Ravi Maths Tuition

Triangles

9th Standard

Mathematics

Multiple Choice Question 102 x 1 = 102

1) A closed figure formed by three intersecting lines is called

(a) circle (b) square (c) triangle (d) rhombus

2) 'Tri' means

(a) one (b) two (c) three (d) four

3) A triangle has

(a) 2 verticles (b) 3 verticles (c) 4 verticles (d) 5 verticles

4) A triangle has

(a) 6 angles (b) 5 angles (c) 8 angles (d) 3 angles

5) The symbol for congruence is

(a) = (b) ~ (c) ^{0} (d) ≅

6) The symbol for correspondence is

(a) $\longrightarrow$ (b) $\Leftrightarrow$ (c) $\leftrightarrow$ (d) ≡

7) The side of an equilateral triangle is 4cm.An equilateral triangle, congruent to it, has the side length

(a) 1 cm (b) 2 cm (c) 3 cm (d) 4 cm

8) Two circles are congruent.If the radius of one circle is 3cm, what is the radius of the other circle?

(a) 3 cm (b) 6 cm (c) 1.5 cm (d) 1 cm

9) Two circles are congruent.If the radius of one circle is 1cm, then the diameter of the other circle is

(a) 1 cm (b) 2 cm (c) 4 cm (d) 0.5 cm

10) Two circles are congruent.If the diameter of one circle is 2cm, then the radius of the other circle is

(a) 1 cm (b) 2 cm (c) 3 cm (d) 4 cm

11) If the diameter of a circle is 2cm, what is the diameter of circle congruent to it?

(a) 1 cm (b) 2 cm (c) 3 cm (d) 4 cm

12) If the side of a square is a cm, what is the side of a congruent square?

(a) 1 cm (b) 2 cm (c) a cm (d) 2a cm

13) Two triangles are congruent, if two sides and the included angle of one triangle are equal to two sides and the included angle of the other triangle. This rule is known as

(a) SAS congruence rule (b) ASA congruence rule (c) SSS congruence rule (d) RHS congruence rule.

14) Two equilateral triangles are congruent when:

(a) their angles ar equal (b) their sides are equal (c) their sides are proportional

(d) their areas are proportional

15) $\Delta ABC \equiv \Delta PQR$, then which of the following is true:

(a) $A \leftrightarrow R$ (b) AB=QR (c) AC=PQ (d) AB=PQ

16) $\Delta ABC \cong \Delta PQR$.If AB = 5cm, $\angle B = 40^0$and $\angle A = 80^0$, then which of the following is true?

(a) QP = 5cm, $\angle P = 60^0$ (b) QP = 5cm, $\angle R = 60^0$ (c) QR = 5cm, $\angle R = 60^0$ (d) QR = 5cm, $\angle Q = 40^0$

17) Two triangles are congruent, if two angles and the included side of one triangle are equal to two angles and the included side of other triangle. This rule is known as

(a) SAS congruence rule (b) ASA congruence rule (c) SSS congruence rule (d) AAS congruence rule.

18) Two triangles are congruent, if any two pairs of angles and one pair of corresponding sides are equal. This rule is known as

(a) SAS congruence rule (b) ASA congruence rule (c) AAS congruence rule (d) SSS congruence rule

19) In the given figure, OA = OB, OD = OC, then $\Delta AOD \cong BOC$ by congruency rule:

(a) SAS (b) ASA (c) SAS (d) RHS

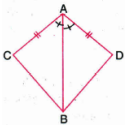
20) Among the following which is not a criteria for congruence of two triangles?

(a) SAS (b) ASA (c) SSA (d) SSS

21) In two triangles ABC and DEF, $\angle A = \angle D$, $\angle B = \angle E$ and AB = EF, then are the two triangles congruent? If yes, by which congruency rule?

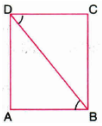
(a) yes, by AA (b) NO (c) yes, by ASA (d) Yes, by RHS

22) Which congruence rule is used to show $\Delta ACB \cong ADB$?



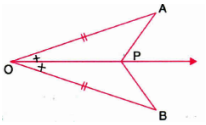
(a) ASA (b) SSS (c) AAS (d) SAS

23) In the given figure, if AB = DC, $\angle ABD = \angle CDB$, which congruence rule would you apply to prove $\Delta ABD \cong CDB$?



(a) SAS (b) SSS (c) AAS (d) SAS

24) Given $\Delta OAP \cong \Delta OBP$ in figure, the criteria by which the triangles are congruent:



(a) SAS (b) SSS (c) RHS (d) ASA

25) In ΔAOC and ΔXYZ, $\angle A = \angle X$, AO=XZ, AC-XY then by which congruence rule $\Delta AOC \cong \Delta XYZ$?

(a) SAS (b) ASA (c) SSS (d) RHS

26) In triangles ABC and DEF, AB = DE, BC = EF and $\angle A = \angle D$. Are the triangles congruent? If yes, by which congruency rule?

(a) yes, by SAS (b) No (c) yes, by SSS (d) yes, by RHS

27) In ΔABC and ΔDEF, AB = DF and $\angle A = \angle D$.The two triangles will be congruent by SAS axiom if:

(a) BC = EF (b) AC = DE (c) DC = DE (d) AC = EF

28) In ΔABC and ΔPQR, AB = PR and $\angle A = \angle P$. The two triangles will be congruent by SAS axiom if:

(a) BC = QR (b) AC = PQ (c) AC = QR (d) BC = PR

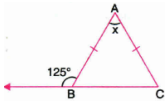
29) The measure of each angle of an equilateral triangle is

(a) 30^0 (b) 45^0 (c) 60^0 (d) 90^0

30) In ΔABC, BC = AB and L B = 80^0, then $\angle A$ is equal to:

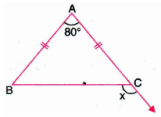
(a) 80^0 (b) 40^0 (c) 50^0 (d) 180^0

31) In figure, if AB = AC find x.



(a) 55^0 (b) 55^0 (c) 50^0 (d) 70^0

32) In figure, in ΔABC, AB = AC. The value of x is:



(a) 80^0 (b) 100^0 (c) 130^0 (d) 120^0

33) In ΔPQR, PQ = PR and $\angle Q = 65^0$, then $\angle P$ is :

(a) 55^0 (b) 130^0 (c) 65^0 (d) 50^0

34) ΔABC is an isosceles right angled triangle in which $\angle A = 90^0$, then $\angle B$ =

(a) 60^0 (b) 90^0 (c) 45^0 (d) 30^0

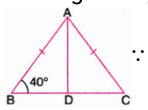
35) In ΔABC, $\angle C = \angle A$ and BC = 6 ern and AC = 5 cm, then the length of AB is:

(a) 6 cm (b) 5cm (c) 3cm (d) 2.5cm

36) In ΔABC and ΔFDE, if AB = DF, BC = DE, AC = EF and $\angle D$ = 550 Then, $\angle B$=

(a) 55^0 (b) 35^0 (c) 90^0 (d) 45^0

37) In the given figure, AD is the median, then ΔBAD is



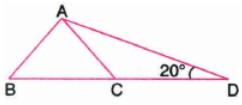
(a) 55^0 (b) 50^0 (c) 100^0 (d) 40^0

38) In triangles ABC and PQR, AB = AC, $\angle C = \angle P$and $\angle B = \angle Q$. The two triangles are:

(a) isosceles but not congruent (b) isosceles and congruent (c) congruent but not isosceles

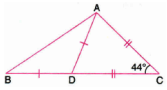
(d) neither isosceles nor congruent

39) In the following figure, in A ABC, AB = AC; CD = CA and $\angle ADC = 20°$.Then, $\angle ABC$=



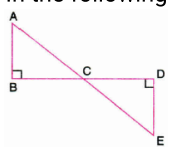
(a) 10^0 (b) 20^0 (c) 30^0 (d) 40^0

40) In the following figure, in ΔABC, AD = BD and AC = DC and $\angle C = 44°$. Then, the measure of $\angle A$ =



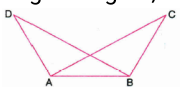
(a) 68^0 (b) 112^0 (c) 34^0 (d) 102^0

41) In the following figure, $\angle B = \angle D = 90°$ and BC = CD.Then, the relation between AB and DE is



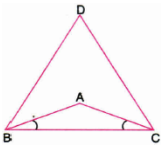
(a) AB = DE (b) AB > DE (c) AB < DE (d) none of these.

