PREVIOUS YEAR QUESTIONS OF TRIANGLES

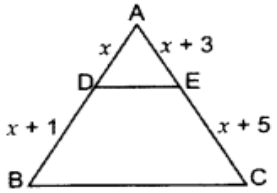
Question 1. If ΔABC ~ ΔPQR, perimeter of ΔABC = 32 cm, perimeter of ΔPQR = 48 cm and PR = 6 cm, then find the length of AC. (2012)

Question 2. ΔABC ~ ΔDEF. If AB = 4 cm, BC = 3.5 cm, CA = 2.5 cm and DF = 7.5 cm, find the perimeter of ΔDEF. (2012, 2017D)

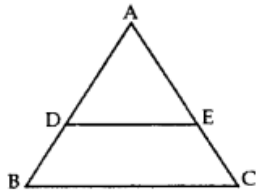
Question 3. If ΔABC ~ ΔRPQ, AB = 3 cm, BC = 5 cm, AC = 6 cm, RP = 6 cm and PQ = 10, then find QR. (2014)

Question 4. In ΔDEW, AB || EW. If AD = 4 cm, DE = 12 cm and DW = 24 cm, then find the value of DB. (2015)

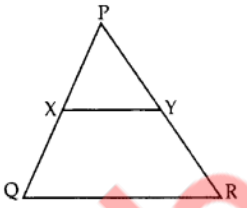
Question 5. In ΔABC, DE || BC, find the value of x. (2015)



Question 6. In the given figure, if DE || BC, AE = 8 cm, EC = 2 cm and BC = 6 cm, then find DE. (2014)



Question 7. In the given figure, XY || QR, $PQ/XQ = 7/3$ and PR = 6.3 cm, find YR. (2017OD)



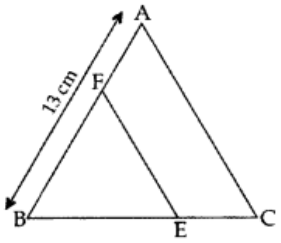
Question 8. The lengths of the diagonals of a rhombus are 24 cm and 32 cm. Calculate the length of the altitude of the rhombus. (2013)

Question 9. If PQR is an equilateral triangle and PX ⊥ QR, find the value of PX^2. (2013)

(2 Marks Questions)

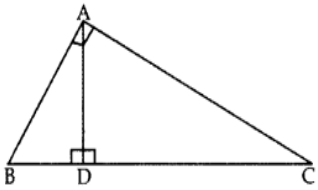
Question 10. The sides AB and AC and the perimeter P, of ΔABC are respectively three times the corresponding sides DE and DF and the perimeter P, of ΔDEF. Are the two triangles similar? If yes, find $ar(\Delta ABC)/ar(\Delta DEF)$ (2012)

Question 11. In the figure, EF || AC, BC = 10 cm, AB = 13 cm and EC = 2 cm, find AF. (2014)



Question 12. X and Y are points on the sides AB and AC respectively of a triangle ABC such that AX/AB=1/4, AY = 2 cm and YC = 6 cm. Find whether XY || BC or not. (2015)

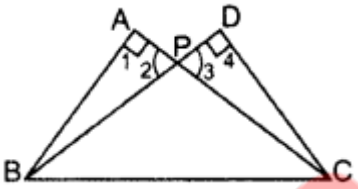
Question 13. In the given figure, ∠A = 90°, AD ⊥ BC. If BD = 2 cm and CD = 8 cm, find AD. (2012; 2017D)



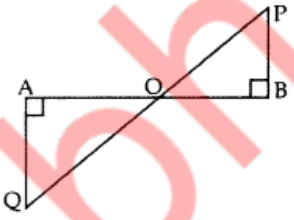
Question 14. In ΔABC, ∠BAC = 90° and AD ⊥ BC. Prove that $AD^2 = BD \times DC$. (2013)

Question 15. A 6.5 m long ladder is placed against a wall such that its foot is at a distance of 2.5 m from the wall. Find the height of the wall where the top of the ladder touches it. (2015)

Question 16. In the figure ABC and DBC are two right triangles. Prove that AP × PC = BP × PD. (2013)

