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PRACTICE PAPER 04 (2025-26)
CHAPTER 06 TRIANGLES

SUBJECT: MATHEMATICS **MAX. MARKS : 40**
CLASS : X **DURATION : 1½ hrs**

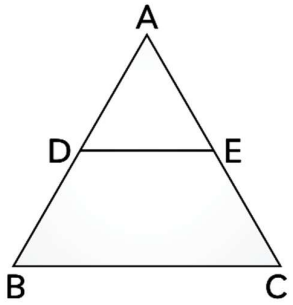
General Instructions:
(i). **All** questions are compulsory.
(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.
(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.
(iv). There is no overall choice.
(v). **Use of Calculators is not permitted**

SECTION – A
Questions 1 to 10 carry 1 mark each.

1. In the ΔABC, DE ‖ BC and AD = 3x − 2, AE = 5x − 4, BD = 7x − 5, CE = 5x − 3, then find the value of x
(a) 1 (b) 7/10 (c) both (a) & (b) (d) none of these

2. ABCD is a trapezium with AD ‖ BC and AD = 4cm. If the diagonals AC and BD intersect each other at O such that AO/OC = DO/OB =1/2, then BC =
(a) 6cm (b) 7cm (c) 8cm (d) 9cm

3. In the given figure, DE ‖ BC, AE = a units, EC =b units, DE =x units and BC = y units. Which of the following is true?

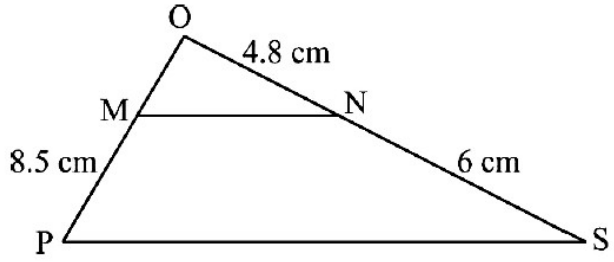


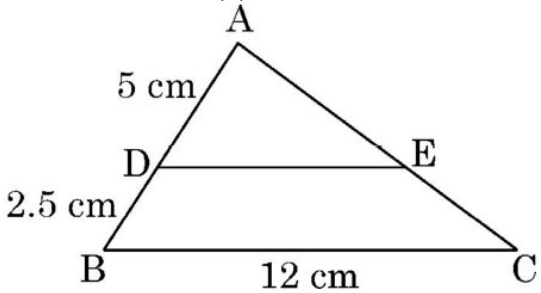
(a) $x = \frac{a+b}{ay}$ (b) $y = \frac{ax}{a+b}$ (c) $x = \frac{ay}{a+b}$ (d) $\frac{x}{y} = \frac{a}{b}$

4. ΔABC~ΔPQR. If AM and PN are altitudes of ΔABC and ΔPQR respectively and $AB^2 : PQ^2 = 4 : 9$, then AM : PN =
(a) 3 : 2 (b) 16 : 81 (c) 4 : 9 (d) 2 : 3

5. The perimeters of two similar triangles ABC and PQR are 56 cm and 48 cm respectively. PQ/AB is equal to
(a) 7/8 (b) 6/7 (c) 7/6 (d) 8/7

6. In the below left sided figure, if M and N are points on the sides OP and OS respectively of ΔOPS, such that MN || PS, then the length of OP is :
(a) 6.8 cm (b) 17 cm (c) 15.3 cm (d) 9.6 cm





7. In the above right sided figure ΔABC is shown. DE is parallel to BC. If AD = 5 cm, DB = 2.5 cm and BC = 12 cm, then DE is equal to
(a) 10 cm (b) 6 cm (c) 8 cm (d) 7.5 cm

8. In ΔABC, PQ || BC. If PB = 6 cm, AP = 4 cm, AQ = 8 cm, find the length of AC.
(a) 12 cm (b) 20 cm (c) 6 cm (d) 14 cm

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:
(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.

