

Maths 10th (Triangles) Paper 1

Total Time: 1 Hour

Total Marks: 30

General Instructions:

1. All questions are **compulsory**.
2. There is no choice in any of the questions.
3. Question numbers **1 to 3** in Section A are one-mark questions.
4. Question numbers **4 to 7** in Section A are two-mark questions.
5. Question numbers **8 to 10** in Section A are three-mark questions.
6. Question numbers **11 to 12** in Section A are five-mark questions.

Question 1. D and E are respectively the points on the sides AB and AC of a triangle ABC such that $AD = 2$ cm, $BD = 3$ cm, $BC = 7.5$ cm and $DE \parallel BC$. Then, length of DE (in cm) is?

Question 2. 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.

Question 3. If in triangles ABC and DEF, $AB/DE = BC/FD$, then they will be similar, when
(A) $\angle B = \angle E$ (B) $\angle A = \angle D$
(C) $\angle B = \angle D$ (D) $\angle A = \angle F$

Question 4. Two sides and the perimeter of one triangle are respectively three times the corresponding sides and the perimeter of the other triangle. Are the two triangles similar? Why?

Question 5. Is it true to say that if in two triangles, an angle of one triangle is equal to an angle of another triangle and two sides of one triangle are proportional to the two sides of the other triangle, then the triangles are similar? Give reasons for your answer.

Question 6. In triangles PQR and MST, $\angle P = 55^\circ$, $\angle Q = 25^\circ$, $\angle M = 100^\circ$ and $\angle S = 25^\circ$. Is $\Delta QPR \sim \Delta TSM$? Why?

Question 7. The ratio of the corresponding altitudes of two similar triangles is $3/5$. Is it correct to say that ratio of their areas is $6/5$? Why?

Question 8. Diagonals of a trapezium PQRS intersect each other at the point O, $PQ \parallel RS$ and $PQ = 3 RS$. Find the ratio of the areas of triangles POQ and ROS.

Question 9. Corresponding sides of two similar triangles are in the ratio of $2:3$. If the area of the smaller triangle is 48 cm^2 , find the area of the larger triangle.

Question 10. A 15 metres high tower casts a shadow 24 metres long at a certain time and at the same time, a telephone pole casts a shadow 16 metres long. Find the height of the telephone pole.

Question 11. In Fig 6.13, OB is the perpendicular bisector of the line segment DE, $FA \perp OB$ and FE intersects OB at the point C. Prove that $1/OA + 1/OB = 2/OC$.

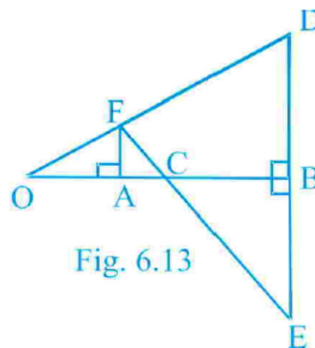


Fig. 6.13

Question 12. Prove that the area of the semicircle drawn on the hypotenuse of a right-angled triangle is equal to the sum of the areas of the semicircles drawn on the other two sides of the triangle.