- Angles opposite to equal sides of a triangle are equal.
- Sides opposite to equal angles of a triangle are equal.
- In a triangle, angle opposite to the longer side is larger (greater)
- In a triangle, side opposite to the larger (greater) angle is longer.
- Sum of any two sides of a triangle is greater than the third side.
- Difference of any two sides of a triangles is less than the third side.

PART-A

1. Which of the following is not a criterion for congruency of triangles ?

   a) SSS b) RHS
   c) AAA d) SAS

2. If $AB \cong CD$ then

   a) $AB < CD$ b) $AB + CD = 0$
   c) $AB = CD$ d) $AB > CD$

3. If $\Delta ABC \cong \Delta DEF$ then.

   a) $AC = DE$ b) $BC = DF$
   c) $FE = CB$ d) $AB = DF$

4. If one angle of a triangle is equal to the sum of the other two angles, then the triangle is

   a) an equilateral triangle b) an isosceles triangles
   c) an obtuse triangle d) a right triangle

5. If $AB = QR$, $BC = PR$ and $CA = PQ$, then

   a) $\Delta ABC \cong \Delta PQR$ b) $\Delta CBA \cong \Delta PRQ$
   c) $\Delta BAC \cong \Delta RPQ$ d) $\Delta PQR \cong \Delta BCA$

6. In ΔABC and ΔDFE, $AB = FD$, $\angle A = \angle D$. The two triangles will be congruent by *SAS* axiom if

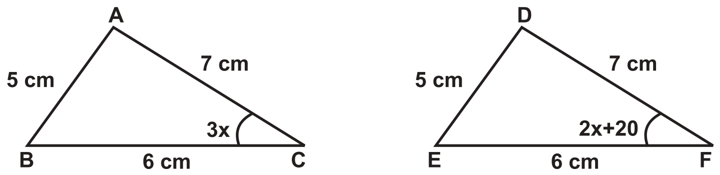
   a) $BC = EF$ b) $AC = DE$
   c) $AC = EF$ d) $BC = DE$

7. If $\Delta ABC \cong \Delta FDE$, $AB = 5$ cm, $\angle B = 40°$, $A = 80°$. Then which of the following is correct ?

   a) $DF = 5$cm, $\angle F = 60°$ b) $DF = 5$ cm, $\angle E = 60°$
   c) $DF = 5$cm, $\angle C = 60°$ d) Both (B) and (C)

8. In ΔABC, $AB = AC$, $\angle B = 40°$. Then $\angle C$ is equal to

   a) 50° b) 40°
   c) 80° d) 140°

9. In ABC, AB = BC, $\angle B = 40°$, Then $\angle A$ is equal to
   a) 70° b) 40°
   c) 140° d) 100°
10. In right ΔABC, AB = BC. Then $\angle A$ is equal to
   a) 45° b) 90°
   c) 60° d) None of these
11. In ΔPQR, $\angle R = \angle P$, QR = 4 cm and PR = 5 cm. Then PQ = ______
   a) 4cm b) 5cm
   c) 1 cm d) 9cm
12. If *a*, b, c are the lengths of the sides of a triangle, then
   a) $a - b > c$ b) $a + b < c$
   c) $c = a + b$ d) $c < a + b$
13. It is not possible to construct a triangle when the lengths of its sides are
   a) 3 cm, 4 cm, 5 cm b) 3 cm, 5 cm, 5 cm
   c) 5.3 cm, 2.2 cm, 3.1 cm d) 9.3 cm, 5.2 cm, 7.4 cm
14. In ΔABC, $\angle B = 90°$ then
   a) AC = AB b) AC < AB
   c) AC < BC d) AC > AB
15. If ΔABC is obtuse angled at C, then
   a) AB > BC b) AB = BC
   c) AB < BC d) AC > AB
16. In ΔPQR, if $\angle R > \angle Q$, then
   a) QR > PR b) PQ > PR
   c) PQ < PR d) QR < PR
17. In ΔABC and ΔPQR. If AB = QP, $\angle B = \angle P$, BC = PR then which one of the following congruence conditions applies :
   a) SAS b) ASA
   c) SSS d) RHS
18. In ΔABC and ΔDEF, if $\angle A = \angle F$, $\angle B = \angle D$ and AB = FD, then which one of the following congruence conditions applies :
   a) SAS b) ASA
   c) SSS d) RHS
19. 