42) In given figure, AD = BC and ∠BAD = ∠ABC, then ∠ACB equals:



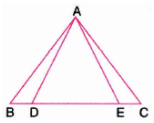
(a) ∠ABD (b) ∠BAD (c) ∠BDA (d) ∠BAC

43) In A ABC, AB = AC and ∠ABD = ∠ACD,then ΔBCD is



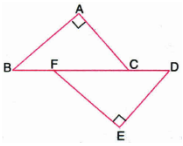
(a) equilateral (b) isosceles (c) equiangular (d) scalene.

44) In ΔABC, AB = AC, BD = EC. Then, ΔADE is



(a) right angled (b) scalene (c) isosceles (d) equilateral

45) In the following figure, BA ⊥ AC, DE ⊥ EF, BA = DE and BF = DC. Then,



(a) AC > EF (b) AC=EF (c) AC (d) AC = 2EF

46) Which of the following is false?

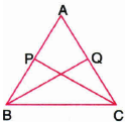
(a) The mid-point of the hypotenuse of a right triangle is equidistant from its vertices.

(b) Each angle of an equilateral triangle is 60°

(c) The side opposite to the greater angle of a triangle is longer than the side opposite the smaller angle

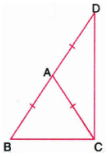
(d) The two altitudes corresponding to two equal sides of a triangle are not equal.

47) In figure, if AB = AC and AP = AQ, then by which congruence criterion ΔPBC ≅ ΔlQCB.



(a) SSS (b) ASA (c) SAS (d) RHS

48) In an isosceles triangle AB = AC and side BA is extended to D such that AB = AD.Then, the measure of ∠BCD is:



(a) 70^0 (b) 90^0 (c) 60^0 (d) 45^0

49) If the 3 altitudes of a triangle are equal, then triangle is:

(a) right angled triangle (b) isosceles triangle (c) acute angled triangle (d) equilateral triangle

50) If three sides C1fone triangle are equal to three sides of another triangle, then the two triangles are congruent.

(a) SAS congruence rule (b) ASA congruence rule (c) AAS congruence rule (d) SSS congruence rule.

51) If in two right triangles hypotenuse and one side of a triangle are equal to the hypotenuse and one side of other triangle, then the two triangles are congruent. This rule is known as:

(a) SAS congruence rule (b) ASA congruence rule (c) SSS congruence rule (d) RHS congruence rule

52) If $\Delta ABC \cong DEF$ by SSS congruence rule then:

(a) AB = EF, BC = FD, CA = DE (b) AB = FD, BC = DE, CA = EF (c) AB = DE, BC = EF, CA = FD

(d) AB = DE, BC = EF, $\angle C = \angle F$

53) If ΔABC is congruent to ΔDEF by SSS congruence rule, then:

(a) $\angle C < \angle F\Delta$ (b) $\angle B < \angle E$ (c) $\angle A < \angle D$ (d) $\angle A = \angle D, \angle B = \angle E, \angle C = \angle F$

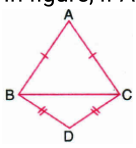
54) If AB = QR, BC = PR and CA = PQ then:

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

55) If in two triangles ABC and DEF, AB = DE, BC = EF and AC = DF then Δ ABC $\cong \Delta DEF$ by congruency rule:

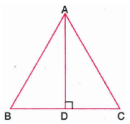
(a) RHS (b) SAS (c) SSS (d) ASA

56) In figure, if AB = AC and BD = DC, ΔABD and ΔACD are congruent by which criterion.



(a) SSS (b) ASA (c) SAS (d) RHS

57) In the following figure, in ΔABC, AB = AC and AD $\perp$ BC.Then, side AD is the bisector of

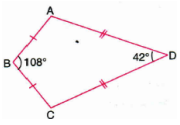


(a) $\angle A$ (b) side BC (c) $\angle A$ and side BC (d) none of these

58) If the lengths of the perpendiculars drawn from the middle point of a line to the other two sides are equal, then the triangle is:

(a) equilateral (b) isosceles (c) equiangular (d) scalene.

59) In figure, ABCD is a quadrilateral in which AB = BC and AD = DC.Measure of $\angle BCD$ is:



(a) 150^0 (b) 30^0 (c) 105^0 (d) 72^0

60) The sum of the three altitudes of a triangle is the perimeter of the triangle.

(a) greater than (b) equal to (c) half of (d) less than

61) In ΔABC, if $\angle A = 35°$ and $\angle B = 65°$, then the longest side of the triangle is:

(a) AC (b) AB (c) BC (d) None of these

62) In ΔPQR, $\angle P = 60°$ and $\angle Q = 50°$ which side of the' triangle is the longest?

(a) PQ (b) QR (c) PR (d) None

63) In ΔABC, if $\angle B = \angle C = 45°$, then the longest side is

(a) AB (b) BC (c) CA (d) none of these

64) Two sides of a triangle are of lengths 7 cm and 3.5 em. The length of the third side of the triangle cannot be

(a) 3.6cm (b) 4.1cm (c) 3.4cm (d) 3.8cm

65) Two sides of a triangle are 12 cm and 13 cm.The length of the third side cannot be:

(a) 0.8cm (b) 5cm (c) 4cm (d) 6cm

66) Two sides of a triangle are 5 cm and 1.5 cm. The length of the third side cannot be:

(a) 3.6cm (b) 4.5cm (c) 3.8cm (d) 3.4cm

67) If length of the largest side of a triangle is 12 cm then other two sides can be:

(a) 4.8cm, 8.2cm (b) 3.2cm, 7.8cm (c) 6.4cn, 2.8cm (d) 7.6cm, 3.4cm

68) It is not possible to construct a triangle when its sides are:

(a) 8.3 em, 3.4 em, 6.1 em (b) 5.4 em, 2.3 em, 3.1 em (c) 6 em, 7 em, 10 em (d) 3 em, 5 em, 5 em

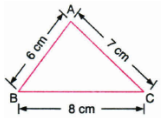
69) In any triangle ABC, $\angle A > \angle B$ and $\angle B > \angle C$, then the smallest side is:

(a) AB (b) BC (c) CA (d) none of these

70) If ΔABC is right angled at B, then:

(a) AB = AC (b) AC < AB (c) AB=BC (d) AC > Ab

71) In ΔABC :



(a) $\angle C > \angle B$ (b) $\angle B < \angle A$ (c) $\angle B > \angle A$ (d) $\angle C > \angle A$

72) In ΔABC, if AB > BC then:

(a) $\angle C < \angle A$ (b) $\angle C = \angle A$ (c) $\angle C > \angle A$ (d) $\angle A = \angle B$

73) In ΔPQR, if $\angle R > \angle Q$, then:

(a) QR > PR (b) PQ > PR (c) PQ < PR (d) QR < PR

74) If in a triangle XYZ, $\angle Y > \angle X$ and XZ = 13 em, then XZ is:

(a) 8cm (b) 9cm (c) 13.5cm (d) 13cm

75) In ABC if AB=BC, then:

(a) $\angle B > \angle C$ (b) $\angle A = \angle C$ (c) $\angle A = \angle B$ (d) $\angle A < \angle C$

76) If E is a point on side QR of a ΔPQR such that PE bisects $\angle QPR$, then:

(a) QE=ER (b) QP > QE (c) QE > QP (d) ER > RP

77) In ΔABC, $\angle A = 100^0$, $\angle B = 30^0$ and $\angle C = 50^0$, then:

(a) AB > AC (b) BC < AC (c) AB < AC (d) none of these

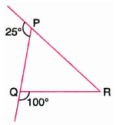
78) P is a point on side BC of ΔABC such that AP bisects $\angle BAC$.Then:

(a) BP = CP (b) BA > BP (c) BP > BA (d) CP < CA

79) In ΔPQR, PE is the perpendicular bisector of $\angle QPR$, then:

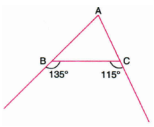
(a) QE = PE (b) QP > QE (c) PQ = PR (d) PQ > PR

80) For the given triangle PQR, which of the following is true?



