

Construction

1. Check whether 13 cm, 12 cm, 5 cm can be the sides of a right triangle.
2. (a) If a PL and PM are two tangents to a circle with center \mathbf{O} from an external point \mathbf{P} and $PL = 4$ cm, find the length of OP , where radius of the circle is 3 cm.
 (b) Find the distance between two parallel tangents of a circle of radius 2.5 cm.
3. (a) \mathbf{D} and \mathbf{E} are points on the sides CA and CB respectively of a triangle ABC , right-angled at \mathbf{C} .
 Prove that $AE^2 + BD^2 = AB^2 + DE^2$.
 (b) Diagonals of a trapezium $ABCD$ with $AB \parallel DC$ intersect each other at the point \mathbf{O} . If $AB = 2CD$, find the ratio of the areas of triangles AOB and COD .
4. Answer any **four** of the following questions :
 - (i) Given $\triangle ABC \sim \triangle PQR$. If $\frac{AB}{PQ} = \frac{1}{3}$, then $\frac{ar(\triangle ABC)}{ar(\triangle PQR)}$ is
 - (A) $\frac{1}{3}$
 - (B) 3
 - (C) $\frac{2}{3}$
 - (D) $\frac{1}{9}$
 - (ii) The length of an altitude of an equilateral triangle of side 8 cm is
 - (A) 4 cm
 - (B) $4\sqrt{3}$ cm
 - (C) $\frac{8}{3}$ cm
 - (D) 12 cm
 - (iii) In $\triangle PQR$, $PQ = 6\sqrt{3}$ cm, $PR = 12$ cm and $QR = 6$ cm. The measure of angle \mathbf{Q} is
 - (A) 120°
 - (B) 60°
 - (C) 90°
 - (D) 40°
 - (iv) If $\triangle ABC \sim \triangle PQR$ and $\angle B = 46^\circ$ and $\angle R = 69^\circ$, then the measure of $\angle A$ is
 - (A) 65°
 - (B) 111°
 - (C) 44°
 - (D) 115°

- (v) **P** and **Q** are the points on the sides AB and AC respectively of a $\triangle ABC$ such that $PQ \parallel BC$. If $AP : PB = 2 : 3$ and $AQ = 4$ cm, then AC is equal to
- (A) 6 cm
 (B) 8 cm
 (C) 10 cm
 (D) 12 cm
5. Write the steps of construction of drawing a line segment $AB = 4.8$ cm and finding a point **P** on it such that $AP = \frac{1}{4}AB$.
6. Answer any **four** of the following questions :
- (i) ABC and BDE are two equilateral triangles such that **D** is the mid-point of BC . The ratio of the areas of the triangles ABC and BDE is
- (A) 2:1
 (B) 1:2
 (C) 4:1
 (D) 1:4
- (ii) In $\triangle ABC$, $AB = 4\sqrt{3}$ cm, $AC = 8$ cm and $BC = 4$ cm. The angle B is
- (A) 120°
 (B) 90°
 (C) 60°
 (D) 45°
- (iii) The perimeters of two similar triangles are 35 cm and 21 cm respectively. If one side of the first triangle is 9 cm, then the corresponding side of the second triangle is
- (A) 5.4 cm
 (B) 4.5 cm
 (C) 5.6 cm
 (D) 15 cm
- (iv) In a $\triangle ABC$, **D** and **E** are points on the sides AB and AC respectively such that $DE \parallel BC$ and $AD : DB = 3 : 1$. If $AE = 3.3$ cm, then AC is equal to
- (A) 4 cm
 (B) 1.1 cm
 (C) 4.5 cm
 (D) 5.5 cm
- (v) In an isosceles triangle ABC , if $AC = BC$ and $AB^2 = 2AC^2$, the $\angle C$ is equal to

- (A) 30°
- (B) 45°
- (C) 60°
- (D) 90°