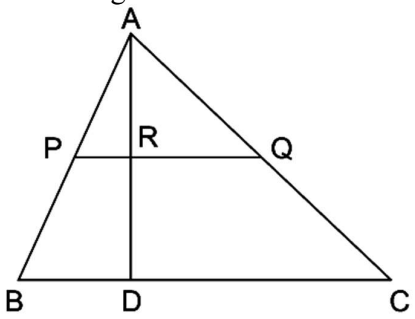
9. **Assertion (A):** D and E are points on the sides AB and AC respectively of a ΔABC such that AD = 5.7cm, DB = 9.5cm, AE = 4.8cm and EC = 8cm then DE is not parallel to BC.
Reason (R): If a line divides any two sides of a triangle in the same ratio then it is parallel to the third side.

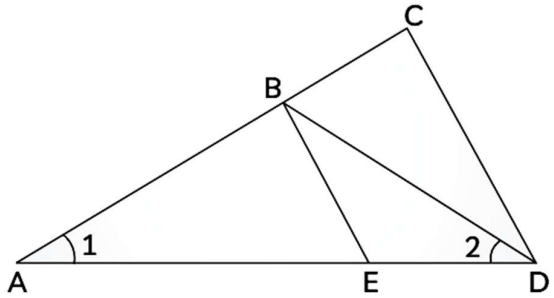
10. **Assertion (A):** D and E are points on the sides AB and AC respectively of a ΔABC such that DE ∥ BC then the value of x is 4, when AD = x cm, DB = (x – 2) cm, AE = (x + 2) cm and EC = (x – 1) cm.
Reason (R): If a line is parallel to one side of a triangle then it divides the other two sides in the same ratio.

SECTION – B

Questions 11 to 14 carry 2 marks each.

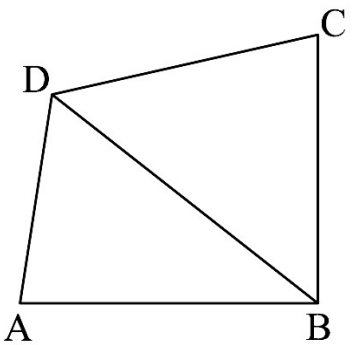
11. In the below left sided figure, AP = 3 cm, AR = 4.5 cm, AQ = 6 cm, AB = 5 cm, AC = 10 cm. Find the length of AD



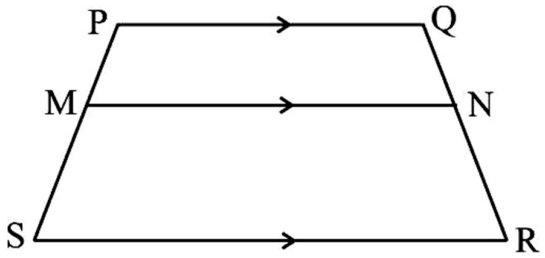


12. In the above right sided figure, AD/AE=AC/BD and ∠1=∠2. Show that Δ BAE~ ΔCAD .

13. In the given figure, ABCD is a quadrilateral. Diagonal BD bisects ∠B and ∠D both. Prove that (i) ΔABD ~ ΔCBD (ii) AB = BC



14. PQRS is a trapezium with PQ || SR. If M and N are two points on the non-parallel sides PS and QR respectively, such that MN is parallel to PQ, then show that $\frac{PM}{MS} = \frac{QN}{NR}$.



OR

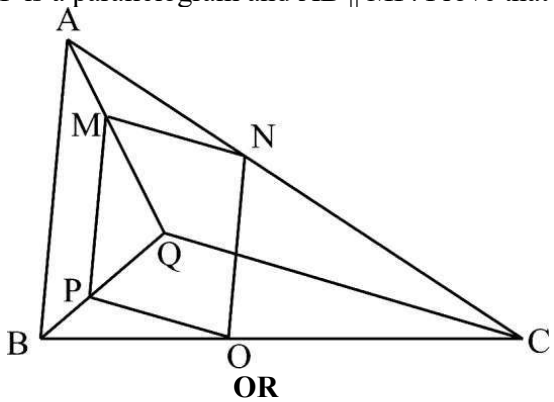
Diagonals AC and BD of trapezium ABCD with AB||DC intersect each other at point O. Show that OA/OC = OB/OD.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. D is a point on the side BC of a triangle ABC such that ∠ADC = ∠BAC, prove that $CA^2 = CB.CD$