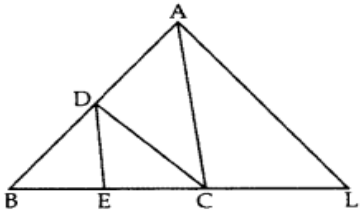


Question 17. In the given figure, QA ⊥ AB and PB ⊥ AB. If AO = 20 cm, BO = 12 cm, PB = 18 cm, find AQ (2017OD)

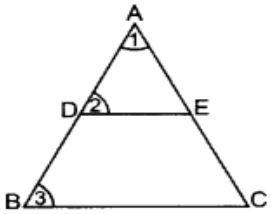


(3 Marks Questions)

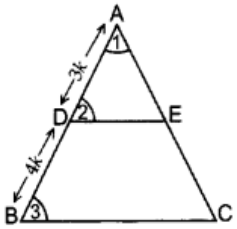
Question 18. In the given figure, CD || LA and DE || AC. Find the length of CL if BE = 4 cm and EC = 2 cm. (2012)



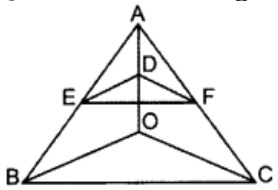
Question 19. If a line segment intersects sides AB and AC of a ΔABC at D and E respectively and is parallel to BC, prove that AD/AB=AE/AC. (2013)



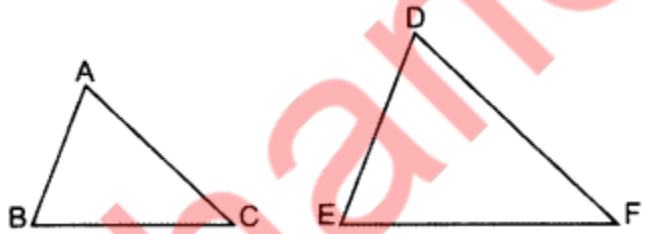
Question 20. In a ΔABC, DE || BC with D on AB and E on AC. If ADDB=34 , find BCDE. (2013)



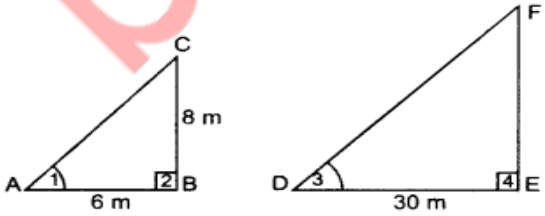
Question 21. In the figure, if DE || OB and EF || BC, then prove that DF || OC. (2014)



Question 22. If the perimeters of two similar triangles ABC and DEF are 50 cm and 70 cm respectively and one side of ΔABC = 20 cm, then find the corresponding side of ΔDEF. (2014)
Solution:

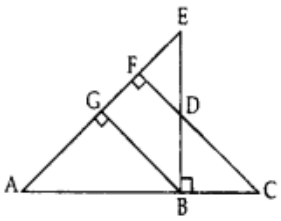


Question 23. A vertical pole of length 8 m casts a shadow 6 cm long on the ground and at the same time a tower casts a shadow 30 m long. Find the height of tower. (2014)
Solution:



Question 24. In given figure, EB ⊥ AC, BG ⊥ AE and CF ⊥ AE (2015)
Prove that:
(a) ΔABG ~ ΔDCB

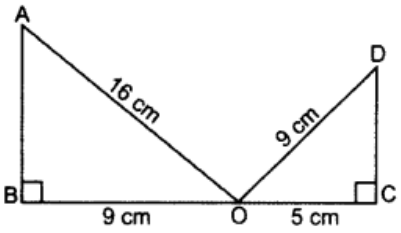
(b) BC/BD=BE/BA



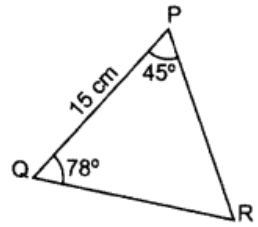
Question 25. ∆ABC ~ ∆PQR. AD is the median to BC and PM is the median to QR. Prove that ABPQ=ADPM. (2017D)

