MATHS

BOOKS - VGS PUBLICATION-BRILLIANT

TRIANGLES

Exercise

1. Which minimum measurements do. You require to check if the given figures are congruent? Two rectangles.

2. Which minimum measurements do you require to check if the given figures are congruent:

i. Two rectangles   ii. Two rhombuses.

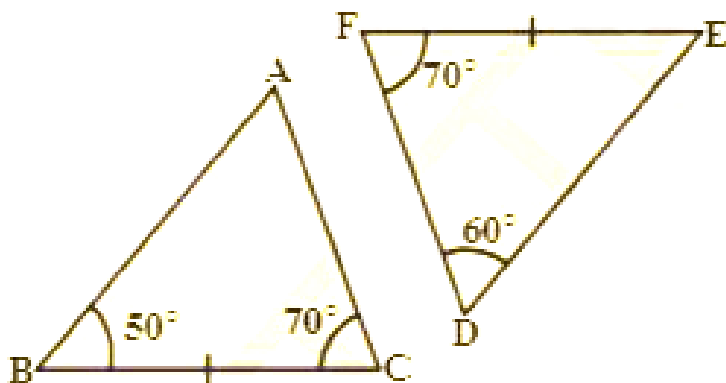**3.** AB is a line segment and line l is its perpendicular bisector. If a point P lies on l,

show that P is equidistant from A and B.

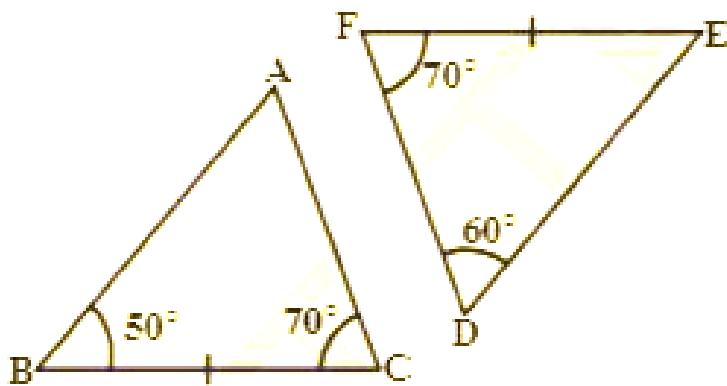**4.** State whether the following triangles are congruent or not? Give reasons for your answer.

5. State whether the following triangles are congruent or not? Give reasons for your answer.

6. In the given figure, the point P bisects AB and DC. Prove that $\triangle\,APC \cong \triangle\,BPD$

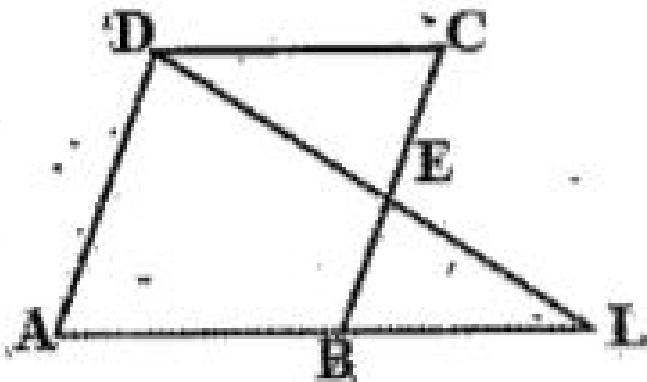**7.** Two triangles are congruent, if two. Angles and the included side of one triangle are equal to two angles and the included side of the other triangle.
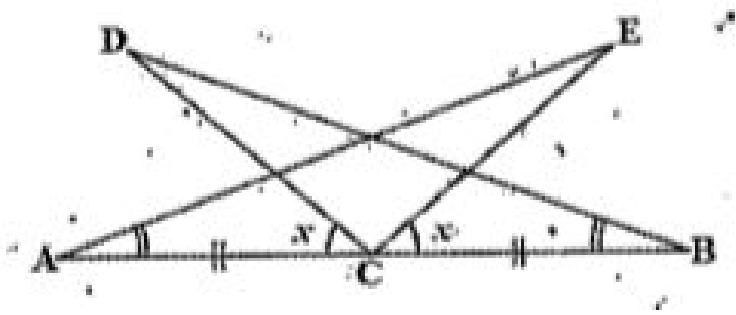
8. In the given figure, $AL || DC$ E is mid point of BC. Show that $\triangle\ EBL \cong \triangle\ ECD$

9. Use the information given in the adjoining figure, to prove $\triangle\ DBC \cong \triangle\ EAC$

10. Use the information given in the adjoining figure, to prove DC=EC
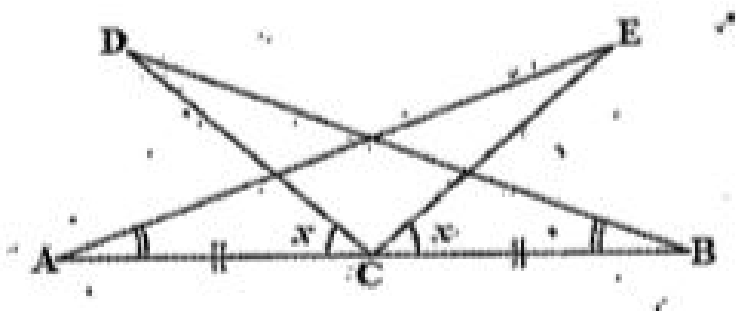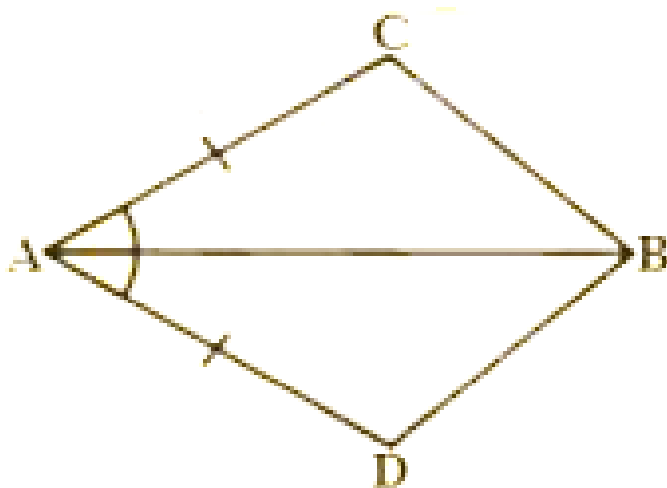
11. In quadrilateral $ACBD$, $AC = AD$ and AB bisects $\angle A$

