



Instructions

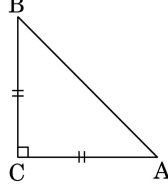
1. Rough work at the last page should be in proper manner too
2. New section on new page
3. Honesty is the best policy.

SECTION-A

Q1. If $\triangle ABC \sim \triangle DEF$ such that $AB = 1.2\text{cm}$ and $DE = 1.4\text{cm}$, the ratio of the areas of $\triangle ABC$ and $\triangle DEF$ is: 1 Mark

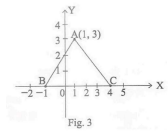
- A 49 : 36 B 6 : 7 C 7 : 6 D 36 : 49

Q2. In Figure, $\triangle ABC$ is an isosceles triangle, right-angled at C. Therefore. 1 Mark



- A $AB^2 = 2AC^2$ B $BC^2 = 2AB^2$ C $AC^2 = 2AB^2$ D $AB^2 = 4AC^2$

Q3. In Fig. 3, the area of triangle ABC (in sq. units) is: 1 Mark

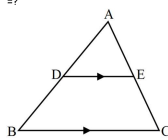


- A 15 B 10 C 7.5 D 2.5

Q4. If the diagonals of a quadrilateral divide each other proportionally then it is a: 1 Mark

- A Parallelogram B Trapezium C Rectangle D Square

Q5. In a $\triangle ABC$, if DE is drawn parallel to BC, cutting AB and AC at D and E respectively such that $AB = 7.2\text{cm}$, $AC = 6.4\text{cm}$ and $AD = 4.5\text{cm}$. Then, AE =? 1 Mark



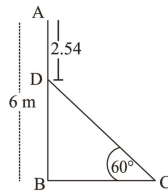
- A 5.4cm B 4cm C 3.6cm D 3.2cm

Q6. In $\triangle ABC$, it is given that $AB = 9\text{cm}$, $BC = 6\text{cm}$ and $CA = 7.5\text{cm}$. Also, $\triangle DEF$ is given such that $EF = 8\text{cm}$ and $\triangle DEF \sim \triangle ABC$. Then, perimeter of $\triangle DEF$ is: 1 Mark

- A 22.5cm B 25cm C 27cm D 30cm

Q7. DIRECTION: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as: 1 Mark

- Assertion: D and E are points on the sides AB and AC respectively of a $\triangle ABC$ such that $AB = 10.8\text{cm}$, $AD = 6.3\text{cm}$, $AC = 9.6\text{cm}$ and $EC = 4\text{cm}$ then DE is parallel to BC.
Reason: If a line is parallel to one side of a triangle then it divides the other two sides in the same ratio.
- A Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
B Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
C Assertion (A) is true but reason (R) is false.
D Assertion (A) is false but reason (R) is true.



Q16. In Figure 2, if $\angle ATO = 40^\circ$, find $\angle AOB$. 1 Mark

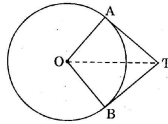
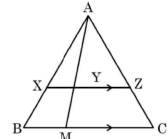


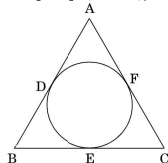
Figure 2

SECTION-B

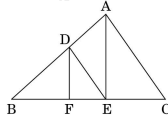
Q17. In the given figure, XZ is parallel to BC. $AZ = 3\text{cm}$, $ZC = 2\text{cm}$, $BM = 3\text{cm}$ and $MC = 5\text{cm}$. Find the length of XY. 2 Marks



Q18. In the given figure, if $AB = AC$, prove that $BE = EC$. 2 Marks



Q19. In the given Figure, $DE \parallel AC$ and $DF \parallel AE$. Prove that $\frac{DE}{FE} = \frac{DF}{EC}$. 2 Marks



Q20. Triangle ABC and DEF are similar. If area ($\triangle ABC$) = 16cm^2 , area ($\triangle DEF$) = 25cm^2 and $BC = 2.3\text{cm}$, find EF. 2 Marks