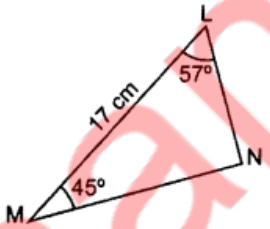
Question 26.
State whether the given pairs of triangles are similar or not. In case of similarity mention the criterion. (2015)

(a)

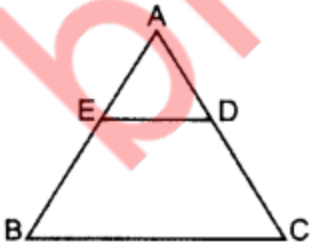


(b)

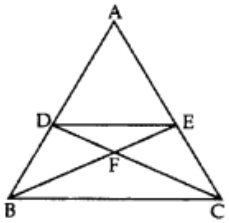




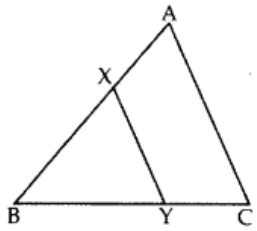
Question 27. In the figure of ∆ABC, D divides CA in the ratio 4 : 3. If DE || BC, then find ar (BCDE) : ar (∆ABC). (2015)



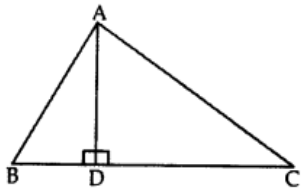
Question 28. In the given figure, DE || BC and AD : DB = 7 : 5, find ar(triangle DEF) }/ ar (triangle CFB) (2017OD)



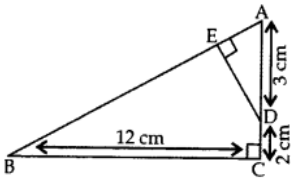
Question 29. In the given figure, the line segment XY is parallel to the side AC of ∆ABC and it divides the triangle into two parts of equal areas. Find the ratio $\frac{AX}{AB}$. (2017OD)



Question 30. In the given figure, AD ⊥ BC and BD = $\frac{1}{3}$CD. Prove that $2AC^2 = 2AB^2 + BC^2$. (2012)



Question 31. In the given figure, ∆ABC is right-angled at C and DE ⊥ AB. Prove that ∆ABC ~ ∆ADE and hence find the lengths of AE and DE. (2012, 2017D)



Question 32. In ∆ABC, if AP ⊥ BC and $AC^2 = BC^2 – AB^2$, then prove that $PA^2 = PB \times CP$. (2015)

Question 33. ABCD is a rhombus. Prove that $AB^2 + BC^2 + CD^2 + DA^2 = AC^2 + BD^2$. (2013)

Question 34. The diagonals of trapezium ABCD intersect each other at point o. If AB = 2CD, find the ratio of area of the ∆AOB to area of ∆COD. (2013)

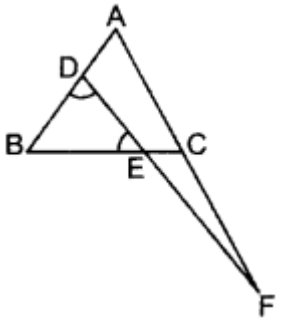
Question 35. The diagonals of a quadrilateral ABCD intersect each other at the point O such that $\frac{AO}{BO} = \frac{CO}{DO}$. Show that ABCD is a trapezium. (2014)

(4 Marks Questions)

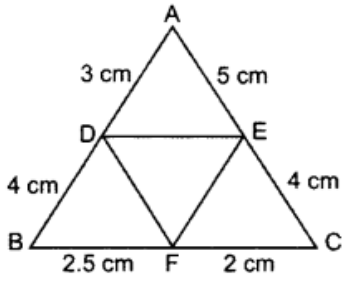
Question 36. In a rectangle ABCD, E is middle point of AD. If AD = 40 m and AB = 48 m, then find EB. (2014D)

Question 37. Let ABC be a triangle and D and E be two points on side AB such that AD = BE. If DP || BC and EQ || AC, then prove that PQ || AB. (2013)