(a) PQ = QR (b) PQ > QR (c) PQ < QR (d) $\angle P = \angle Q$

81) In the following figure, write the relation between AB and AC.



(a) AB > AC (b) AB < AC (c) Ab = AC (d) AB=$\frac{1}{2}$AC

82) $\angle X$ and $\angle Y$ are exterior angles of ΔABC at the points B and C respectively. Also $\angle B > \angle C$, then the relation between $\angle X$and $\angle Y$is:

(a) $\angle X > \angle Y$ (b) $\angle X < \angle Y$ (c) $\angle X = \angle Y$ (d) $\angle X \geq \angle Y$

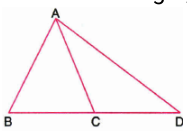
83) In ΔABC, if $\angle A > \angle B > \angle C$ then:

(a) AB > AC (b) AC < BC (c) AB > BC (d) AC > BC

84) In ΔABC, $\angle B=30^0$, $\angle C=80^0$ and $\angle A =70^0$ then,

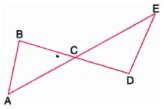
(a) AB > BC < AC (b) AB < BC > AC (c) AB > BC > AC (d) AB < BC < AC

85) In the following figure, if AB = AC, then the relation between AB and AD is



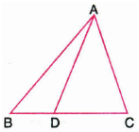
(a) AD = AB (b) AD < AB (c) AD > AB (d) None of these

86) In the following figure, $\angle B > \angle A$ and $\angle D > \angle E$.Then, the relation between AE and BD is



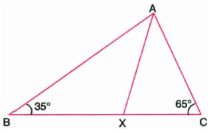
(a) AE = BD (b) AE > BD (c) AE < BD (d) None of these

87) In ΔABC, AB > AC and D is any point on side BC.Then, the relation between AB and AD is



(a) AB > AD (b) AB = AD (c) AB < AD (d) None of these

88) In ΔABC, $\angle B = 35°$, $\angle C = 65°$ and the bisector of $\angle BAC$ meets BC in X.Then, the relation between BX and AX is



(a) BX = AX (b) BX < AX (c) BX > AX (d) None of these

89) Which of the following is not a criterion for congruence?

(a) SSS (b) AAA (c) AAS

90) In ΔABC and ΔPQR AB = PQ, BC = QR, LQ = LB Which of the following is correct?

(a) $\Delta ABC \cong \Delta QPR$ (b) $\Delta ABC \cong \Delta PRQ$ (c) $\Delta ABC \cong \Delta PQR$

91) In ΔABC, and ΔDEF, if AC = EF, AB = ED and BC = DF then which is correct?

(a) $\Delta ABC \cong \Delta DEF$ (b) $\Delta ABC \cong \Delta EFD$ (c) $\Delta ABC \cong \Delta EDF$

92) Look at the ΔABC and ΔPQR in the given figure. Which of the following is correct?

(a) $\Delta ABC \cong \Delta QRP$ (b) $\Delta ABC \cong \Delta QPR$ (c) $\Delta ABC \cong \Delta PRQ$

93) In the figure, OA = OQ and OB = OP Which one of the following is correct?

(a) $\Delta AOB \cong \Delta QOP$ (b) $\Delta AOB \cong \Delta POQ$ (c) $\Delta AOB \cong \Delta OPQ$

94) If in ΔABC and ΔPQR, if AB = QR, BC = PR and CA = PQ then which of the following is true?

(a) $\Delta CBA \cong \Delta PRQ$ (b) $\Delta BCA \cong \Delta PQR$ (c) $\Delta ABC \cong \Delta PQR$

95) If it is given that $\Delta ABC \cong \Delta FDA$ such that AB = 4.5 cm, LB = 50°, and $\angle A = 70°$ then which of the following is correct?

(a) DF = 4.5 cm and $\angle F = 60°$ (b) DF = 4.5 cm and $\angle E = 60°$ (c) DE = 4.5 cm and $\angle D = 70°$

96) In a ΔDEF, ∠F > ∠E then which of the following is true?

(a) EF > DF (b) DE > DF (c) DE < DF (d) EF < DF

97) In ΔBC and ΔDEF, we have AB = AC; ∠C = ∠D and ∠B = ∠E then for the two triangles which of the following is true?

(a) congruent but not isosceles (b) congruent and isosceles (c) isosceles but not congruent

(d) neither congruent nor isosceles

98) In the figure, AB = AC = BC. Which of the following relations true?

(a) AD = AC (b) AD < AB (c) AD > AB

99) AD is a median of a triangle ABC. Which of the following is not true?

(a) AB + BC > AD (b) AC + BC > AD (c) AB + BC < AD

100) In the figure ∠B < ∠A and ∠C < ∠D then which of the following is true?

(a) AD = BC (b) AD < BC (c) AD > BC

101) Which of the following form a set of sides of a triangle?

(a) 10 cm, 5 cm, 4 cm (b) 8 cm, 6 cm, 3 cm (c) 5 cm, 2.5 cm, 1.9 cm

102) Which of the following form a set of angles of a triangle?

(a) 35°, 45°, 95°, (b) 40°, 50°, 100°, (c) 21°, 39°, 120°,

1 Marks 55 x 1 = 55

103) Is SSA a criterion for congruence of triangle?

104) If the altitudes from two vertices of a triangle to the opposite sides are equal. then what type of triangle will be formed?

105) If the corresponding angles of two triangles are equal. then they are always congruent. Is this statement true or false?

106) It is given that $\triangle ABC \cong \triangle RPQ$. Is it true to say that BC = QR? Why?

107) In $\triangle ABC$ if AB = AC and $\angle A = 100^0$ then find $\angle B$ and $\angle C$

108) If AB = PQ BC = QR and AC = PR, then which congruence rule holds for the congruence of ABC and MQR?

109) In $\triangle ABC$ if $\angle C$ > $\angle B$ then find the relation between the sides AB and AG.

110) In $\angle ABC$,if $\angle AB = 35^0$ and $\angle B = 65^0$ then find the longest side of the triangle.

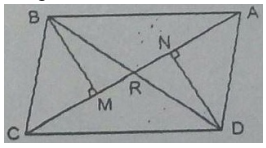
111) In $\angle P = 40^0$ and $\angle Q = 85^0$ there find the smallest side of the triangle

112) In $\triangle ABC$, If $\triangle A = 50^0$ and $\triangle Q = 70^0$ then find the shortest side of the triangle

113) In ΔABC and ΔPQR, ∠A = ∠Q and $\angle B = \angle R$. Which side of ΔPQR should be equal to side AB of ΔABC, so that the two triangle are congruent? Given reason for your answer.

114) If the altitudes AD, BE and CF of a ΔABC are equal, then prove that ΔABC is an equilateral triangle.

115) In a quadrilateral ABCD, perpendiculars BM and DN are drawn to AC, such that BM = DN. If BR = 8 cm, then find the length of BD.



116) AD is a median and BL and CM are perpendiculars drawn from Band C respectively on AD produced to M. Prove that BL = CM.