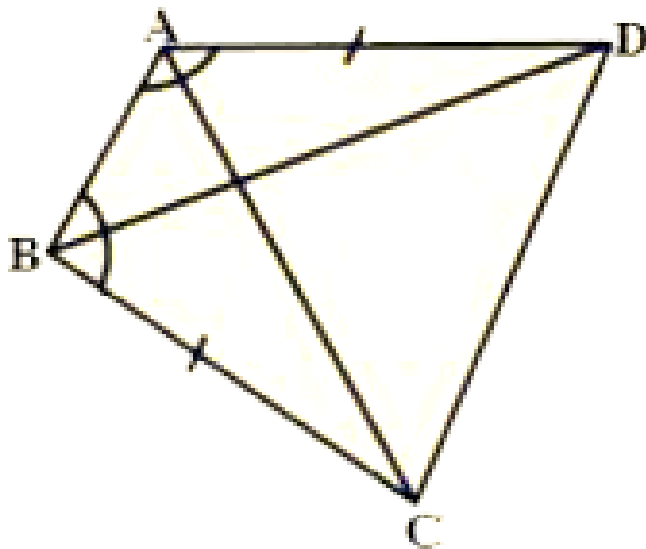Show that $\triangle ABC \cong \triangle ABD$.
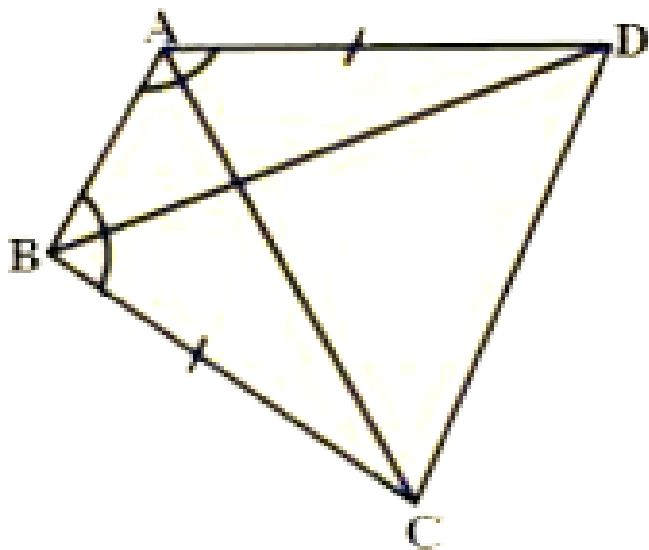
What can you say about BC and BD?

12. ABCD is a quadrilateral in which AD = BC

and $\angle DAB = \angle CBA$ Prove that

$(i) \triangle ABD \cong \triangle BAC$

(ii) $BD = AC$

(iii) $\angle ABD = \angle BAC$

13. ABCD is a quadrilateral in which AD = BC and $\angle DAB = \angle CBA$ Prove that

$(i) \Delta ABD \cong \Delta BAC$
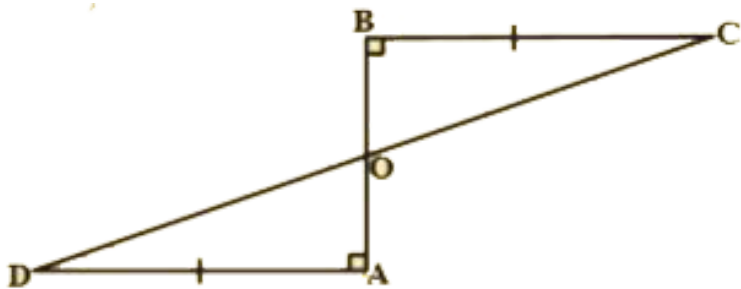
(ii) $BD = AC$

(iii) $\angle ABD = \angle BAC$

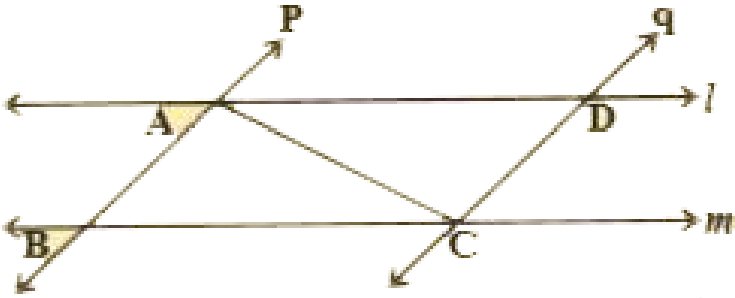**14.** AD and BC are equal and perpendiculars to a line segment AB. Show that CD bisects AB.

15. l and m are two parallel lines intersected by another pair of parallel lines p and q . Show

that $\triangle ABC \cong \triangle CDA$.

> ▶ **Watch Video Solution**

16. In the figure given below AC=AE ABAD and $an \geq lBAD= an \geq lEAC$. Show that BC = DE.

17. In right triangle ABC, right angle is at 'C'. M

s the mid-point of hypotenuse . ABC is joined

to M and produced to a point D such that DM

= CM. Point D is Joined to point B (see fig.).

Show that: $CM = \dfrac{1}{2}AB$
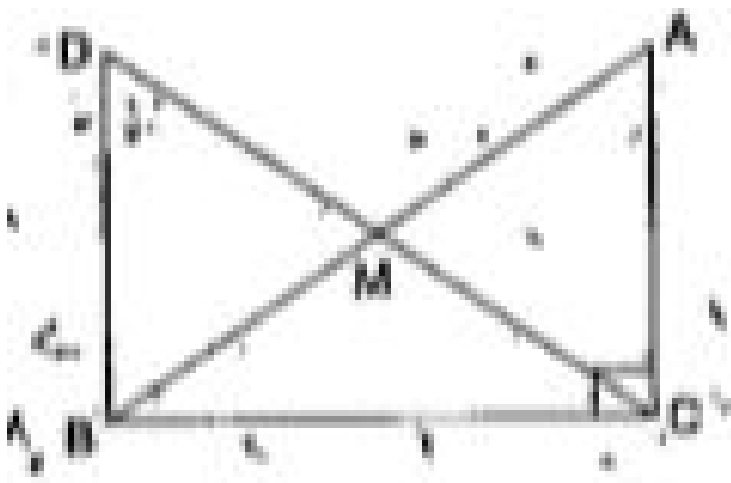
18. If the bisector of an angle of a triangle also bisects the opposite side, prove that the triangle is isosceles.

19. In the given figure ABC is a right triangle and right angled at B such that $\angle BCA = 2\angle BAC$.

Show that hypotenuse AC = 2BC.
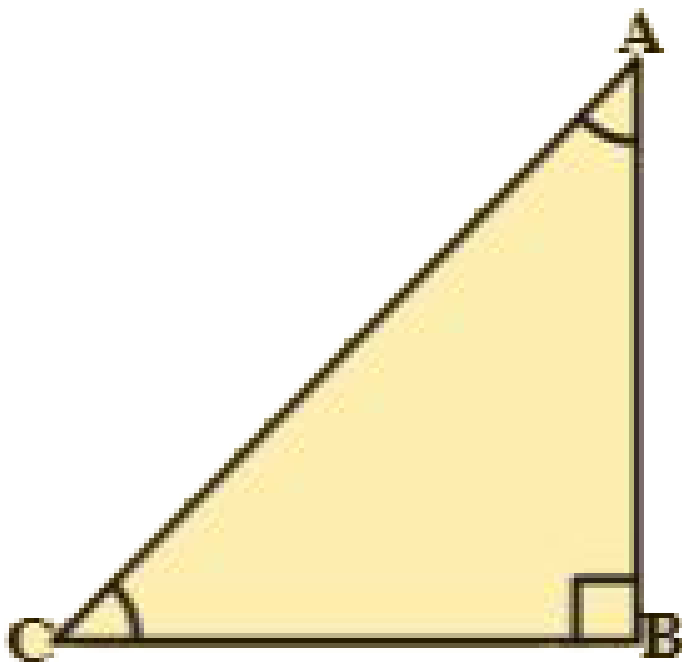
20. In $\triangle ABC$, the bisector AD of A is perpendicular to side BC Show that AB = AC and $\triangle ABC$ is isosceles.
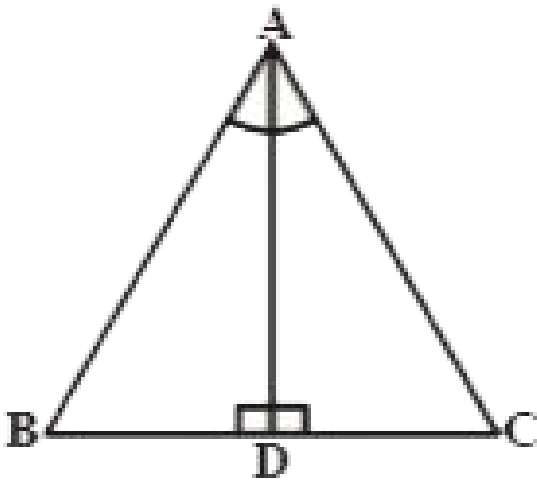
21. In the given figure, AB=BC and AC=CD. Prove that $an \geq lBAD : an \geq lADB$ = 3:1
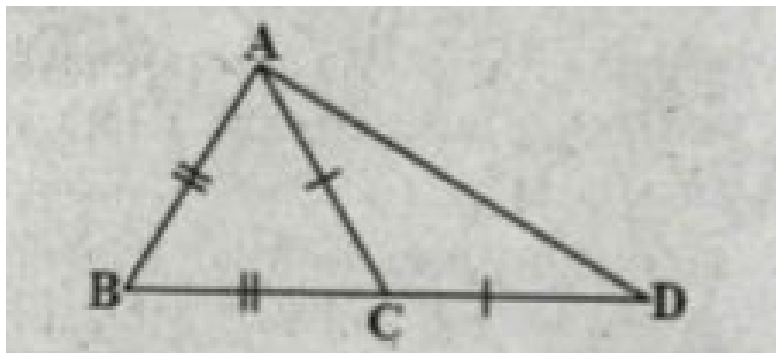
22. In an isosceles triangle ABC with AB = AC, D and E are points on BC such that BE = CD (see