Question 38. In the figure, ∠BED = ∠BDE & E divides BC in the ratio 2 : 1.
Prove that AF × BE = 2 AD × CF. (2015)



Question 39. In the given figure, AD = 3 cm, AE = 5 cm, BD = 4 cm, CE = 4 cm, CF = 2 cm, BF = 2.5 cm, then find the pair of parallel lines and hence their lengths. (2015)

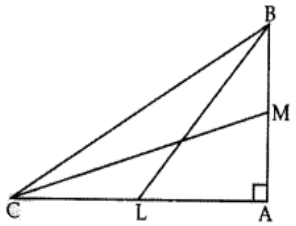


Question 40. If sides AB, BC and median AD of AABC are proportional to the corresponding sides PQ, QR and median PM of PQR, show that ΔABC ~ ΔPQR. (2017OD)

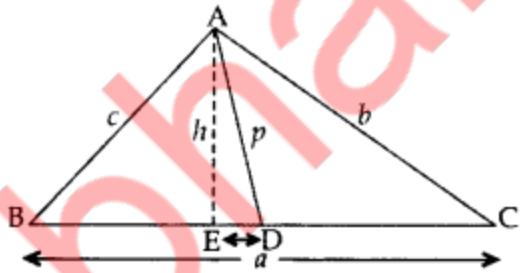
Question 41. Prove that the ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides. (2012)

Question 42. State and prove converse of Pythagoras theorem. Using the above theorem, solve the following: In ΔABC, AB = 63–√ cm, BC = 6 cm and AC = 12 cm, find ∠B. (2015)

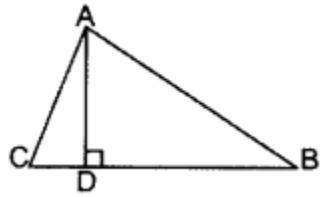
Question 43. In the given figure, BL and CM are medians of a triangle ABC, right angled at A. Prove that: $4(BL^2 + CM^2) = 5BC^2$ (2012)



Question 44. In the given figure, AD is median of ΔABC and AE ⊥ BC. (2013)
Prove that $b^2 + c^2 = 2p^2 + 12\ a^2$.

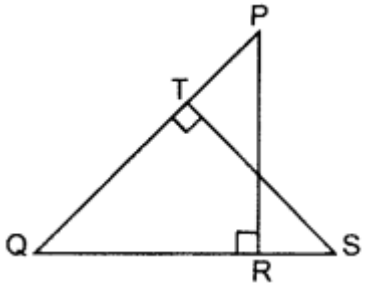


Question 45. In a ΔABC, the perpendicular from A on the side BC of a AABC intersects BC at D such that DB = 3 CD. Prove that $2\ AB^2 = 2\ AC^2 + BC^2$. (2013; 2017OD)

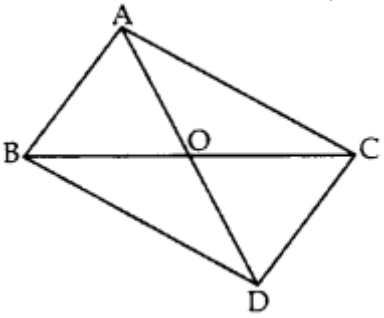


Question 46. In ΔABC, altitudes AD and CE intersect each other at the point P. Prove that: (2014)
(i) ΔAPE ~ ΔCPD
(ii) AP × PD = CP × PE
(iii) ΔADB ~ ΔCEB
(iv) AB × CE = BC × AD

Question 47. In the figure, PQR and QST are two right triangles, right angled at R and T resepctively. Prove that QR × QS = QP × QT. (2014)



Question 48. In the given figure, ABC and DBC are two triangles on the same base BC. If AD intersects BC at O, show that ar(ABC)/ar(DBC)=AO/DO. (2012)



Question 49. Hypotenuse of a right triangle is 25 cm and out of the remaining two sides, one is longer than the other by 5 cm. Find the lengths of the other two sides. (2013)

Question 50. In Figure, AB ⊥ BC, FG ⊥ BC and DE ⊥ AC. Prove that ΔADE ~ ΔGCF. (2016 OD)