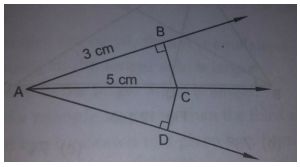
117) In an isosceles ΔABC with AB = AC, D and E are the points on BC such that BE = CD. Show that AD = AE.

118) In a ΔABC, 0 and Pare the points on AB and AC, respectively. If OA = 1/2 AB,PA =1/2 AC and 2 2 OA = PA show that AB = AC.

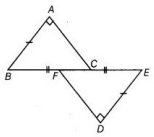
119) In a ΔABC, if AB = 3cm, AC = 3cm and ∠A = 50^0, then find ∠B.

120) D and E are points on the base BC of ΔABC, such that BD = CE. if AD=AE, then prove that ΔABE ≅ ΔACD

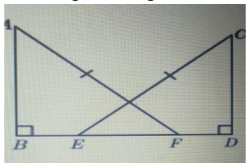
121) In the given figure, if AC is bisector of ∠BAD, such that AD = AD = AB = 3cm and AC = 5cm. Show that ΔABC≅ΔAC and BC = CD



122) In the given figure, BA⊥AC, DE⊥DF such that BA = DE and BF = EC. show that ΔABC≅ΔDEF



123) In the given figure AB and CD are perpendiculars on BD.Also, AB = CD and AF = CE. Prove that BE = FD



124) If a, b and c are the sides of a triangle, then write anyone of the inequality of a triangle.

125) Is it possible to construct a triangle with lengths of its sides as 4 cm, 3 cm and 7 cm? Give reason for your answer.

126) In ΔPQR, ∠P = 70^0 and ∠30^0 . Which side of this triangle is the longest? Give reason for your answer.

127) Show that the sum of three altitudes of a triangle is less than the sum of the three sides of the triangle.

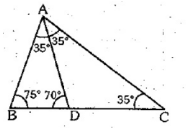
128) In $\triangle ABC$ it BC= AB and 0 find < AB

129) In $\triangle ABC$ $\triangle PQR$ it is given that $\angle A = \angle R, \angle C = \angle P \; and \; \angle B = \angle Q$ Find either both triangles are isosceles or congruent

130) Show that the difference of any two sides of a triangle is less than the third side.

131) Prove that the perimeter of a triangle is greater than the sum of its three medians

132) In the given figure, AD bisects ∠A. Then, find the relation between the sides AB, AC and DC.



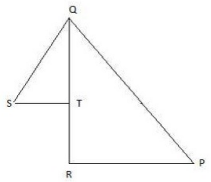
133) Show that in a quadrilateral ABCD, AB + BC +CD + DA < 2(BD + AC).

134) If AB and CD are the smallest and largest sides of a quadrilateral ABCD, out of ∠B and ∠D decide which is greater?

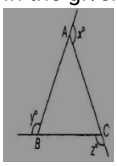
135) Sis any point on side OR of a ΔPOR. Show that PO +OR + RP > 2PS

136) In the given figure, PO > PR, OS and RS are the bisectors of ∠Q and ∠R respectively, then find the relation between the sides SO and SR.

137) In the given figure, T is a mid-point of side OR of of ΔPQR POR and S is a point such that RT = ST. Prove that PO + PR > OS.



138) In the given figure, AB = 8.5 crn, BC = 6 crn and CA = 7.2 cm. Write X^0 / y^0 and Z^0 in ascending order.



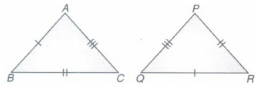
139) Write ASA congruence rule for two triangles.

140) In $\triangle$ABC and $\triangle$DEF, AB=DE, $\angle$A=$\angle$D. What will be the condition in which the two triangles will be congruent by SAS axiom?

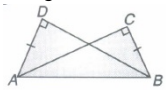
141) What do we call a triangle if the angles are in the ratio 5 : 3 : 7?

142) $\triangle ABC \cong \triangle PQR$, AB=PQ. Which statement has been followed in this?

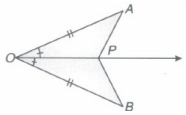
143) In the given figure given below, if AB=QR, BC = PR and CA = PQ, then



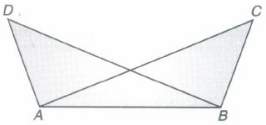
144) In the figure below, it is given that$\triangle ABD \cong \triangle BAC$. What criteria is used to prove that the triangles are congruent?



145) Given$\triangle OAP \cong \triangle OBP$ in the figure below. Prove the criteria by which the triangles are congruent.



146) In given fig., AD = BC and $\angle$BAD =$\angle$ABC, then prove that $\angle$ACB = $\angle$BDA.

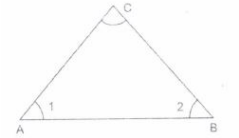


147) $\triangle PQR \cong \triangle ABC$, if PQ = 5 cm, $\angle$Q = 40° and $\angle$P = 80°, calculate the value of $\angle$C.

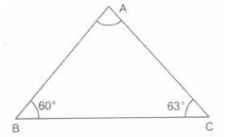
148) Is it possible to construct a triangle, when its sides are 5.4 cm, 2.3 cm, 3.1 cm?

149) In $\triangle$ABC, $\angle$B = 30°, $\angle$C = 80° and $\angle$A = 70°, then prove that AB > BC > AC.

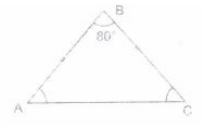
150) In a ΔABC, BC = CA and ∠A = 50°, which is longer BC or AB?



151) In ΔABC, ∠B = 60° and ∠C = 63°. Name the greatest side.



152) In ΔABC if BC = AB and ∠B = 80° then find the measure of ∠A.



153) Which of the following is not the criterion for congruence of Δs?
(i) SAS.
(ii) SS.,
(iii) ASA.
(iv) RHS

154) If two angles are (30 - a)° and (125 + 2a)° and they are supplement of each other: Find the value of 'a'.

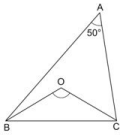
155) Each of the equal angles of an isosceles triangle is 38°, what is the measure of the third angle?

156) In an isosceles ΔABC, AB = AC and ∠A = 80°. What is the measure of ∠B?

157) Find the measure of each of acute angle in a right angle isosceles triangle.

Assertion and reason 15 x 1 = 15

158) **Assertion :** In the given figure, BO and CO are the bisectors of ∠B and ∠C respectively. If ∠A = 50° then ∠BOC = 115°
Reason : The sum of all the interior angles of a triangle is 180^o

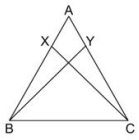


159) **Assertion :** In ΔABC, ∠C = ∠A, BC = 4 cm and AC = 5 cm. Then, AB = 4 cm
Reason : In a triangle, angles opposite to two equal sides are equal.

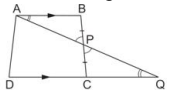
160) **Assertion :** In ΔABC, BC = AB and ∠B = 80°. Then, ∠A = 50°
Reason : In a triangle, angles opposite to two equal sides are equal.

161) **Assertion :** In ΔABC, D is the midpoint of BC. If DL ⊥ AB and DM ⊥ AC such that DL = DM, then BL = CM
Reason : If two angles and the included side of one triangle are equal to two angles and the included side of the other triangle, then the two triangles are congruent.

162) **Assertion :** In the adjoining figure, X and Y are respectively two points on equal sides AB and AC of ΔABC such that AX = AY then CX = BY.
Reason : If two sides and the included angle of one triangle are equal to two sides and the included angle of the other triangle, then the two triangles are congruent.