figure) Show that AD = AE

23. In an isosceles triangle ABC, with AB =AC, the bisectors of $\angle B$ and $\angle C$ intersect each

other at 'O'. Join A to O. AO bisects $\angle A$
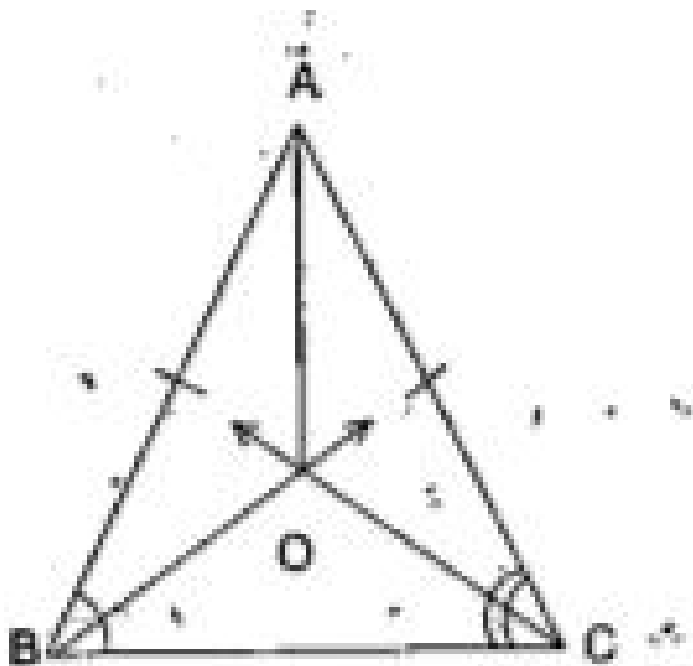
24. In $\triangle ABC$, AD the perpendicular bisector of BC (see given figure). Show that $\triangle ABC$ is

an   isosceles   triangle   in   which   AB=AC.
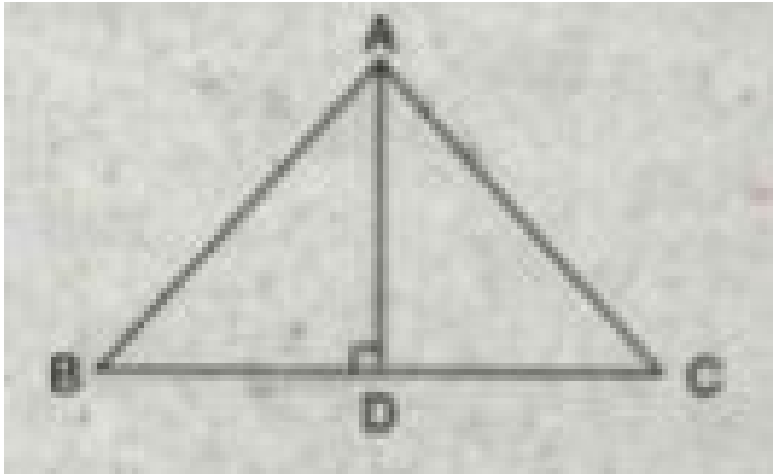
25. ABC is a triangle in which altitudes BD and CE to sides AC and AB are equal (see figure) . Show that

$(i) \triangle ABD \cong \triangle ACE$

$(ii) AB = AC$ i.e., ABC is an isosceles triangle.
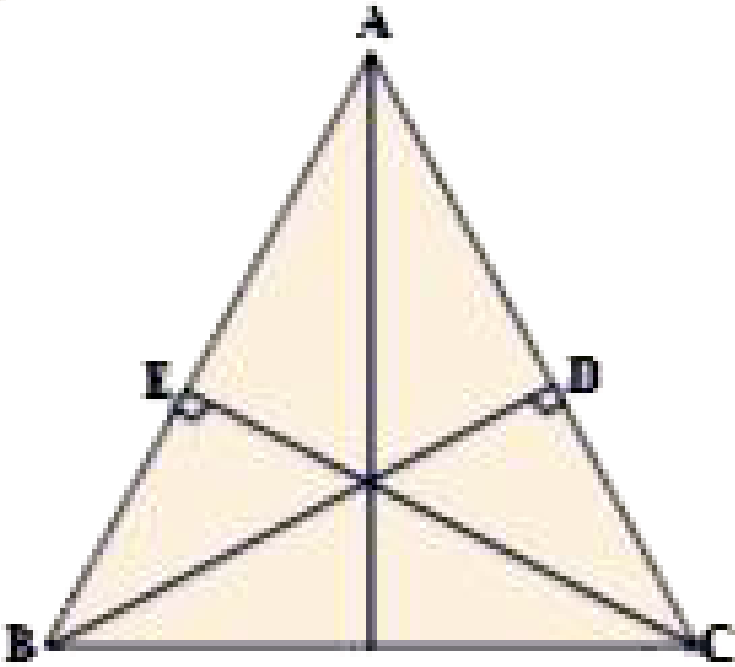
26. $\triangle ABC$ and $\triangle DBC$ are two isosceles triangles on the same base BC (see figure). Show that $an \geq lABD = an \geq lACD$.
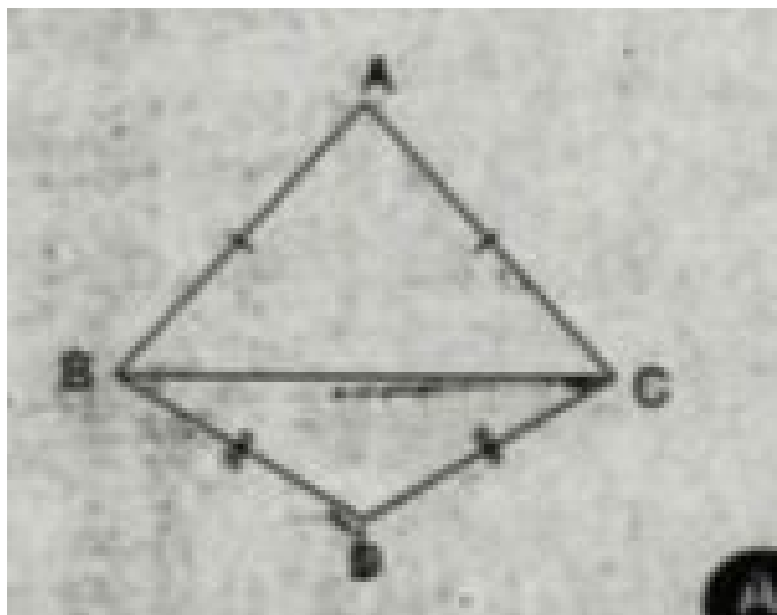
27. Through construction we have seeri that SSS congruency rule hold. This theorem can be proved using a suitable construction.