In the given figure, the value of x is

a) 4 b) 32

c) 20 d) 180

20. If $\Delta PQR \cong \Delta LMN$ than NL = ________

a) PQ b) QR

c) RP d) None of these

21. If $\Delta CAB \cong \Delta\, MLK$ then $\angle K$ = ______

a) $\angle A$ b) $\angle B$

c) $\angle C$ d) None of these

22. In ΔABC, $\angle C$ is the greatest angle, then

a) $AC > AB$ b) $AB > AC$

c) $AB > BC$ d) Both (b) and (c)

23. For ΔABC, which of the following is incorrect ?

a) $(BC - AB) < AC$ b) $(AC - BC) < AB$

c) $(AC - AB) < BC$ d) None of these

24. If $\Delta ABC \cong \Delta ACB$, then

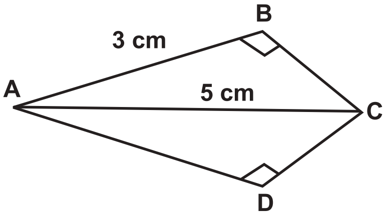
a) $AB = AC$ b) $AB = BC$

c) $AC = BC$ d) None of these

25. In the given figure AC is bisector of $\angle BAD$, AB = 3 cm, AC = 5cm, then AD = __________

a) 2 cm b) 5 cm

c) 3 cm d) 8 cm



Fill in the blanks :-

26. Two figures are congruent if they have the ________ shape and same ____________

27. Two circles are congruent if they have __________ radii.

28. Two equilateral triangles are congruent. if they have ________ sides.

29. Two square are congruent if they have ___________ sides.

30. The sum of any two sides of a triangle is ____________ than the third side.

31. The difference of any two sides of a triangle is ________ than the third side.
32. In a right triangle, the hypotenuse is the __________ side
33. If two angles of a triangle are unequal, then the smaller angle has the _________ side opposite to it.
34. If two sides of a triangle are unequal, then the larger side has ___________ angle opposite to it.
35. In a triangle, sides opposite to equal angles are ______________

State which of the following statements are true and false.

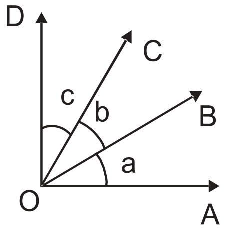
36. In a triangle, the greatest angle has the longest side opposite to it.
37. Two triangles are congruent if three angles of one triangle are equal to three angles of the other triangle.
38. In a triangle, the shortest side has the smallest angle opposite to it.
39. It is necessary to write the correspondence of vertices correctly for writing congruence of triangles in symbolic form.
40. If all the line segments that can be drawn from a point to a line not containing it, the perpendicular line segment is the shortest one.
41. If $\Delta ABC \cong \Delta DEF$ then

(i) AB = _________ (ii) BC = _________

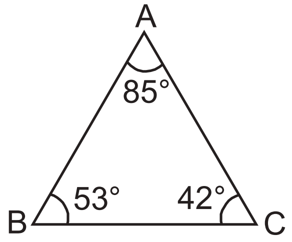
(iii) CA = _________ (iv) $\angle E$ = _________

(v) $\angle EDF$ = _________ (vi) $\angle BCA$ = _________

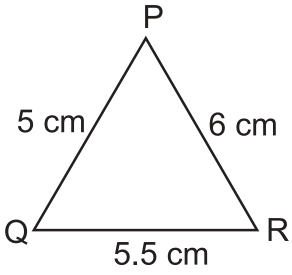
42. Circle $O_1 \cong$ Circle O_2. If radius of circle O_1 = 6 cm then diameter of circle O_2 is _______.
43. In the given figure, if a = b = c then $\angle AOC \cong$ _________



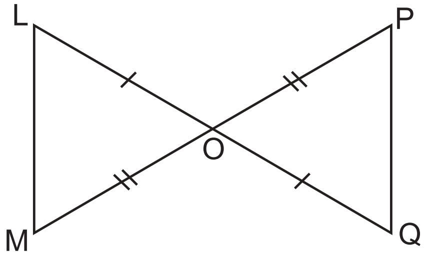
44. Which is the longest side of the triangles given in the figure ?