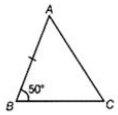


163) In the given figure, ABCD is a quadrilateral in which AB || DC and P is the midpoint of BC. On producing, AP and DC meet at Q then DQ = DC + AB.
Reason : If two sides and the included angle of one triangle are equal to two sides and the included angle of the other triangle, then the two triangles are congruent

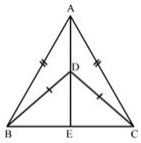


164) **Assertion :** Angles opposite to equal sides of a triangle are not equal.
Reason : Sides opposite to equal angles of a triangle are equal.
Codes:
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A)
(c) Assertion (A) is true but reason (R) is false.
(d)Assertion (A) is false but reason (R) is true.

165) **Assertion :** In ΔABC, AB = AC and ∠B = 50º, then ∠C is 50º.
Reason : Angles opposite to equal sides of a triangle are equal.
Codes:
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.

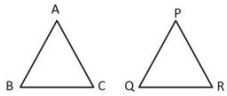


166) **Assertion :** ΔABC and ΔDBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC. If AD is extended to intersect BC at E, then ΔABD ≅ ΔACD
Reason : If in two right triangles, hypotenuse and one side of a triangle are equal to the hypotenuse and one side of other triangle, then the two triangles are congruent.

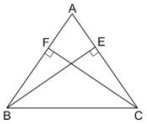


167) **Assertion :** In triangles ABC and PQR,∠A = ∠P, ∠C = ∠R and AC = PR. The two triangles are congruent by ASA congruence.
Reason : If two angles and the included side of one triangle are equal to two angles and the included side of the other triangle, then the two triangles are congruent.

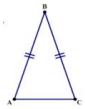
168) **Assertion :** In ΔABC and ΔPQR, AB = PQ, AC = PR and ∠BAC = ∠QPR then ΔABC ≅ ΔPQR
Reason : Both the triangles are congruent by SSS congruence.
Codes:
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A). (b)Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d)Assertion (A) is false but reason (R) is true.



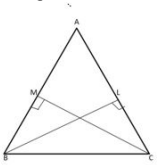
169) **Assertion:** In the given figure, BE and CF are two equal altitudes of ΔABC then ΔABE ≅ ΔACF
Reason: If two angles and one side of one triangle are equal to two angles and the corresponding side of the other triangle, then the two triangles are congruent.



170) **Assertion:** In ABC, ∠A = ∠ C and BC = 4 cm and AC = 3 cm then the length of side AB = 3 cm.
Reason: Sides opposite to equal angles of a triangle are equal.



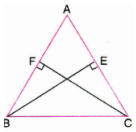
171) **Assertion :** If the altitudes from two vertices of a triangle to the opposite sides are equal, then the triangle is an isosceles triangle.
Reason: If two angles and one side of one triangle are equal to two angles and the corresponding side of the other triangle, then the two triangles are congruent.



172) **Assertion:** Two angles measures a – 60° and 123° – 2a. If each one is opposite to equal sides of an isosceles triangle, then the value of a is 61°.
Reason: Sides opposite to equal angles of a triangle are equal.

2 Marks 59 x 2 = 118

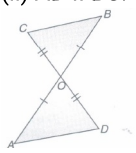
173) ABC is an isosceles triangle in which altitudes BE and CF are drawn to equal sides AC and AB respectively (see figure). Show that these altitudes are equal.



174) Line segment AB is parallel to another line segment CD. 0 is the mid-point of AD. Show that
(i) ΔAOB ≅ ΔDOC
(ii) O is also the mid-point of BC

175) ABC is an isosceles triangle with AB = AC. Draw AP⊥ BC show that ∠B = ∠C.

176) In the figure, OA = OB and OD = OC Show that:
(i) $\triangle AOD \cong \triangle BOC$,
(ii) AD II BC.



177) AB and CD are respectively the smallest and longest sides of a quadrilateral ABCD (see figure). Show that ∠A > ∠C and ∠B > ∠D.

178) In ΔABC, if ∠A = 50° and ∠B = 60°, determine the shortest and the longest side of the triangle.

179) In a ΔDEF, if ∠D = 30°, ∠E = 60° then which side of the triangle is longest and which side is shortest?

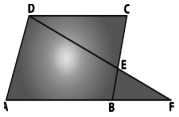
180) In ΔABC, ∠A = 60°, ∠B = 40°, which side of this triangle is the smallest? Give reasons for your answer.

181) In ΔPQR, ∠P = 100° and ∠R = 60°, which side of the triangle is the longest. Give reasons for your answer.

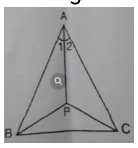
182) In ΔPQR, if $\angle$P, QR=4cm and PR=5cm, then find the length of PQ.

183) If ABCD is a parallelogram, then prove that ΔABD is congruent to ΔCDB.

184) ABCD is a parallelogram and E is the mid-point of side BC. DE and AB when produced meet at F. Prove that AF = 2AB.

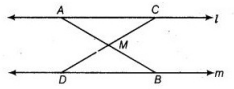


185) In the given figure. if AB = AC and ∠1=∠2, then prove that ∠PBC=∠PCB.

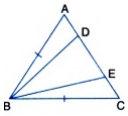


186) E and F are the mid-points of equal sides AB and AC of a ΔABC. respectively. Show that BF = CE

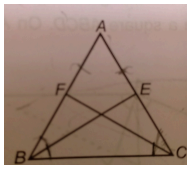
187) In the given figure, l ǁm and M is the mid-point of a line segment AB. Show that M is also the mid-point of any line segment CD having its end points on l and m, respectively.



188) In the given figure, if AB = AC and DB = DC. then ΔABE≅ΔCBD



189) In the adjoining figure. AB = AC =AC and BE and CF are bisector of ∠B and ∠C, respectively. Prove that ΔEBC≅ΔFCB

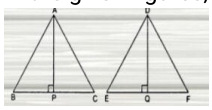


190) In ΔABC and ΔPQR, ∠A=∠Q=∠Q and ∠B=∠R. Which side of ΔPQR should be equal to side BC of ΔABC, so that the two triangles are congruent? Give reason for your answer.

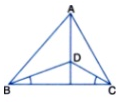
191) ΔABC is an isosceles triangle in which AB-AC and LM is parallel to BC. If $\angle A=60^0$, find∠LMC.

192) ABCD is a square, X and Yare points on sides AD and BC respectively such that AY = BX. Prove that BY=AX and ∠ BAY=∠ABX

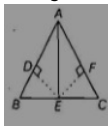
193) In the given figures, AB = DE, BC = EF and median AP = median DQ. Prove that ∠B=∠E



194) In the given figure, AB = AC, D is the point in the interior of ΔABC such that ∠DBC=∠DCB. Prove that AD bisects ∠ BAC of ΔABC.



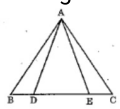
195) It is given that, DE = EF, BE = EC, ED⊥AB and EF⊥AC. Prove that AB = AC



196) In ΔABC, bisectors of ∠B and ∠C meet at point P. Through P, a line LM is drawn parallel to BC, meeting AB at L and AC at M. Show that LM = BL + CM

197) ΔABC and ΔDBC are two isosceles triangles on the same base BC. Show that ∠ABD=∠ACD.

198) In the given figure, AD = AE and BD = EC. Prove that AB = AC.



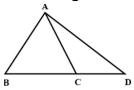
199) In the given figure, if BC := 2.6cm, then find 2BD + $\frac{BC}{2}$

200) In the given figure, if $l|||m$
$\angle ABC = \angle ABD = 40^0$
$\angle BAC = \angle BAD = 90^0$ then prove that BCD is an associates triangle .

201) Is it possible to construct a triangle with lengths of its'sides as 9 cm, 7 cm and 17 cm? Give reason for your answer.

202) In ΔABC, if ∠A=40^0 and ∠B=60^0, then find the longest side of ΔABC

203) In the given figure, AB > AC, Then, what is the relation between the sides AB and AD?