Q21. In $\triangle ABC$, ray AD bisects $\angle A$ and intersects BC in D. If $BC = a$, $AC = b$ and $AB = c$, prove that $DC = \frac{ab}{a+c}$. 2 Marks

Q22. In the figure, $\triangle AMB \sim \triangle CMD$; determine MD in terms of x, y and z. 2 Marks

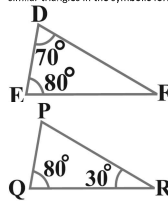
Q8. ABC is an equilateral triangle of side 2a, then length of one of its altitude is _____. 1 Mark

Q9. Fill in the blank using the correct word given in brackets: All _____ triangles are similar. (isosceles, equilateral) 1 Mark

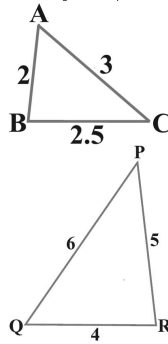
Q10. Write the truth value (T/F) of the following statements: Any two congruent figures are similar. 1 Mark

Q11. Write the truth value (T/F) of the following statements: Two triangles are similar, if their corresponding angles are proportional. 1 Mark

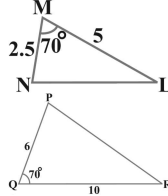
Q12. State which pairs of triangles in Fig. are similar. Write the similarity criterion used by you for answering the question and also write the pairs of similar triangles in the symbolic form: 1 Mark



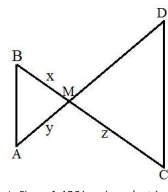
Q13. State which pairs of triangles in Fig. are similar. Write the similarity criterion used by you for answering the question and also write the pairs of similar triangles in the symbolic form: 1 Mark



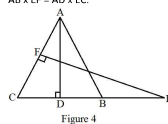
Q14. State which pairs of triangles in Fig. are similar. Write the similarity criterion used by you for answering the question and also write the pairs of similar triangles in the symbolic form: 1 Mark



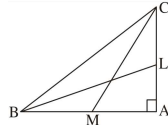
Q15. In Fig. 1, AB is a 6 m high pole and CD is a ladder inclined at an angle of 60° to the horizontal and reaches up to a point D of pole. If $AD = 2.54\text{ m}$, find the length of the ladder. (use $\sqrt{3} = 1.73$) 1 Mark



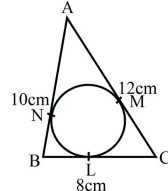
Q23. In Figure 4, ABC is an isosceles triangle in which $AB = AC$. E is a point on the side CB produced, such that $FE \perp AC$. If $AD \perp CB$, prove that: $AB \times EF = AD \times EC$. 3 Marks



Q24. In Figure 1 BL and CM are medians of a $\triangle ABC$ right-angled at A. Prove that $4(BL^2 + CM^2) = 5 BC^2$. 3 Marks

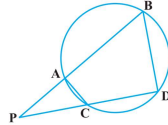


Q25. In Fig., a circle is inscribed in a $\triangle ABC$ having sides $BC = 8\text{cm}$, $AB = 10\text{cm}$ and $AC = 12\text{cm}$. Find the lengths BL, CM and AN. 3 Marks

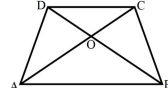


SECTION-C

Q26. In Fig. two chords AB and CD of a circle intersect each other at the point P (when produced) outside the circle. Prove that: 4 Marks



Q27. In the adjoining figure, ABCD is a trapezium in which $CD \parallel AB$ and its diagonals intersect at O. If $AO = (2x + 1)\text{cm}$, $OC = (5x - 7)\text{cm}$, $DO = (7x - 5)\text{cm}$ and $OQ = (7x + 1)\text{cm}$, find the value of x. 4 Marks



Q28. In an equilateral triangle ABC, D is a point on side BC such that $BD = \frac{1}{3} BC$. Prove that $9AD^2 = 7AB^2$. 5 Marks