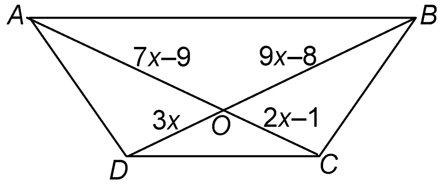
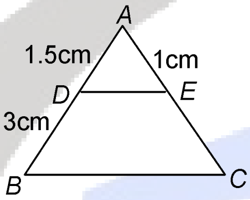
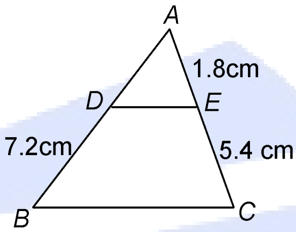
1. M and N are points on the sides PQ and PR respectively of ΔPQR. State whether MN II QR. Given PQ = 15.2 cm, PR = 12.8 cm, PM = 5.7 cm, PN = 4.8 cm.
2. In the following figure, if AB II DC, find the value of x.




3. In the given figure (i) and (ii) DE || BC. Find EC in (i) and AD in (ii)

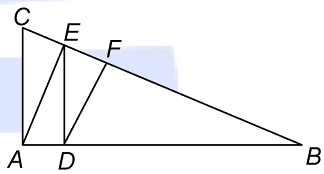


(i)

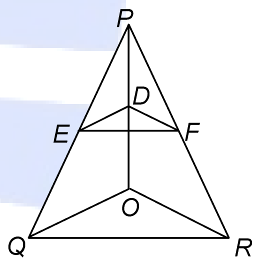


(ii)

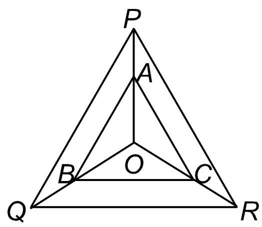
4. In the figure, if DE || AC and DF || AE, prove that $\frac{BF}{EF} = \frac{BE}{CE}$.




5. In the given figure, if DE || OQ and DF || OR, prove that EF || QR.

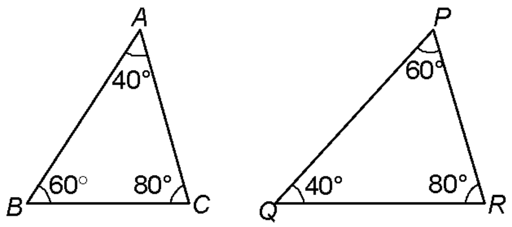



6. In figure, PQ || AB and PR || AC, prove that QR || BC.

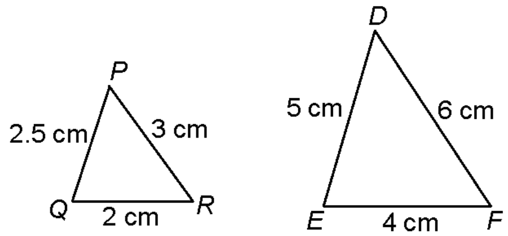



7. Using Basic proportionality theorem, prove that the line drawn through the mid point of one side of a triangle parallel to another side bisects the third side.
8. ABCD is a trapezium such that AB || DC. The diagonals AC and BD intersect at O. Prove that $\frac{AO}{OC} = \frac{BO}{DO}$ or $\frac{AO}{BO} = \frac{CO}{DO}$.

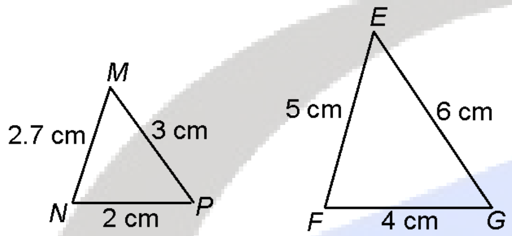
9. Examine each pair of triangles in figure and state which pair of triangles are similar. Also, state the similarity criterion used and write the similarity relation in symbolic form.



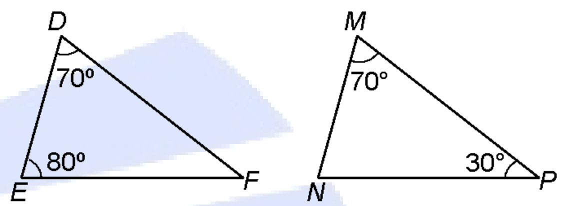

(i)




(ii)




(iii)

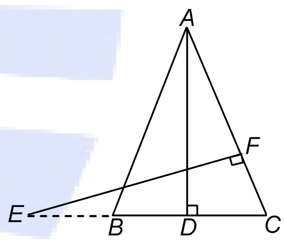



(iv)

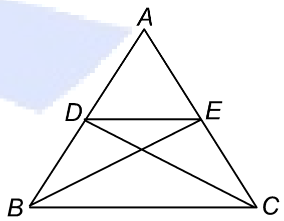
10. Prove that the ratio of the perimeters of two similar triangles is the same as the ratio of their corresponding sides.