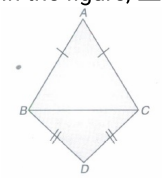


204) Mis a point on side BC of a $\triangle ABC$ such that AM is the bisector of LBAC. Is it true to say that perimeter of the triangle is greater than 2AM? Give reason for your answer

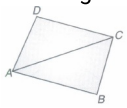
205) If D is a point on the side BC of a $\triangle ABC$ such that AD bisects $\triangle BAC$. Then, show that BA > BD.

206) Show that if two sides of a triangle are of lengths 5 crn and 1.5 cm, then the length of third side of the triangle cannot be 3.4 cm.

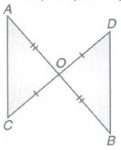
207) In the figure, △ABC and △DBC are two isosceles triangles on the same base BC Prove that ∠ ABD = ∠ACD.



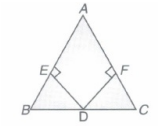
208) In the figure below, the diagonal AC of quadrilateral ABCD bisects ∠BAD and ∠BCD.Prove that BC = CD.



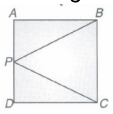
209) In the figure below, O is the mid-point of AB and CD, Prove that AC = BD.



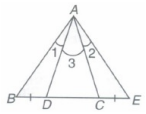
210) In the given figure, D is the mid-point of base BC DE and DF are perpendiculars to AB and AC respectively such that DE = DF. Prove that ∠B = ∠C.



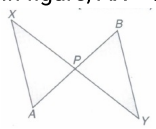
211) In the figure below, ABCD is a square and P is the mid-point of AD. BP and CP are joined. Prove that ∠PCB = ∠PBC.



212) In figure ∠B = ∠E, BD = CE and ∠1 =∠2. Show $\triangle ABC \cong \triangle AED$.

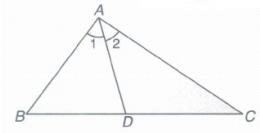


213) In figure, AX = BY and AX II BY, prove that $\triangle APX \cong \triangle BPY$.

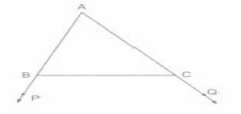


214) PS is an altitude of an isosceles triangle PQR in which PQ = PR. Show that PS bisects ∠P.

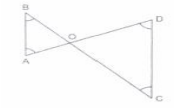
215) In the figure, given AC > AB and AD is the bisector of ∠A. Show that ∠ADC > ∠ADB.



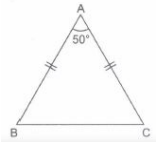
216) In the adjoinins figure, sides AB and AC of ABC are extended to points P and Q respcctivclv. Also, ∠PBC < ∠QCB. Show that AC > AB.



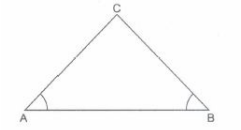
217) In the figure, ∠B < ∠A and ∠C < ∠D. Show that AD > BC.



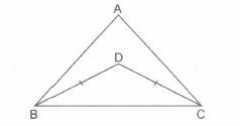
218) In the figure, AB = AC and ∠A = 50°. Then what is the measure of ∠C?



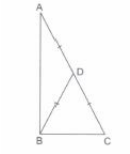
219) In the figure ∠A = ∠B. Then what is AB : BC?



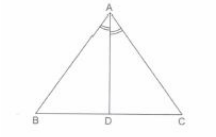
220) In the figure ∠B = ∠C and BD and CD are their bisectors respectively. Then what is AB : AC?



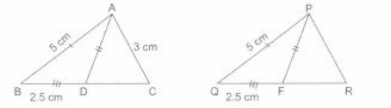
221) the figure, AD - BD = CD then what is the measure of ∠ABC?



222) If D is a point on BC such that AD bisects ∠A of ΔABC, then compare BA and BD.



223) In the figure, AD = PF and ΔABD ≅ ΔPQF then what is the length of PR?

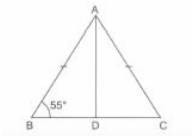


224) In ΔABC, if we have ∠C = ∠A and AB = 4 cm and AC = 5 cm then what is BC?

225) In ΔABC, AB = BC. If ∠B = 80° then what is the measure of ∠A?

226) In ΔABC and ΔPQR, AB = RP and ∠A = ∠P. When the two triangles will be congruent by SAS axiom?

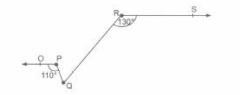
227) In the figure, ∠B = 55°. If D is the mid point of BC and AB = AC what is the measure of ∠BAD?



228) If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio 2 : 3, then what is the measure of the greater of the two angles?

229) An exterior angle of a triangle is 105° and its two interior opposite angles are equal. What is the measure of these equal angles?

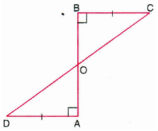
230) In the given figure OP II RS, ∠OPQ = 110° and ∠QRS = 130°, then find the value of ∠PQR.



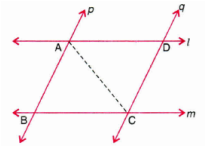
231) In ΔABC, AB = AC and BD ⊥ AC and CE ⊥ AB. Is BD = CE?

3 Marks 85 x 3 = 255

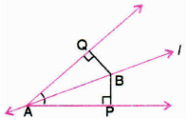
232) AD and BC are equal perpendiculars to a line segment AB (see figure). Show that CD bisects AB.



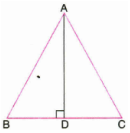
233) l and m are two parallel lines intersected by another pair of parallel lines p and q (see figure). Show that $\triangle ABC \cong \triangle CDA$



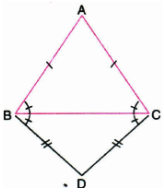
234) Line l is the bisector of an angle$\angle A$ and $\angle B$ is any point on l.BP and BQ are perpendiculars from B to the arms of $\angle A$ (see figure). Show that:
(i) $\triangle APB \cong \triangle AQB$
(ii) BP = BQ or B is equidistant from the arms of $\angle A$



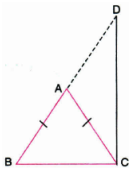
235) In $\triangle ABC$, AD is the perpendicular bisector of BC (see figure).Show that $\triangle ABC$ is isosceles triangle in which AB = AC.



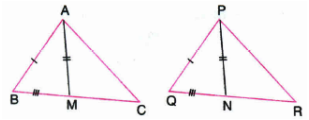
236) ABC and DBC are two isosceles triangles on the same base BC (see figure). Show that $\angle ABD = \angle ACD$



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



238) Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of $\angle PQR$ (see figure). Show that:
(i) $\triangle ABM \cong \triangle PQN$ (ii) $\triangle ABC \cong \triangle PQR$



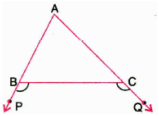
239) Show that the angles of an equilateral triangle are 60° each.

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

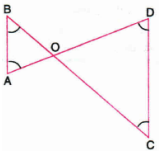
241) BE and CF are two equal altitudes of a triangle ABC. Using RHS congruence rule, prove that the triangle ABC is isosceles.

242) Show that in a right angled triangle, the hypotenuse is the longest side.

243) In Fig. sides AB and AC of D ABC are extended to points P and Q respectively. Also, ∠ PBC < QCB. Show that AC > AB.



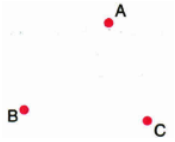
244) In figure, ∠B < ∠A and ∠C < ∠D. Show that AD < BC.



245) ABC is a triangle. Locate a point in the interior of Δ ABC which is equidistant from all the vertices of ΔABC.

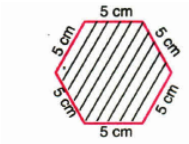
246) In a triangle locate a point in its interior which is equidistant from all the sides of the triangle.

247) In a huge park, people are concentrated at three points (see figure):
A) where there are different slides and swings for children,

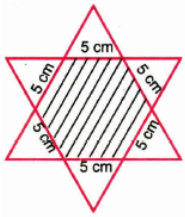


B) near which a man-made lake is situated,
C) which is near to a large parking and exit.
where should an icecream parlour be set up so that maximum number of persons can approach it?