45. Which is the largest angle in the $\angle PQR$?

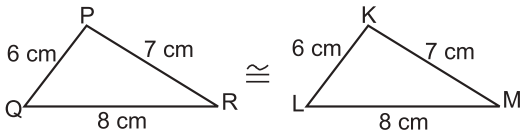


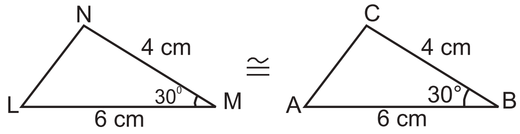
46. Which two triangles are congruent in the given figure. Write them in symbolic form.

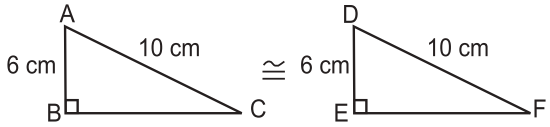


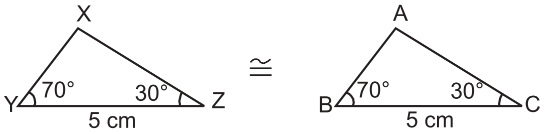
Part – B

47. Match the columns :

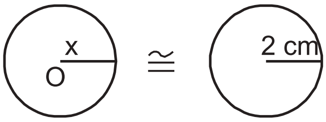
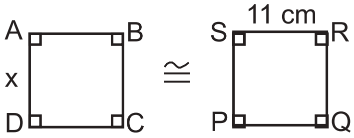
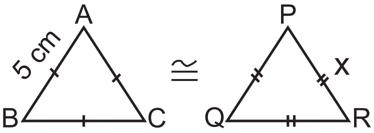
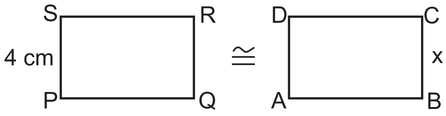
Column A	Column B
(i) 	(a) SAS congruence

(ii)  (b) SSS congruence

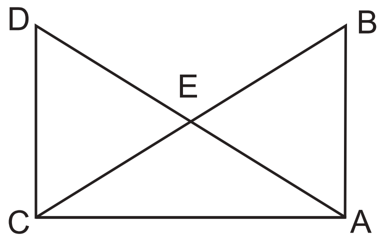
(iii)  (c) ASA congruence

(iv)  (d) RHS congruence

48. Match the columns :

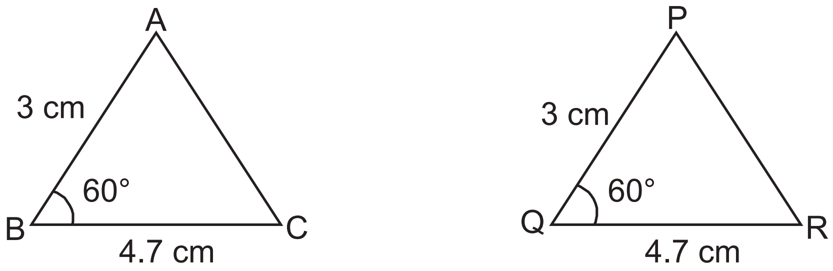
	Column A		**Column B**
(i)		x = ?	(a) 2 cm
(ii)		x = ?	(b) 5 cm
(iii)		x = ?	(c) 10 cm
(iv)		x = ?	(d) 4 cm
(v)		x = ?	(e) 11 cm

49. In the given figure. If AB = CD, AD = BC then prove that $\Delta ADC \cong \Delta CBA$



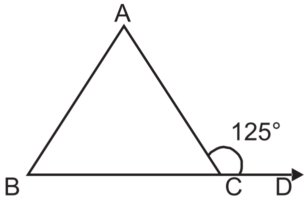
50. If ΔABC is an isosceles triangle such that AB = AC, then prove that altitude AD from A on BC bisects it.

