QUESTION BANK
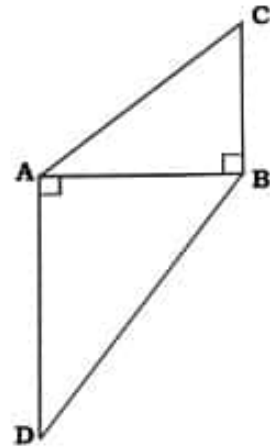
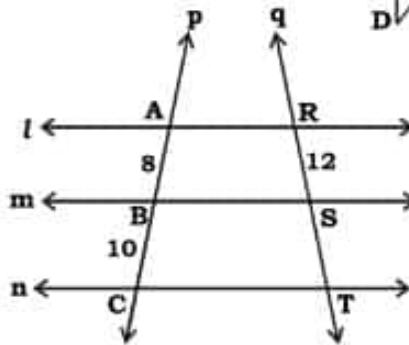### CHAPTER 1 - SMILARITY

1 MARK QUESTIONS

1. In the figure, BC ⊥ AB, AD ⊥ AB,
    BC = 4, AD = 8,
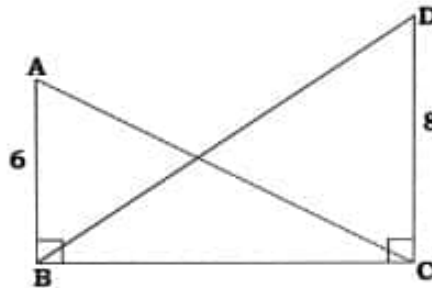
    then find $\dfrac{A(\triangle ABC)}{A(\triangle ADB)}$

2. In the adjoining figure,
    line l ∥ line m ∥ line n.
    Lines p and q are transversals.
    From the given information,
    find ST.

3. $\triangle ABC \sim \triangle APQ$, if $\dfrac{A(\triangle ABC)}{A(\triangle APQ)} = \dfrac{1}{4}$, find $\dfrac{BC}{PQ}$.

4. $\triangle ABC \sim \triangle PQR$. State which ratio of sides are equal to $\dfrac{AB}{PQ}$.

5. $A(\triangle PQR)$ = 24 cm², the height QS is 8 cm. What is the length of side PR ?

6. ∠ABC = ∠DCB = 90°
    AB = 6, DC = 8,

    then $\dfrac{A(\triangle ABC)}{A(\triangle DCB)} = ?$

7. If $\triangle DEF \sim \triangle MNK$, DE = 5, MN = 6, find the value of $\dfrac{A(\triangle DEF)}{A(\triangle MNK)}$.
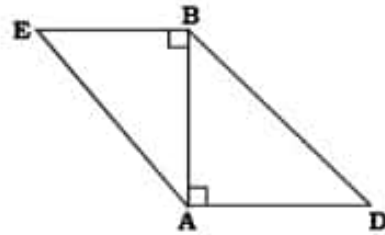
8. In $\triangle ABC$, D is a point on side BC such that BD = 6 cm and DC = 4 cm. Find A ($\triangle ABD$) : A ($\triangle ADC$).
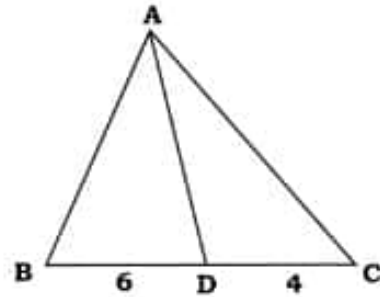
9. For $\triangle ABC \sim \triangle PQR$, state all the corresponding congruent angles.

10. In the adjoining figure, seg BE $\perp$ seg AB and seg BA $\perp$ seg AD. If BE = 6 and AD = 9 find $\dfrac{A\ (\triangle ABE)}{A\ (\triangle ABD)}$

11. If $\triangle ABC \sim \triangle DEF$, A ($\triangle ABC$) = 36 cm², A ($\triangle DEF$) = 64 cm², what is the ratio of the length of sides BC and EF ?

12. The height and the base of $\triangle ABC$ and $\triangle PQR$ are equal. Find $\dfrac{A\ (\triangle ABC)}{A\ (\triangle PQR)}$.

13. If $\triangle PQR \sim \triangle XYZ$, $\dfrac{PR}{XZ} = \dfrac{2}{3}$ and PQ = 12, then find XY.

14. $\triangle PQR \sim \triangle XYZ$. If m $\angle Q = 60°$, then find m $\angle Y$.