248) Complete the hexagonal and star shaped Rangolies [see figures (i) and (ii)] by filling them with as many equilateral triangles of side 1em as you can.Count the number of triangles in each case.Which has more triangles?



(i)

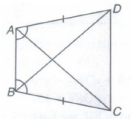


(ii)

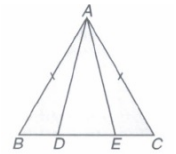
249) AB is a line segment and line I is a perpendicular bisector of AB. If a point P lies on I, then show that P is equidistant from A and B.

250) D is a point on side BC of ΔABC, such that AD = AC. show that AB > AD.

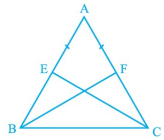
251) ABCD is a quadrilateral in which AD = BC and ∠DAB = ∠CBA. Prove that BD = AC.



252) In an isosceles triangle ABC with AB = AC, D and E are points on BC such that BE = CD (see Fig). Show that AD = AE.

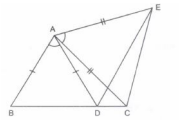


253) E and F are respectively the mid-points of equal sides AB and AC of D ABC (see Fig). Show that BF = CE.



254) In quadrilateral ACBD, AC = AD and AB bisects ∠A (see figure). Show that Δ ABC ≅ ΔABD. What can you say about BC and BD?

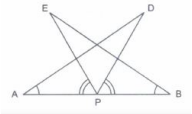
255) In the figure, AC = AE, AB = AD and ∠BAD = ∠EAC. Show that BC = DE.



256) AB is a line segment and P is its mid-point. D and E are points on the same side of AB such that ∠BAD = ∠ABE and ∠EPA = ∠DPB (see figure). Show that

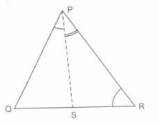
(i) ΔDAP ≅ ΔEBP

(ii) AD = BE



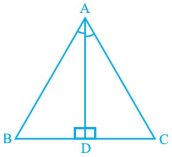
257) ABC is a right angled triangle in which ∠A = 90° and AB = AC Find ∠B and ∠C.

258) In the figure, PR > PQ and PS bisects ∠QPR. Prove that ∠PSR > ∠PSQ.

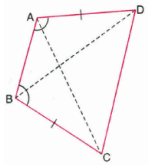


259) Show that of all line segments drawn from a given point not on it, the perpendicular line segment is the shortest.

260) In D ABC, the bisector AD of $\angle$ A is perpendicular to side BC (see Fig.). Show that AB = AC and $\angle$ ABC is isosceles

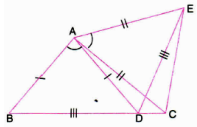


261) ABCD is a quadrilateral in which AD = BC and $\angle DAB = \angle CBA$ (see fihure).Prove that:

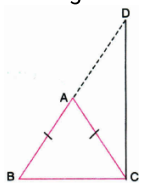


(i) $\triangle ABD \cong \triangle BAC$
(ii) BD = AC
(iii) $\angle ABD = \angle BAC$

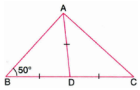
262) In figure, AC = AE, AB = AD and $\angle BAD = \angle EAC$. Show that BC = DE



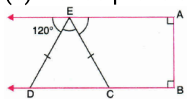
263) In the given figure, AB = AC and AB = AD. Prove that $\angle BCD = 90^0$



264) In the given figure, D is the mid-point of the side BC of a ΔABC and ∠ABD = 50°. If AD = BD = CD, then find the measure of ∠ACD.

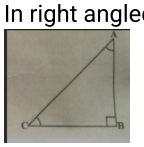


265) In figure, AB ⊥ AE, BC ⊥ AB, CE =DE and ∠AED = 120°. Find
(a) ∠ EDC
(b) ∠DEC
(c) Hence prove that EDC is an equilateral triangle.



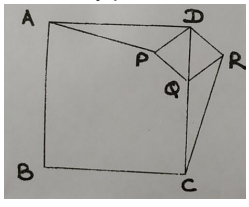
266) In $\triangle ABC$,AB = AC and $\angle B = \frac{2}{5}$ th of $\angle A$ Find the measure of $\angle A$

267) In right angled $\triangle ABC$ right angled at B, such that LBCA = 2 < CAB, show that hypotenuse AC = 2BC

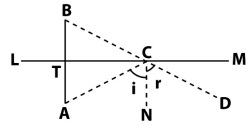


268) Bisectors of the angles Band C of an isosceles triangle with AB = AC intersect each other at O. BO is produced to a point M. Prove that $\angle MOC = \angle ABC$

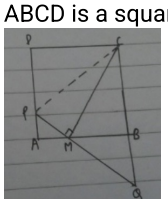
269) If P is any point in the square ABCD and DPOR is another square, then prove that AP = CR.



270) The image of an object placed at a point A before a plane mirror LM is seen at the point B by an observer at D as shown in figure. Prove that the image is as far behind the mirror as the object is in front of the mirror



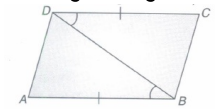
271) ABCD is a square. Mis the mid-point of AB and PO $\perp$ .CM meets AD at P and CB produced at O.



Prove that
(i) PA = BQ
(ii) CP = AB + PA

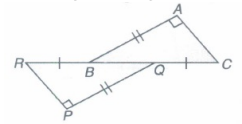
272) In a right angled triangle, one acute angle is double the other. Prove that the hypotenuse is double the smallest side.

273) In the given figure AB = CD, $\angle$ABD = $\angle$CDB. Prove that AD = CB.

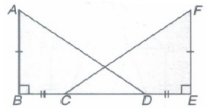


274) In the given figure, AB = CD and $\angle$ABC = $\angle$DCB.
Prove that:
(i) $\triangle ABC \cong \triangle DCB$
(ii) AC = DB.

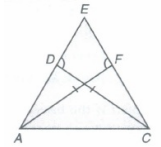
275) In the given figure, BA$\perp$ CA, RP$\perp$QP, AB = PQ and BR = CQ. Prove that AC = PR.



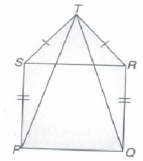
276) In figure, AB = EF, BC = ED, AB $\perp$ BD, FE $\perp$EC Prove that $\triangle ABD \cong \triangle FEC$



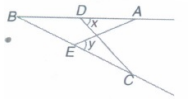
277) In the figure, if AF = CD are $\angle$AFE = $\angle$CDE, prove that EF = ED.



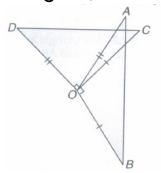
278) In figure, PQRS is a square and SRT is an equilateral triangle. Prove that:
(i) PT = QT
(ii) $\angle$ TQR = 15°



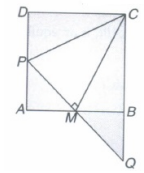
279) In the given figure, if ∠ADC = ∠AEC and AB = BC, then prove that AE = CD.



280) In figure, OA⊥OD, OC⊥OB, OD = OA and OC = OB. Prove that AB = CD.



281) In the given figure, ABCD is a square and M is the mid-point of AB. PQ 1.CM meets AD at P and CB produced at Q. Prove that PA = BQ.

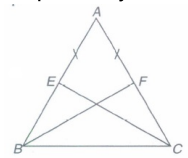


282) In a right angled triangle, if one acute angle is double the other, then prove that the hypotenuse is double the smallest side.

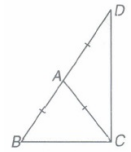
283) In a triangle ABC, X and Yare the points on AB and BC respectively. If BX=$\frac{1}{2}$ AB and and AB = BC Show that BX = BY.

284) Prove that each angle of an equilateral triangle is 60°.

