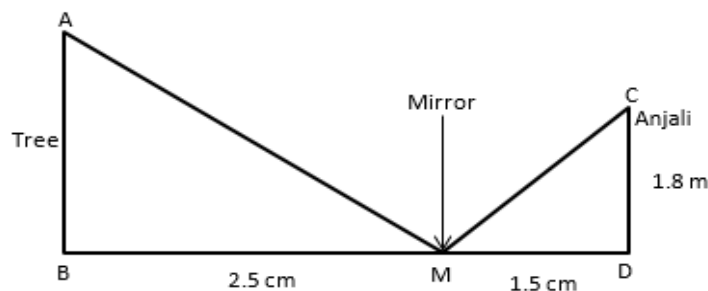
- S and T are points on sides PR and QR of $\triangle PQR$ such that $\angle P = \angle RTS$. Show that $\triangle RPQ \sim \triangle RTS$
- Determine if the points, (1, 5), (2, 3) and (-2, -11) are collinear.
- Find the co-ordinates of the point which divides the join (-1, 7) and (4, -3) in the ratio 2:3.
- Find the ratio in which the line segment joining the points (-3, 10) and (6, -8) is divided by (-1, 6).
- It is given that $\triangle ABC \sim \triangle EDF$ such that AB=5 cm, AC=7 cm, DF= 15 cm and DE=12 cm. Find the lengths of the remaining sides of the triangle.
- Find the points on the x axis which is equidistant from (2, -5) and (-2, 9).

SECTION C

- State and prove Basic Proportionality Theorem.
- Find a relation between x and y such that the point (x, y) is equidistant from the point (3, 6) and (-3, 4).

SECTION D

- 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.
- CASE STUDY**
 Teacher gives an activity to students to measure the height of a tree. Anjali places a mirror on level ground to find its height. She stands at certain distance so that she can see the top of tree reflected from the mirror. Anjali's eye level is 1.8 m above ground. The distance of Anjali and tree from the mirror are 1.5 m and 2.5 m respectively.



a) The two similar triangles formed in figure are

- (i) $\triangle ABM$ and $\triangle CMD$ (ii) $\triangle AMB$ and $\triangle CDM$ (iii) $\triangle ABM$ and $\triangle CDM$ (iv) None of these

b) The two triangles are similar by the similarity criterion.

- (i) SSS (ii) SAS (iii) AA (iv) ASA

c) The height of the tree is:

- (i) 3 m (ii) 3.5 m (iii) 2.5 m (iv) 4m

d) If $\triangle AMB$ and $\triangle CDM$ are similar, $CD=6$ cm, $MD=8$ cm and $BM=24$ cm, then $AB=.....$

- (i) 17 cm (ii) 18 cm (iii) 12 cm (iv) 24 cm

e) In $\triangle AMB$, if $\angle BAM = 30^\circ$ then $\angle MCD$ is equal to:

- (i) 40° (ii) 45° (iii) 60° (iv) 30°