15. $\triangle ABC \sim \triangle APQ$, if $\dfrac{A\ (\triangle ABC)}{A\ (\triangle APQ)} = \dfrac{1}{4}$, find $\dfrac{BC}{PQ}$.

16. A ($\triangle PQR$) = 24 cm², the height QS is 8 cm. What is the length of side PR ?
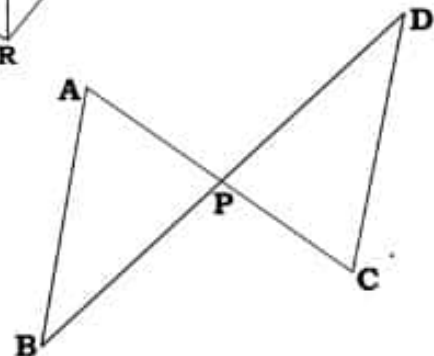
2 MARK QUESTIONS

1. In the figure, PM = 10 cm, A($\triangle$ PQS) = 100 sq.cm, A($\triangle$ QRS) = 110 sq.cm, then find NR
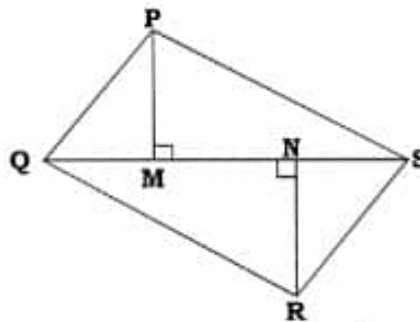
2. In the figure, seg AC and seg BD interest each other in point P and $\dfrac{AP}{CP} = \dfrac{BP}{DP}$
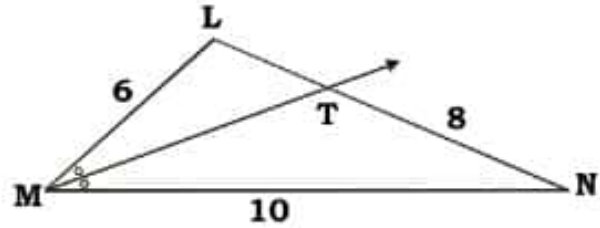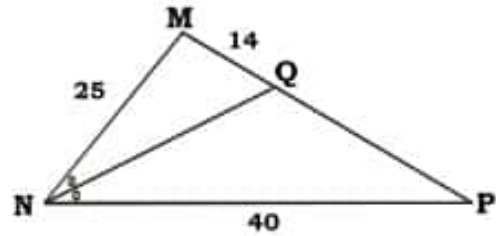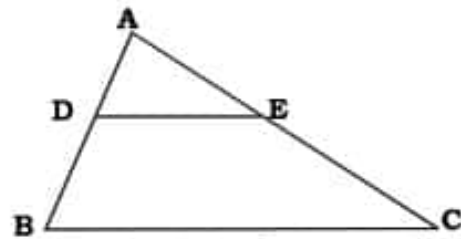
    Prove that : $\triangle ABP \sim \triangle CDP$
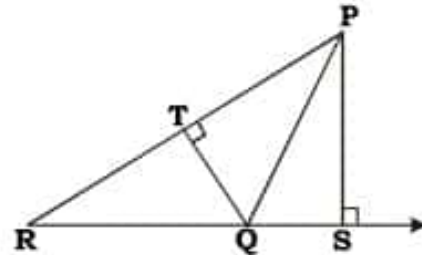
3. In ΔLMN, ray MT bisects ∠LMN
   If LM = 6, MN = 10, TN = 8,
   then find LT.

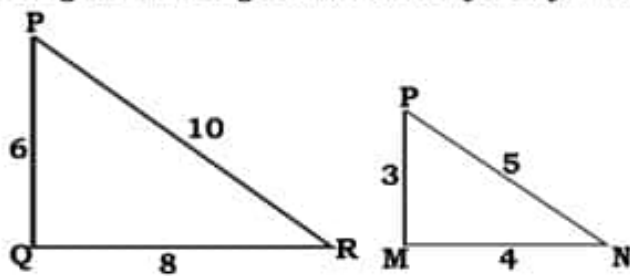4. Find QP, using the given information
   in the figure.