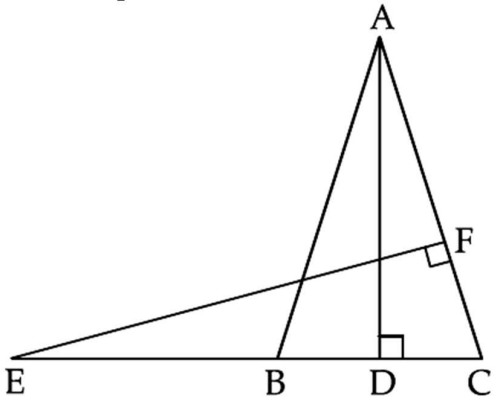
16. In the given figure, MNOP is a parallelogram and AB || MP. Prove that QC || PO.



OR

A girl of height 100 cm is walking away from the base of a lamp post at a speed of 1.9 m/s. If the lamp is 5 m above the ground, find the length of her shadow after 4 seconds.

17. In the given figure, E is a point on the side CB produced of an isosceles triangle ABC with AB = AC. If AD ⊥ BC and EF ⊥ AC, them prove that ΔABD ~ ΔECF.



SECTION – D

Questions 18 carry 5 marks.

18. State and prove Basic Proportional Theorem.

OR

Sides AB and AC and median AD to ΔABC are respectively proportional to sides PQ and PR and median PM of another triangle PQR. Show that ΔABC ~ ΔPQR.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

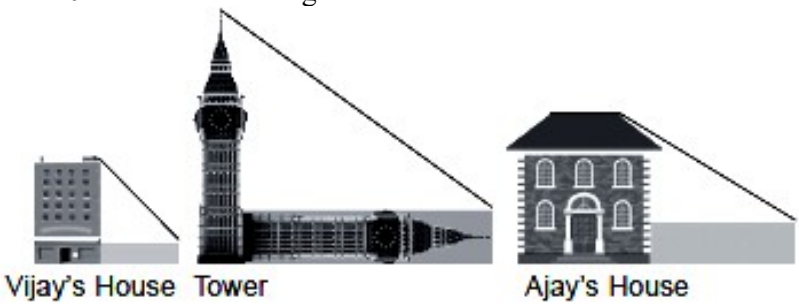
19. While browsing through the catalogue of wooden shelves, Karthik came across this beautiful triangular shaped shelf. In the shelf, DE is parallel to the base BC could be used for displaying small plants and showpieces.

(a) Find the relation between the sides AD, DB, AE and EC. Also, mention the theorem used. (1)
(b) With measurement AE = 1.8 cm, BD = 7.2 cm and CE = 5.4 cm. Karthik thought of finding the length of side AD from the given figure of shelf. How he will find the length. (1)
(c) Find the value of x if AD = (x + 3) cm, BD = (3x + 19) cm, AE = x cm and EC = (3x + 4) cm. (2)

OR

(c) If AB = 9 cm, AC = 18 cm, AD = 2 cm and AE = 4 cm, then prove that DE || BC. (2)

20. Vijay is trying to find the average height of a tower near his house. He is using the properties of similar triangles. The height of Vijay's house if 20 m when Vijay's house casts a shadow 10 m long on the ground. At the same time, the tower casts a shadow 50 m long on the ground and the house of Ajay casts 20 m shadow on the ground.



(a) What is the height of the tower? (1)
(b) What is the height of Ajay's house? (1)
(c) What will be the length of the shadow of the tower when Vijay's house casts a shadow of 12 m? (2)

OR

(c) When the tower casts a shadow of 40 m, same time what will be the length of the shadow of Ajay's house? (2)