11. A vertical stick 12m long casts a shadow 8m long on the ground. At the same time a tower casts the shadow 40m long on the ground. Determine the height of the tower.

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



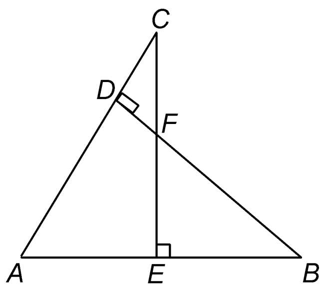

13. In figure, if ΔABE ≅ ΔACD, prove that ΔADE ~ ΔABC.



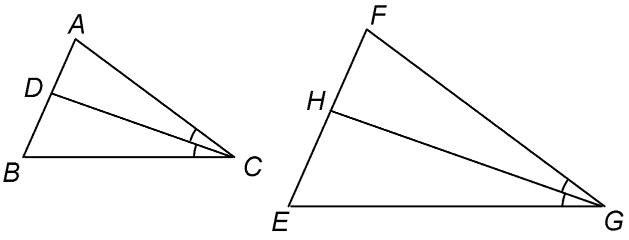

14. In figure, if BD ⊥ AC and CE ⊥ AB, prove that

(i) ΔAEC ~ ΔADB

(ii) $\frac{CA}{AB} = \frac{CE}{DB}$



15. If CD and GH (D and H lie on AB and FE) are respectively bisectors of $\angle ACB$ and $\angle EGF$ and $\Delta ABC \sim \Delta FEG$, prove that

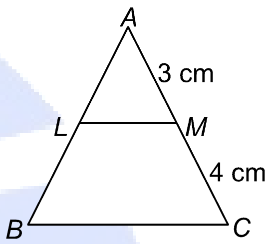



(i) $\frac{CD}{GH} = \frac{AC}{FG}$

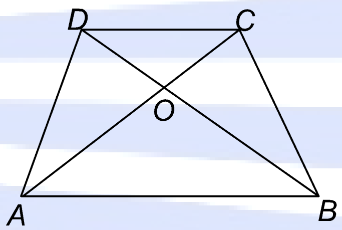
(ii) $\Delta DCB \sim \Delta HGE$

16. The areas of two similar triangles ABC and PQR are 64 $cm^2$ and 36 $cm^2$ respectively. If QR = 16.5 cm, find BC.

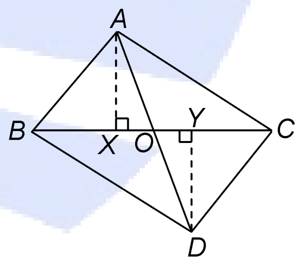
17. In the given figure, LM || BC. AM = 3 cm, MC = 4 cm.
If the ar($\Delta$ALM) = 27 $cm^2$, calculate the ar($\Delta$ABC).




18. In the given figure, ABCD is a trapezium in which AB || DC and AB = 2 CD. Find the ratio of the areas of triangles AOB and COD.




19. In figure, prove that $\frac{\text{Area}(\Delta ABC)}{\text{Area}(\Delta DBC)} = \frac{AO}{DO}$.

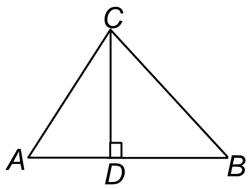



20. Two isosceles triangles have equal vertical angles and their area are in the ratio 16 : 25. Find the ratio of their corresponding heights.

21. A ladder is placed in such a way that its foot is at a distance of 5 m from a wall and its top reaches a window 12 m above the ground. Determine the length of the ladder.

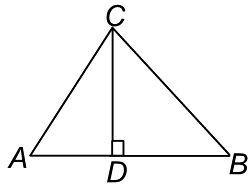
22. A ladder 15 m long reaches a window which is 9 m above the ground on one side of a street. Keeping its foot at the same point, the ladder is turned to the other side of the street to reach a window 12 m high. Find the width of the street.

23. In the given figure, $\angle ACB = 90°$ and $CD \perp AB$.




Prove that $\frac{BC^2}{AC^2} = \frac{BD}{AD}$.

24. ABC is a triangle right-angled at C and p is the length of the perpendicular from C to AB. Show that




(a) pc = ab

(b) $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$; where a = BC, b = AC and c = AB.

25. In ΔABC, $\angle C > 90°$ and side AC is produced to D such that segment BD is perpendicular to segment AD. Prove that $AB^2 = AC^2 + 2CA \times CD$.

26. In ΔABC, $\angle B < 90°$ and AD is drawn perpendicular to BC. Prove that $AC^2 = AB^2 + BC^2 - 2BC.BD$.

27. The perpendicular from A on the side BC of a ΔABC intersects BC at D such that DB = 3 CD. Prove that $2AB^2 = 2AC^2 + BC^2$.

28. Prove that three times the square of any side of an equilateral-triangle is equal to four times the square of the altitude.

29. ABC is a right triangle right-angled at C and $AC = \sqrt{3}$ BC. Prove that $\angle ABC = 60°$.

30. The internal bisector of an angle of a triangle divides the opposite side internally in the ratio of the sides containing the angle.