28. In the figure given below $\triangle ABC$ and $\triangle DBC$ are two triangles such that AB=BD,

and AC=CD. Show that $\triangle ABC \cong DBC$
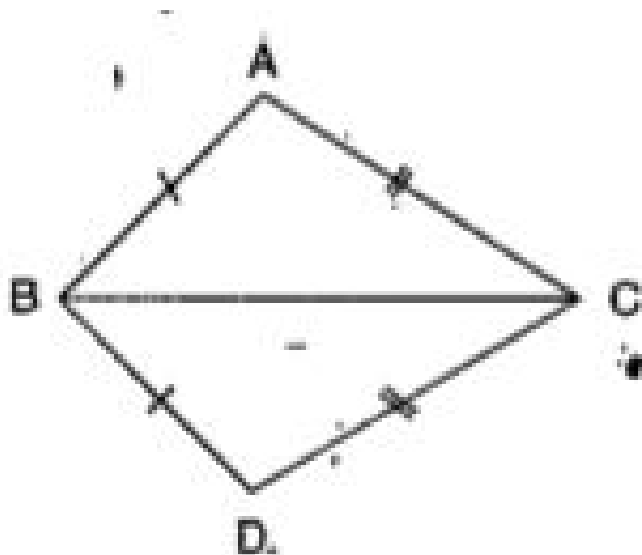
29. P is a point equidistant from two lines l

and m intersecting at point A (see figure).

Show that the line AP bisects the angle

between them.
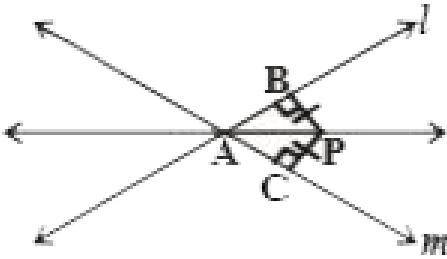
30. AD is an altitude of an isosceles triangle ABC in which AB = AC. Show that, (i) AD bisects BC (ii) AD bisects $\angle A$.

31. AD is an altitude of an isosceles triangle ABC in which AB = AC. Show that, (i) AD bisects BC (ii) AD bisects $\angle A$.

▶ **Watch Video Solution**

32. Two sides AB, BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of $\triangle PQR$ (see

figure).   Show   that: $\triangle\ ABC \cong \triangle\ PQR$
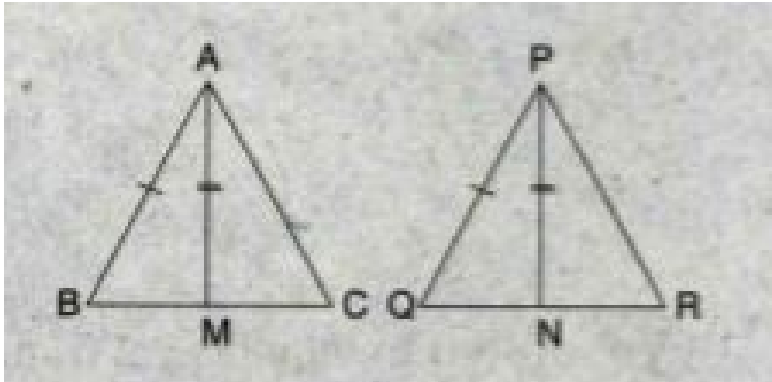
33. BE and CF are two equal altitudes of a triangle ABC. Using RHS congruence rule, prove that the triangle ABC is isosceles.

34. $\triangle ABC$ is an isosceles triangle in which AB = AC. Show $\angle B = \angle C$ (Hint : Draw `APbotBC) (Using RHS congruence rule)

35. $\triangle ABC$ is an isosceles triangle in which AB = AC. Side BA is produced to D such that AD = AB (see figure). Show that $\angle BCD$ is a right

angle.
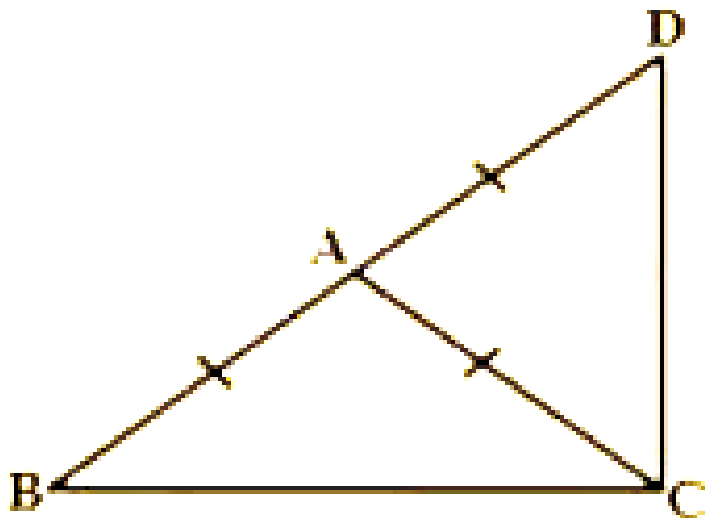
36. ABC is a right angled triangle in which $\angle A = 90°$ and $AB = AC$. Show that $\angle B = \angle C$.

37. Show that the angles of an equilateral triangle are $60°$ each.

38. In $\angle ABC$, D is a point on side BC, $\triangle ABC$ such that AD. AC (see figure).
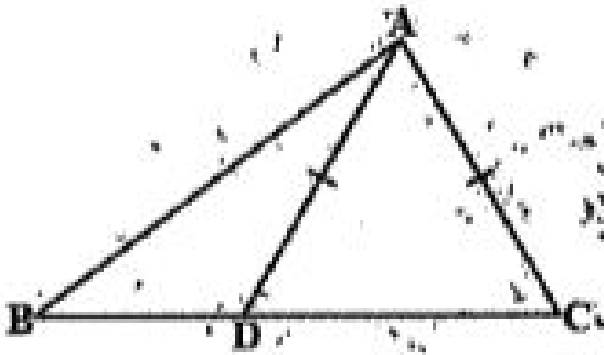
39. Show that in a right angled triangle, the hypotenuse is the longest side.