5. In ΔABC, DE ‖ BD
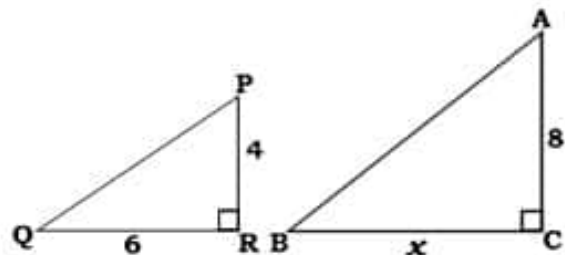   If DB = 5.4 cm, AD = 1.8 cm,
   EC = 7.2 cm, then find AE

6. In the adjoining figure,
   seg PS ⊥ seg RQ, seg QT ⊥ seg PR,
   If RQ = 6, PS = 6 and PR = 12,
   then find QT.

7. Are the triangles in the figure similar? If yes, by which test? Justify.

8. As shown in the figure, two poles of
   height 8 m and 4 m are perpendicular
   to the ground. If the length of the
   shadow of smaller pole due to sunlight
   is 6 m, then how long will be the
   shadow of the bigger pole at the same
   time?

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9. ΔLMN ~ PQR, 9 × A (ΔPQR) = 16 × A (ΔLMN). If QR = 20, then find MN.

10. Ratio of areas of two triangles with equal heights is 2 : 3. If base of the smaller triangle is 6 cm, then what is the corresponding base of the bigger triangle?

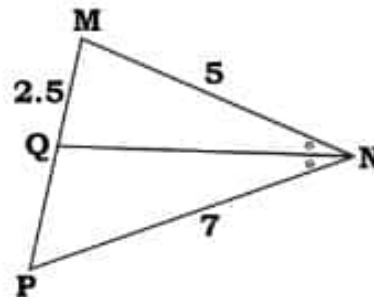11. From the information given in the adjoining figure, state whether ray PM is the bisector of ∠QPR.
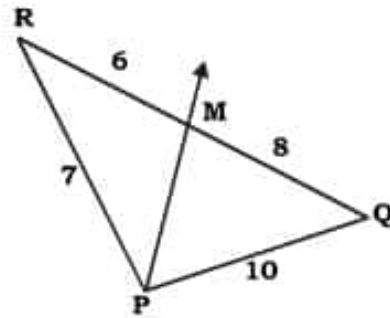
12. In ΔPQR, PM = 15, PQ = 25, PR = 20, NR = 8. State whether line NM is parallel to side RQ. Give reason.
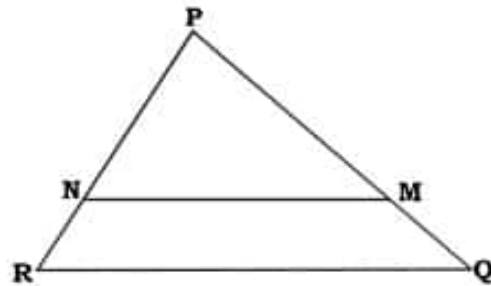

13. Base of a triangle is 9 and height is 5. Base of another triangle is 10 and height is 6. Find the ratio of areas of these triangles.

14. In ΔMNP, NQ is a bisector of ∠ N. If MN = 5, PN = 7, MQ = 2.5, then find QP.


15. Areas of two similar triangles are 225 sq.cm. and 81 sq.cm. If a side of the smaller triangle is 12 cm, then find the corresponding side of the bigger triangle.

16. In the figure, ∠ABC = 75°, ∠EDC = 75° state which two triangles are similar and by which test? Also write the similarity of these two triangles by a proper one to one correspondence.
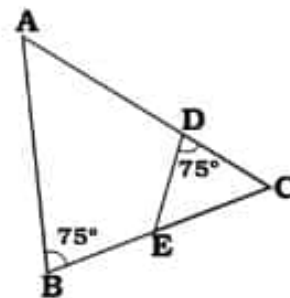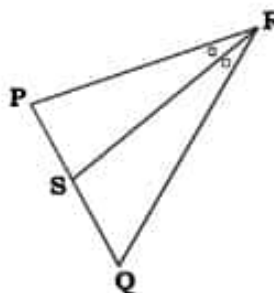
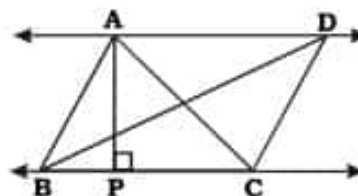17. Measures of some angles in the figure are given.

Prove that $\dfrac{AP}{PB} = \dfrac{AQ}{QC}$
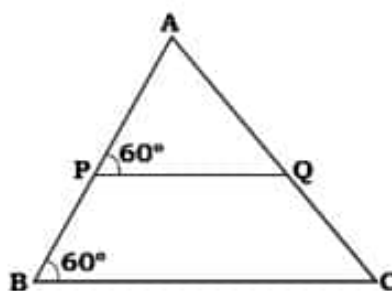
18. In ΔPQR, seg RS bisects ∠R. If PR = 15, RQ = 20 PS = 12, then find SQ.