51. Which criteria of congruence of triangles is satisfied in the given figure.



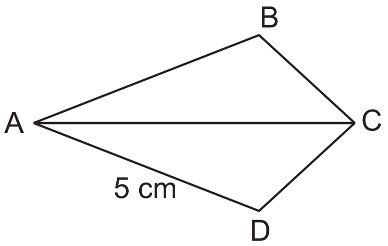
52. In a ΔPQR, $\angle P = 110°$, PQ = PR. Find $\angle Q$ and $\angle R$.

53. In the given figure AB = AC and $\angle ACD = 125°$. Find $\angle A$



54. In ΔABC, if $\angle A = 55°$, $\angle B = 75°$ then find out the smallest and longest side of the triangle.

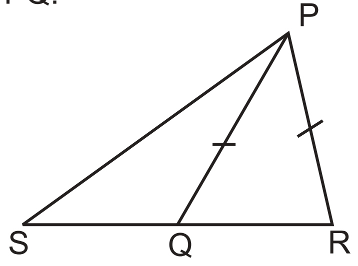
55. In the given figure, AC bisects $\angle A$ and $\angle C$. If AD = 5 cm find AB.



56. The vertex angle of an isosceles triangle is 80°. Find out the measure of base angles.

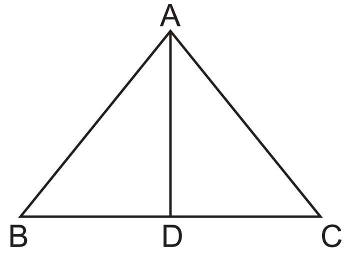
Part – C

57. In the given figure, Q is a point on the side SR of ΔPSR such that PQ = PR Prove that PS > PQ.

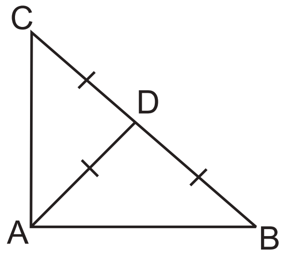


58. ABC is a triangle and D is the mid-point of BC. The Perpendicular from D to AB and AC are equal. Prove that triangle is isosceles.
59. Prove that angles opposite to the equal sides of an isosceles triangle are equal.
60. In the given figure, AC > AB and AD bisects $\angle BAC$

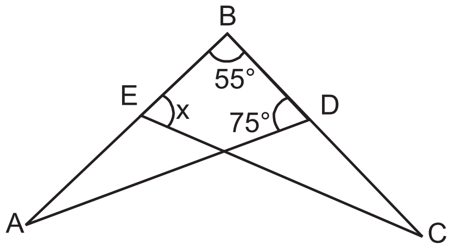
Prove that $\angle ADC > ADB$.



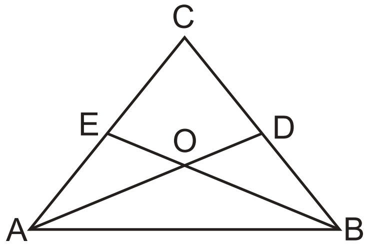
61. S is any point in the interior of a ΔPQR. Prove that SQ + SR < PQ + PR.
62. In the given figure, if AD = BD = CD, Find $\angle BAC$



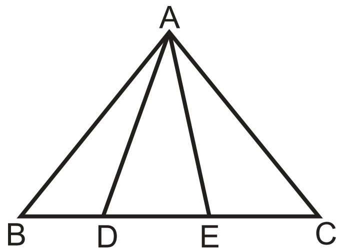
63. In the given figure, if AB = BC and $\angle A = \angle C$ then find the value of x.



64. In the given figure $\angle ABC = \angle BAC$, D and E are points on BC and AC respectively such that DB = AE. If AD and BE intersect at O then prove that OA = OB.



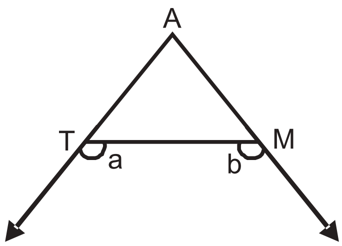
65. In the given figure, if AB = AC, $\angle BAD = \angle CAE$ then prove that ΔADE is an isosceles triangle.