40. In the given figure, $\angle B < \angle A$ and $\angle C < \angle D$. Show that $AD < BC$.

41. AB and CD are respectively the small est and longest sides of a quadrilateral ABCD (see

figure). Show that $\angle A > \angle C$ and $\angle B > \angle D$.
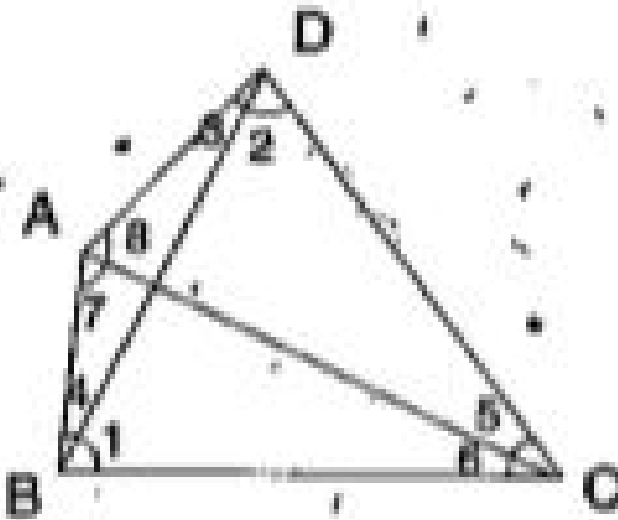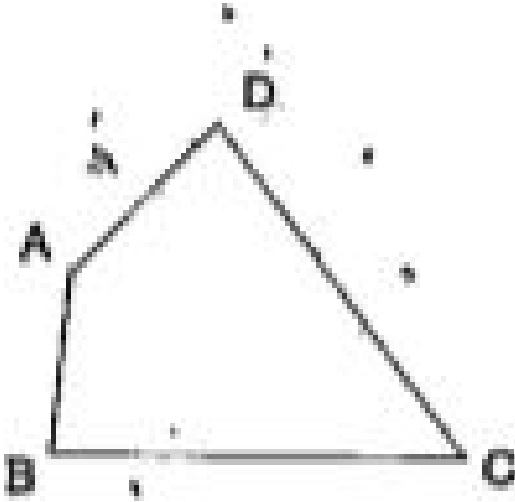
42. If two sides of a triangle measure 4 cm and 6 cm find all possible measurements (positive Integers) of the third side. How many distinct triangles can be obtained?

> ▶ **Watch Video Solution**

43. State SAS congruency rule.

> ▶ **Watch Video Solution**

44. State ASA congruency rule.

▶ Watch Video Solution

45. State SSS congruency rule.

▶ Watch Video Solution

46. State RHS congruency rule.

▶ Watch Video Solution

47. Write the properties of a triangle re lating to its sides.

48. What are called congruent figures?

49. When do you say that $\triangle ABC \cong \triangle DEF$? (Use S.S.S. congruent

rule).

50. In the given figure, the point P bisects AB and DC. Prove that $\triangle APC \cong \triangle BPD$

51. Observe the given figure and show that $\triangle ABC$ is Isosceles.
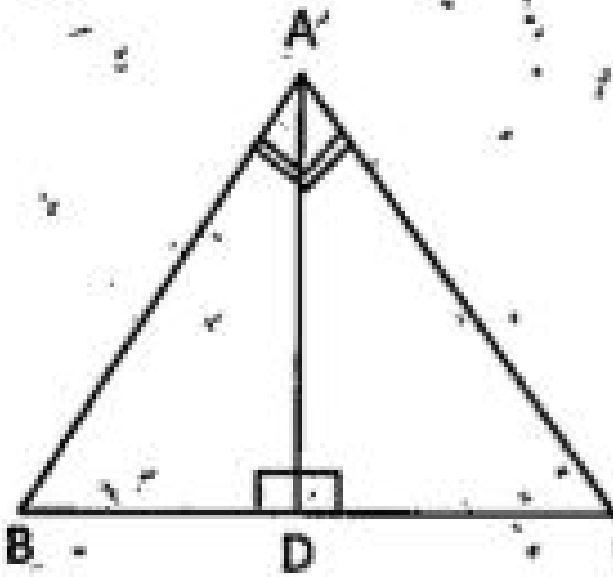
52. Observe the given figure and show that $\triangle \ EBL \cong trian \geq lECD.$
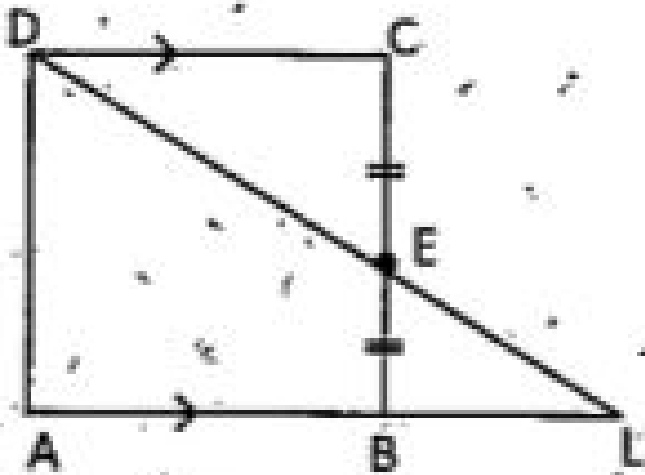
53. Show that in a right angled triangle, the hypotenuse is the longest side.

54. Figures having same shape and size are called _____ figures.

A. Congruent

B. Identical

C. Similar

D. Different

Answer:

▶ Watch Video Solution

55. Two squares are congruent if they have same

A. Shape

B. Side

C. Angles

D. None

Answer:

▶ **Watch Video Solution**

56. If $\triangle PQR \cong \triangle ABC$, then $\angle R =$

A. $\angle A$

B. $\angle B$

C. $\angle C$

D. Right angle

Answer:

▶ **Watch Video Solution**

57. Any two circles are

A. Similar

B. Congruent

C. Equal

D. Not equal

Answer:

▶ **Watch Video Solution**

58. $\triangle PQR$ Is an isosceles triangle and 'S' is the mid-point of $\overline{QR}$ then $\triangle PQS \cong$
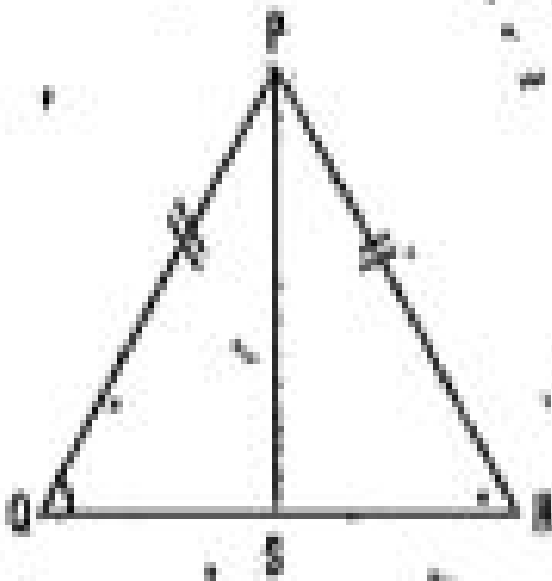
A. $\triangle PSR$

B. $\triangle RSP$

C. $\triangle SPR$

D. $\triangle PRS$

Answer:

59. If in $\triangle DEF$, $\overline{DF}$ is the longest side, then the greatest angle is

A. $\angle D$

B. $\angle E$

C. $\angle F$

D. Right angle

Answer:

60. If in $\triangle PQR$, $PQ > QR$ Then

   A. $\angle R > \angle P$

   B. $\angle P > \angle Q$

   C. $\angle R > \angle P$

   D. $\angle P < \angle Q$

Answer:

▶ **Watch Video Solution**

61. In $\triangle ABC$ which of the following is True?

A. $AB + BC < AC$

B. $AB - AC > AC$

C. $BC + CA < AB$

D. $AB + BC > AC$

Answer:

▶ **Watch Video Solution**

62. In $\triangle XYZ$ W is a point on YZ such that XW = XZ, then
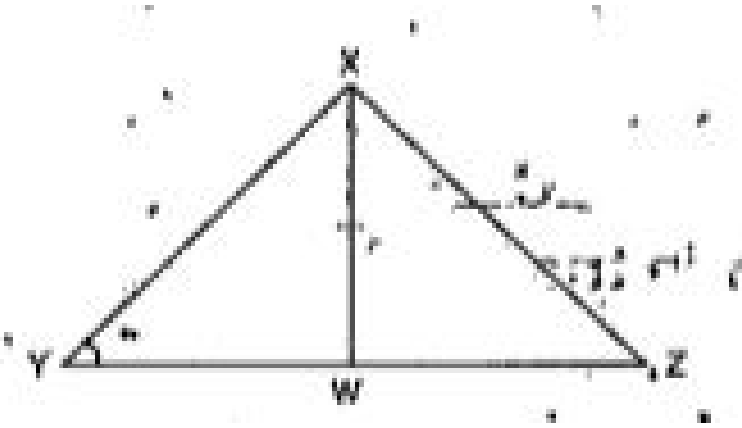
A. XY=XW

B. $XY > XW$

C. $XY < XW$

D. $XY < XZ$

Answer:

63. In the figure AB is a line segment and PQ is

an arc with centre A then
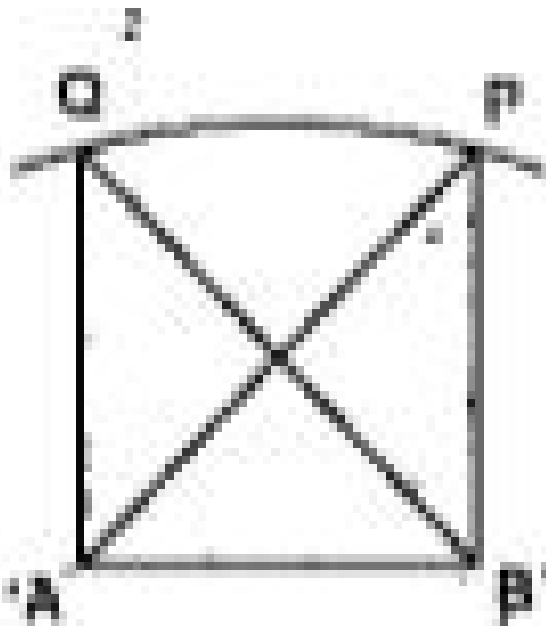
A. $\angle QAB < \angle PAB$

B. $\angle QAB > \angle PAB$

C. $\angle QAB = \angle PAB$

D. None

Answer:

▶ **Watch Video Solution**

64. In rhombus ABCD $\Delta AOB \cong$

A. ΔBOC
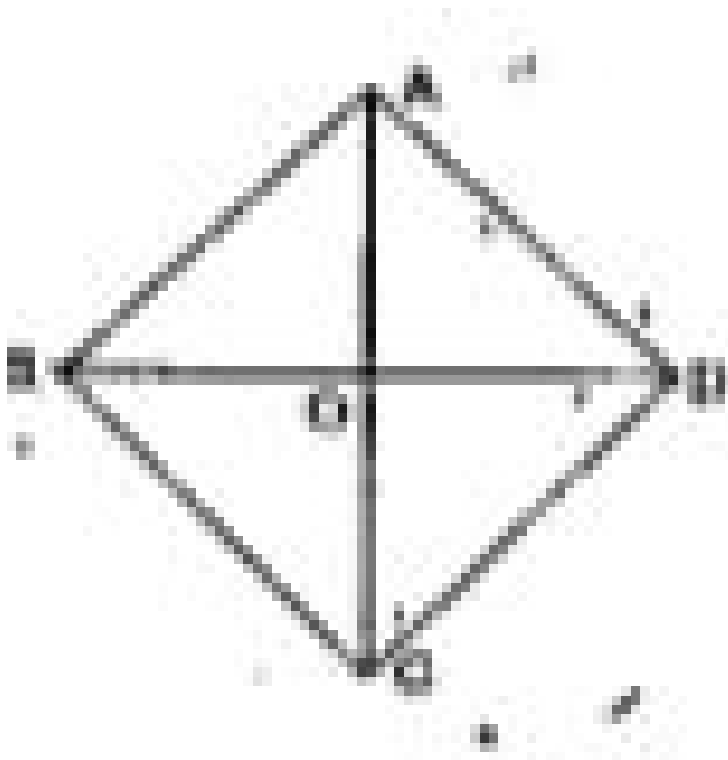
B. ΔCOD

C. $\triangle DOA$

D. All of the above

Answer:

▶ **Watch Video Solution**

---

65. In the figure PQ = SQ, PR = SR, then $\triangle PQR \cong \triangle SQR$ by _____ congruence .
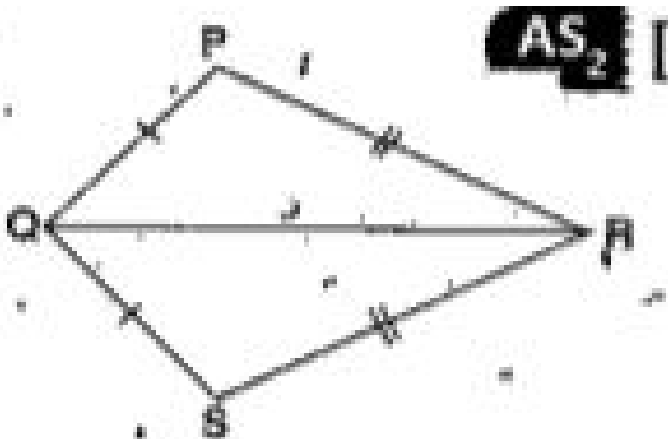
A. R.H.S.

B. S.A.S.

C. S.S.S.

D. A.S.A.

Answer:

▶ **Watch Video Solution**

---

66. In $\triangle ABC$, altitudes BD and CE are equal,

then $\triangle DCB \cong \triangle EBC$ by _____Congruence.
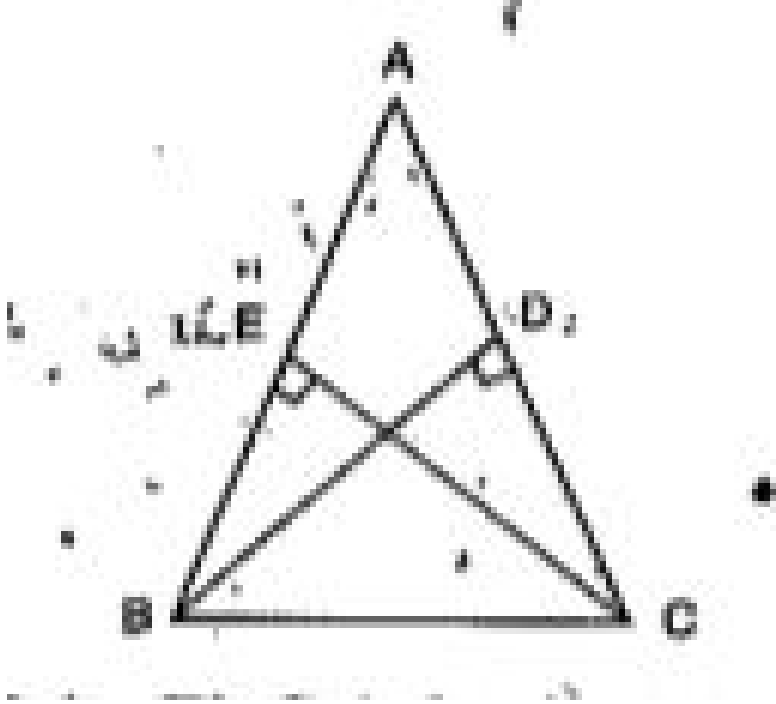
A. A.S.A.