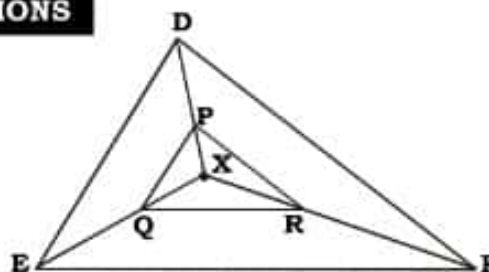19. In the adjoining figure, AP ⊥ BC, AD ∥ BC, then find A(Δ ABC) : A(Δ BCD)

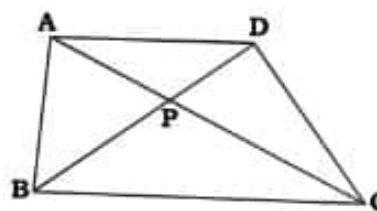## 3 MARK QUESTIONS

1. In the figure, X is any point in the interior of triangle. Point X is joined to vertices of triangle. seg PQ ∥ seg DE, seg QR ∥ seg EF.

   Prove that : seg PR ∥ seg DF.

2. In ▱ ABCD, seg AD ∥ seg BC. Diagonal AC and diagonal BD intersect each other in point P.
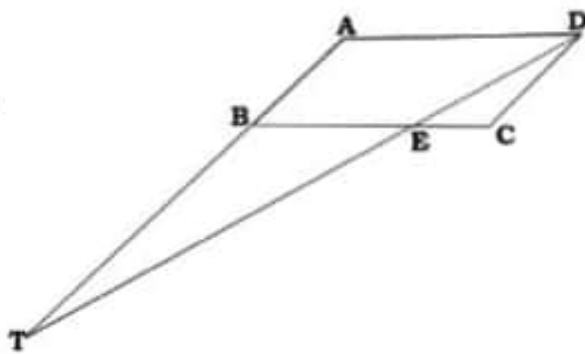
   Then show that $\dfrac{AP}{PD} = \dfrac{PC}{BP}$

3. In Δ PQR seg PM is a median. Angle bisectors of ∠PMQ and ∠PMR intersect side PQ and side PR in points X and Y respectively.

   Prove that XY ∥ QR.
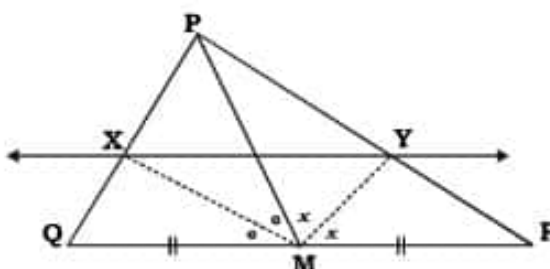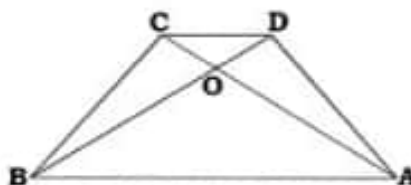
4. ▭ ABCD is a parallelogram.
Point E is on side BC.
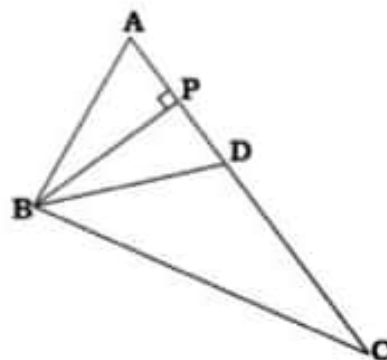Line DE intersects ray AB in point T.
Prove that DE × BE = CE × TE

5. In trapezium ABCD,
side AB ∥ side DC,
diagonals AC and BD
intersect in point O.
If AB = 20, DC = 6, OB = 15,
then find OD.

6. In ΔABC, ray BD bisects ∠ABC and ray CE bisects ∠ACB.
If seg AB ≅ seg AC, then prove that ED ∥ BC.

7. In the adjoining figure, in ΔABC,
point D is on side AC.
If AC = 16, DC = 9 and
BP ⊥ AC,
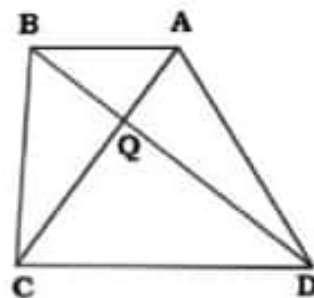then find the following ratios.