66. In ΔDEF, $\angle E = 2\angle F$ DM is the angle bisector of $\angle EDF$ that intersects EF at M. If DM = MF, then prove that $\angle EDF = 72°$

67. Prove that the angles of an equilateral triangle are 60° each.

68. In the given figure, $\angle a > \angle b$, show that $\angle ATM < \angle AMT$.



Part-D

69. AF, BD and CE altitudes of ΔABC are equal. Prove that ABC is an equilateral triangle.

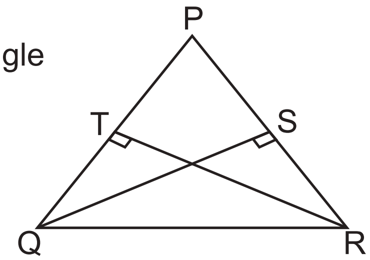
70. Prove that two triangles are congruent if two angles and the included side of one triangle are equal to the two angles and the included side of the other triangle.

71. O is any point in the interior of a ΔABC. Prove that $(OA + OB + OC) > \frac{1}{2}$ $(AB + BC + CA)$

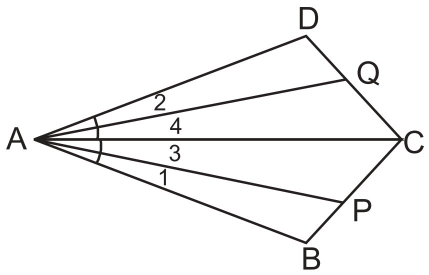
72. Prove that the perimeter of a triangle is greater than the sum of its three altitudes.

73. Two sides AB, BC and median AM of one ΔABC are respectively equal to sides PQ, QR, and median PN of ΔPQR. Show that.
    (i) $\Delta ABM \cong \Delta PQN$
    (ii) $\Delta ABC \cong \Delta PQR$

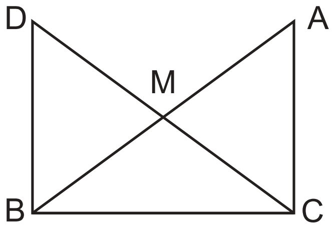
74. In the given figure, PQR is a triangle in which altitudes QS and RT to sides PR and PQ are equal. show that.
    (i) $\Delta PQS \cong \Delta PRT$
    (ii) PQR is an isosceles triangle



75. In the given figure, AB = AD, $\angle 1 = \angle 2$ and $\angle 3 = \angle 4$. Prove that AP= AQ.

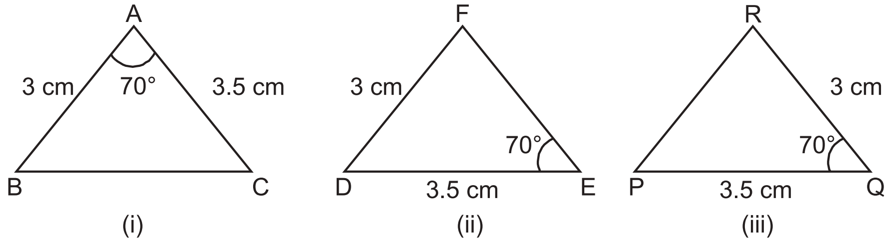


76. In the given figure, ABC is a right angled triangle, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. D is joined to B. Prove that $CM = \frac{1}{2} AB$



77. Prove that the sum of any two sides of a triangle is greater than its third side.

78. Vandana wishes to literate the poor children of the nearby slum area. She makes flash cards for them as shown in the given figure.



(a) Which two flash cards are congruent?

(b) Which criteria of congruency is satisfied here?

(c) Write the third side of both the triangles which are equal by CPCT.

79. Prove that the sum of any two sides of a triangle is greater than twice the median drawn to the third side.

80. In the given figure, AB = CD, CE = BF and $\angle ACE = \angle DBF$. Prove that

(i) $\Delta\ ACE \cong \Delta DBF$

(ii) AE = DF