B. S.A.S.

C. S.S.S.

D. R.H.S

Answer:

67. $\triangle ABC$ is isosceles with sides AB = AC, AD is the altitude, if $\angle BAD = 50°$ then $\angle CAD$=

A. $40°$

B. $130°$

C. $50°$

D. None

Answer:

68. If three angles of a triangle are equal To three angles of another triangle then they are

A. Congruent

B. Equal

C. Similar

D. Can't be said

Answer:

69. The angle of an equilateral triangle is

    A. $30°$

    B. $45°$

    C. $90°$

    D. $60°$

Answer:

70. In $\triangle ABC$, AB = AC and $AP \perp BC$ we can

prove that $\angle B = \angle C$ Using
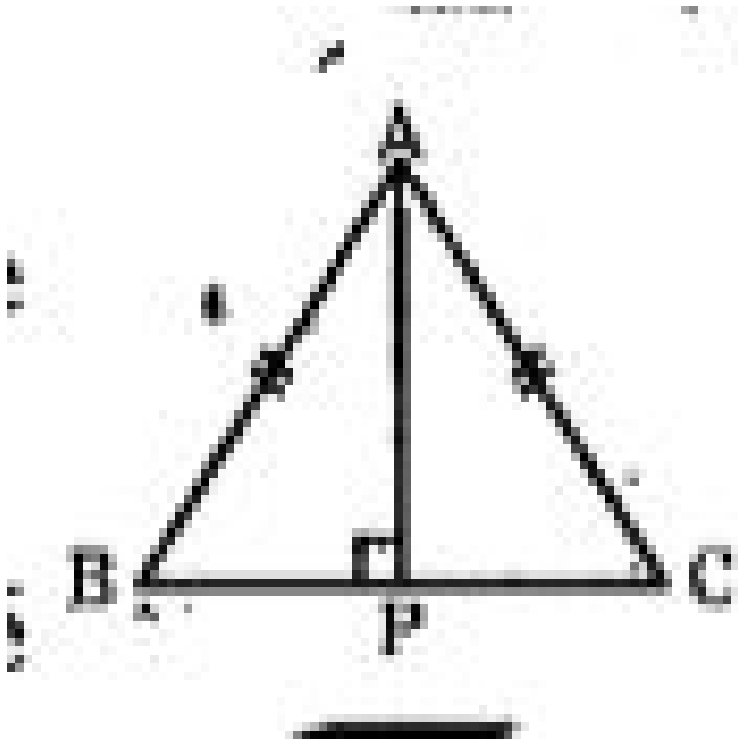
A. SSS congruency rule

B. RHS congruency rule

C. SAS congruency rule

D. ASA congruency rule

Answer:

▶ **Watch Video Solution**

71. In $\triangle ABC$, $AB > AC$, then
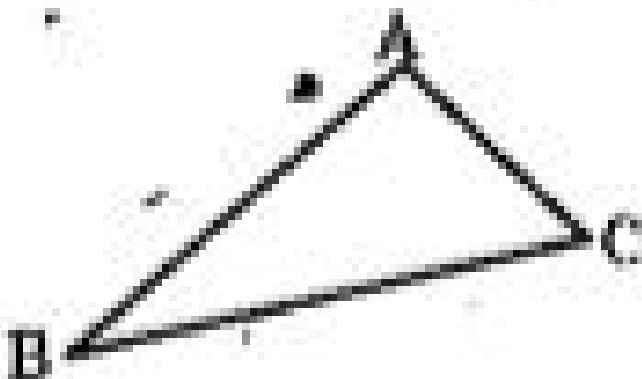
A. $\angle C < \angle B$

B. $AB + AC < BC$

C. $\angle C > \angle B$

D. $AB - AC > BC$

Answer:

72. Which of the following set of measurements is not possible to construct a Triangle ?

A. 5 cm, 8 cm, 4 cm

B. 2 cm, 4 cm, 8 cm

C. 7 cm, 5 cm, 3 cm

D. 5 cm, 8 cm, 1 cm

Answer:

73. Which measurement is required to Make a

triangle along with sides 4 cm and 6 cm ?

   A. 1cm

   B. 2cm

   C. 3 cm

   D. 1.5 cm

Answer:

74. Which of the following statement is not correct ?

A. In $\triangle ABC$, $\angle A + \angle B + \angle C = 180°$

B. In $\triangle ABC$, if $AB > BC$ then $C > A$

C. In a right angled triangle, the hypotenuse is the smallest side

D. In $\triangle ABC$, if AB=BC, then $\angle C = \angle B$

Answer:

75. Which congruency rule is applied in the following figures?
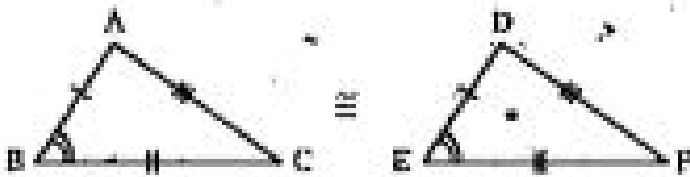
A. R.H.S

B. A.S.A

C. S.A.S

D. S.S.S.

Answer:

▶ **Watch Video Solution**

76. Which congruency rule is taken for the following figures?
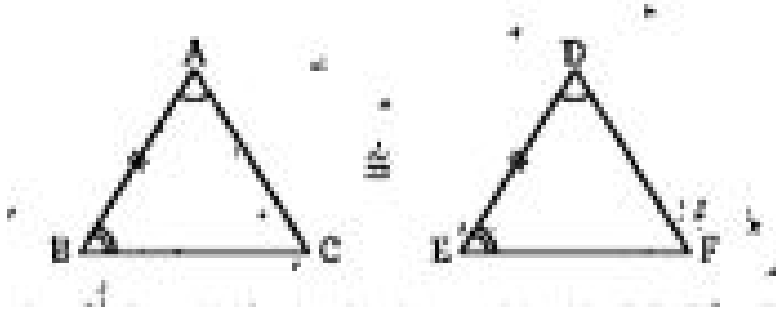
A. S.S.S

B. S.A.S

C. A.S.A

D. R.H.S.

Answer:

▶ Watch Video Solution

77. Which congruency rule is taken into consideration in the following figures?

A. S.S.S

B. S.A.S.

C. A.S.A

D. R.H.S.

Answer:

78. In $\triangle PQR$, PQ = 5 cm, QR= 12 cm, and PR = 13 cm, then PQR is

A. an acute angle triangle

B. A right angled triangle

C. An obtuse angled triangle

D. An equilateral triangle

Answer:

79. The angles of a triangle are in the ratio 5:3:7, then the triangle is

A. An obtuse angled triangle

B. Right angle triangle

C. An Isosceles triangle

D. An acute angled triangle

Answer:

80. In $\triangle ABC$, $\angle A = 40°$ if $\overline{BO}$ and $\overline{CO}$ are the bisectors of $\angle B$ and $\angle C$, then the value of $\angle BOC$ is
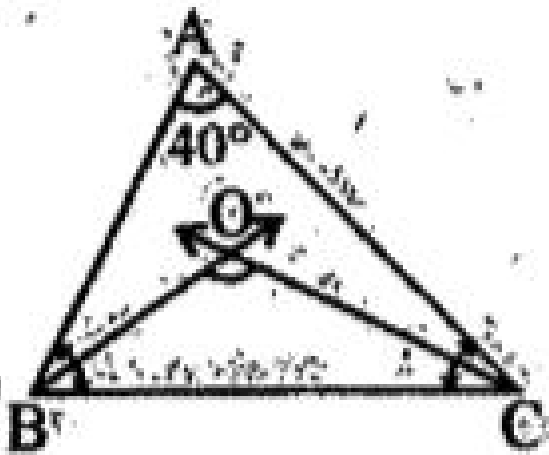
A. $110°$

B. $70°$

C. $40°$

D. $40°$

Answer:

81. Which of these is a postulate?

A. A.A.A

B. A.S.A

C. S.S.S

D. S.A.S

Answer:

82. In the given diagram BD = AD and AC = CD then $\angle CAB : \angle ABD$
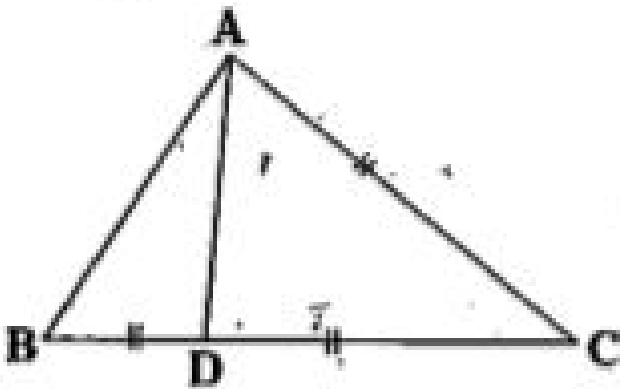
A. 0.12569444444444

B. 0.04375

C. 0.044444444444444

D. 0.16736111111111

Answer:

83. In $\triangle ABC$, D, E are the mid points $\overline{AB}, \overline{AC}$, of F, G are the mid points of $\overline{AD}, \overline{AE}$. If $\overline{FG} = 2cm$, then BC=

A. 10 cm.

B. 4 cm.

C. 6cm.

D. 8 cm.

Answer:

▶ **Watch Video Solution**

84. ΔPQR is an equilateral triangle.X,Y,Z are the mid points of the sides and A,B,C are midpoints of sides of ΔXYZ. If the perimeter of

ΔPQR is 8.4cm., then the perimeter of ΔABC=

A. 4.2cm.

B. 8.4 cm.

C. 2.1cm.

D. 2.8 cm.

Answer:

▶ **Watch Video Solution**

85. The exterior angle at R in ΔPQR is

A. $120\,^{\circ}$

B. $60\,^{\circ}$

C. $80\,^{\circ}$

D. $100\,^{\circ}$

Answer:

▶ **Watch Video Solution**

86. In $\triangle XYZ$ the biggest angle is at which vertex?

A. X+Y+Z

B. X

C. Y

D. Z

Answer:

▶ Watch Video Solution

87. $\triangle ABC \cong \triangle DBC$ by which congruency rule?

A. A.A.A.

B. S.S.S

C. S.A.S

D. A.S.A

Answer:

▶ Watch Video Solution

88. In the given triangle is it possible to exist all exterior angles as right angles.

    A. Never possible

    B. Always possible

    C. Sometimes possible

    D. There can be 2 rights angles

Answer:

▶ **Watch Video Solution**

89. "In a triangle median decides the triangle into two triangle whoes areas are equal."

Rough diagram for the above statement is

A.

B.

C.

D.

Answer:

▶ **Watch Video Solution**

90. $rectang \le ABCD$ is a Rhombus prove that the diagonals divides the Rhombus info for congruent triangles (let the point of intersection is O) for the above problem what is R.T.P?

A.

$$\triangle ABC \cong \triangle ACD \cong \triangle ABD \cong \triangle BCD$$

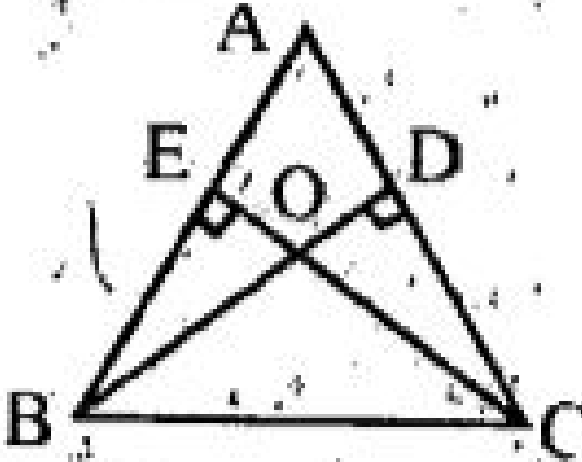B. $\triangle ABC \cong \triangle ACD$

C. $\triangle ABD \cong \triangle BCD$

D.

$$\Delta OAB \cong \Delta OBC \cong \Delta OCD \cong \Delta OAD$$

Answer:

91. From the given figure, what is the additional information needed to prove

$\Delta OBD = \Delta OCD$?

A. BE=CD

B. $\angle BOE = \angle COD$

C. $\angle OBE = \angle OCD$

D. BD=CE

Answer:

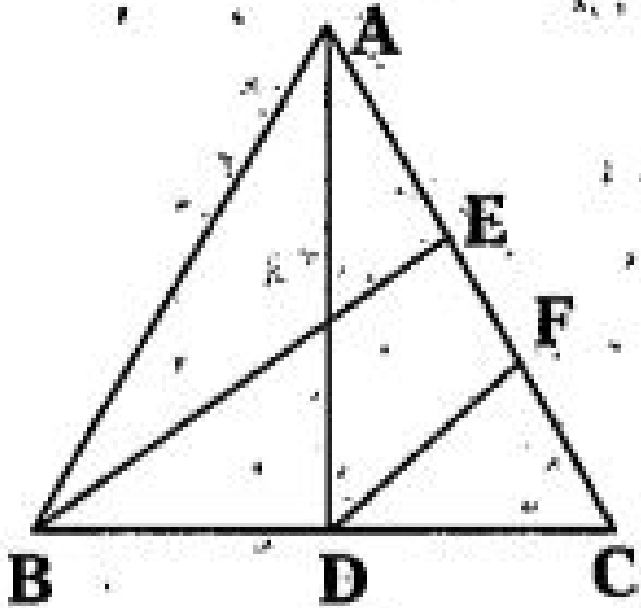**92.** In $\triangle ABC, \overline{AD}, \overline{BE}$ are medians $\overline{BE} || \overline{DF}$. To prove $CF = \dfrac{1}{4}AC$ it was written as In $\triangle ABC$ 'D' is the mid-point of $\overline{BC}$ and $BE || DF$. As per triangle mid-point theorem F is the mid-point of $\overline{CE} \therefore CF = \dfrac{1}{2}CE.$ Which of the following is the next step? Which of the following is the

A. $CF = \dfrac{1}{4}AC$

B. $2CF = CE$

C. $CF = \dfrac{1}{2}\left(\dfrac{1}{2}AC\right)$

D. $4CF = AC$

Answer:

▶ Watch Video Solution