(i) $\dfrac{A(\triangle ABD)}{A(\triangle ABC)}$
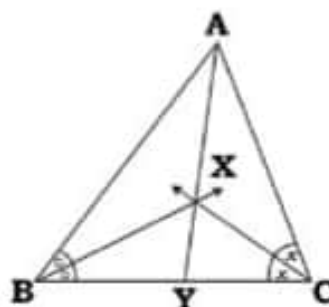
(ii) $\dfrac{A(\triangle BDC)}{A(\triangle ABC)}$

(iii) $\dfrac{A(\triangle ABD)}{A(\triangle BDC)}$

8. Diagonals of quadrilateral ABCD
intersect in point Q.
If 2QA = QC,
2QB = QD,
then prove that DC = 2AB

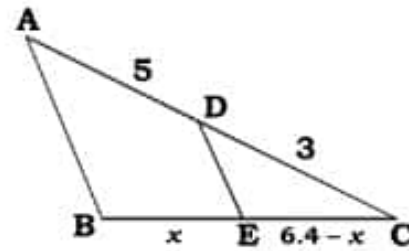9. In the figure, bisectors of ∠B and ∠C
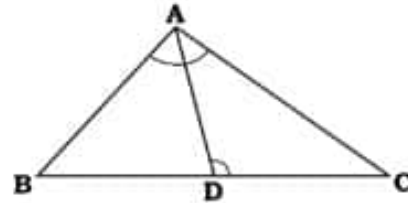of ΔABC intersect each other in point X.
Line AX intersects side BC in point Y.

AB = 5, AC = 4, BC = 6, then find $\dfrac{AX}{XY}$

10. In the figure, A–D–C and B–E–C,
    seg DE ∥ side AB. If AD = 5,
    DC = 3, BC = 6.4, then find BE.

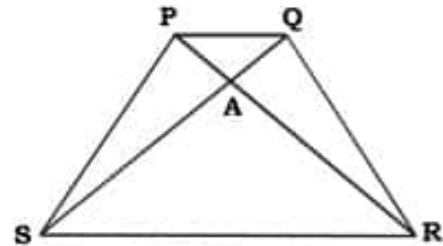11. In the figure, in △ABC,
    point D on side BC is such that,
    ∠BAC = ∠ADC.
    Prove that : $CA^2 = CB \times CD$

12. In △ ABC, ray BD bisects ∠ ABC and ray CE bisects ∠ ACB.
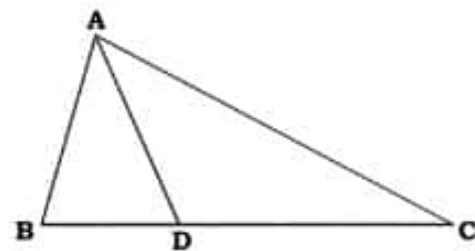   If seg AB ≅ seg AC, then prove that ED ∥ BC.

13. In trapezium PQRS,
    side PQ ∥ side SR, AR = 5AP,
    AS = 5AQ, then
    Prove that : SR = 5PQ

14. In △ABC, ray BD bisects ∠ABC and ray CE bisects ∠ACB.
    If seg AB ≅ seg AC, then prove that ED ∥ BC.

15. In ABC, B–D–C and BD = 7,
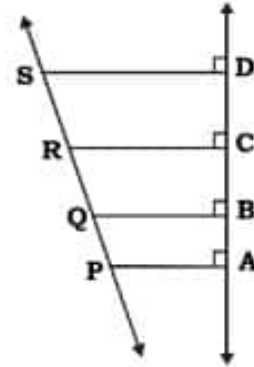   BC = 20, then find following ratios.

    (i) $\dfrac{A(\triangle ABD)}{A(\triangle ADC)}$

    (ii) $\dfrac{A(\triangle ABD)}{A(\triangle ABC)}$

    (iii) $\dfrac{A(\triangle ADC)}{A(\triangle ABC)}$

4 MARK QUESTIONS

1. **Prove :** If a line parallel to a side of a triangle intersects the remaining sides in two distinct points, then the line divides the sides in proportion.

2. In the figure, seg PA, seg QB, seg RC and seg SD are perpendicular to line AD.
    AB = 60, BC = 70, CD = 80,
    PS = 280, then find PQ, QR and RS.

3. **Prove :** The bisector of an angle of a triangle divides the side opposite to the angle in the ratio of the remaining sides.

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