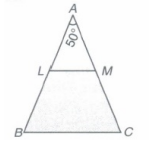
285) In the given figure, ABC is an isosceles △ in which altitudes BF and CE are drawn to equal sides AC and AB respectively. Show that these altitudes are equal.



286) Triangle ABC is an isosceles triangle such that AB = AC Side BA is produced to D, such that AD = AB. Show that ∠ BCD is a right angle.

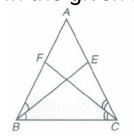


287) In the figure, ABC is an isosceles triangle in which AB = AC and LM is parallel 10 BC If LA = 50°, find ∠LMC.

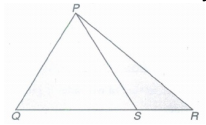


288) PQR is a triangle in which PQ = PR. 5 is any point on the side PQ. Through 5, a line is drawn parallel to QR intersecting PR at T. Prove that PS = PT.

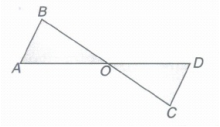
289) In the given figure, AB = AC and BE and CF are bisectors of ∠ B and ∠C respecively. Prove that △EBC= △FCB



290) In △PQR, if S is any point on the side QR. Show that PQ + QR + RP > 2PS.



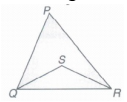
291) In the given figure $\angle B > \angle A$ and $\angle C > \angle D$. Show that AD > BC.



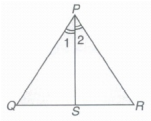
292) Prove that the perimeter of a triangle is greater than the sum of its three altitudes.

293) In a $\triangle ABC$, AD $\perp$ BC, BE$\perp$AC and CF$\perp$AB. Prove that AD + BE + CF < AB + BC + CA.

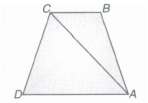
294) In the given figure, PQR is a triangle and S is any point in its interior. Show that SQ + SR < PQ + PR.



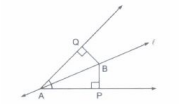
295) In the given figure, PR > PQ and PS bisect $\angle QRP$. Prove that $\angle PSR > \angle PSQ$



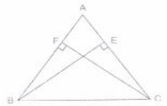
296) In the figure, prove that CD + DA + AB + BC > 2AC.



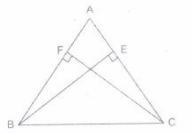
297) Line l is the bisector of an angle A and B is any point on l. BP and BQ are perpendiculars from B to the arms of $\angle A$ (see Figure). Show that:
(i) $\Delta APB \cong \Delta AQB$
(ii) BP = BQ or B is equidistant from the arms of $\angle A$.



298) ABC is an isosceles triangle with AB = AC. Prove that the altittulcs BE and CF of the triangle are equal.



299) ABC is triangle is which altitudes BE utul CF to sides AC and AB are equal (see figure). Show that
(i) $\Delta ABE \cong \Delta ACF$
(ii) AB = AC i.e. ABC is isosceles triangle.

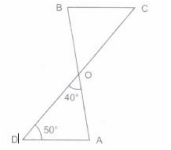


300) The angles of triangle are ill the ratio 2 : 3 : 4. Find the angles.

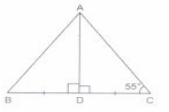
301) In a ΔABC, if $\angle A + \angle B = 110°$ and $\angle B + \angle C = 130°$. then find $\angle A$. $\angle B$ and $\angle C$.

302) Prove that ΔABC is an isosceles if and only if altitude AD bisects BC.

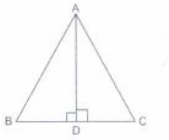
303) In the adjoining figure, $\Delta OAD \cong \Delta OBC$ Find $\angle A$ and $\angle B$.



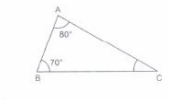
304) In the figure, AD ⊥ BC and AB = AC Find ∠B.



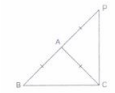
305) In the adjoining figure, AB = BC = AC, then find the measure of ∠A.



306) In ΔABC, if ∠A = 80°, ∠B = 70°, then identity the longest and the shortest sides of the triangle.

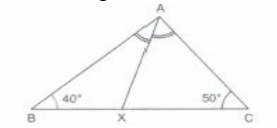


307) In the figure, ABC is a triangle in which AB = AC. The side BA is produced to P such that AB = AP . Prove that ∠BCP = 90°.

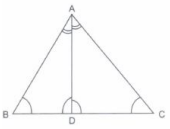


308) In the adjoining figure, O is the centre of the circle and AB is a diameter. If AC is any chord, then show that ∠A = $\frac{1}{2}$ ∠COB.

309) In the figure, ABC is a triangle such that ∠B = 40° and ∠C = 50°. ∠A meets BC in X . Write AX, BX and CX in the ascending order.



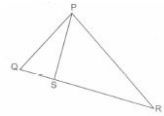
310) In the given figure, AD is the bisector of ∠A of ΔABC, where D lies on BC. Show that AB > BD and AC > CD.



311) Bisectors of the angles Band C of an isosceles triangle ABC with AB = AC intersect each other at O. Show that external angle adjacent to ∠ABC is equal to ∠BOC.

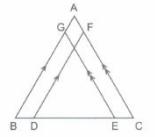
312) Prove that any two sides of a Δ are together greater than twice the median drawn to the third side.

313) In the given figure, S is any point on the side QR of ΔPQR. Prove that PQ + QR + RP > 2 Ps.

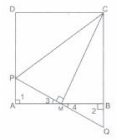


314) ABCD is a square. P is any point inside it, such that DPQR is another square. Prove that AP = CR

315) !n the adjacent figure, BA II DF and CA II EG. If BD = EC then prove that BG = DF and EG = CF.

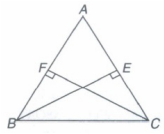


316) ABCD is a square. M is the mid point of AB and PQ ⊥ CM meets AD at P. CB produced meet at Q. Prove that (i) CP = AB + PA



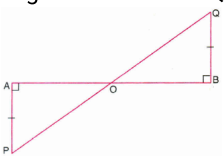
4 Marks 73 x 4 = 292

317) In figure, ABC is a triangle in which altitudes BE and CF to sides AC and AB respectively are equal.
Show that:
(i) $\triangle ABE \cong \triangle ACF$
(ii) AB = AC.



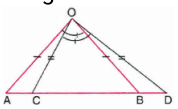
318) In an isosceles triangle ABC, with AB = AC, the bisectors of LB and LC intersect each other at O. Join A to O. Show that:
(i) OB = OC
(ii) AO bisects ∠A

319) In figure, AP and BQ are perpendiculars to the line-segment AB and AP = BQ. Prove that O is the mid-point of line segments AB and PQ.

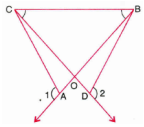


320) In a rectangle ABCD, E is a point which bisects BC Prove that AE = ED

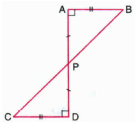
321) In figure OA = OB, OC = OD and $\angle AOB = \angle COD$. Prove that AC = BD



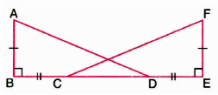
322) In figure OA = OD and $\angle 1 = \angle 2$ prove that $\triangle OCB$ is an isosceles triangle.



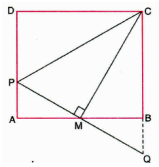
323) In the given figure, AB and CD are perpendicular to the line segment AD. AD and BC intersect at P such that PA = PD. Prove that:
(i) AB = CD
(ii) P is the mid-point of BC.



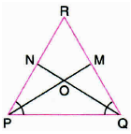
324) In the given figure, if AB = FE, BC=ED, $AB \perp BD$ and $FE \perp EC$, then prove that
(i) $\triangle ABD \cong \triangle FEC$
(ii) $AD \cong FC$



325) In the given figure ABCD is a square and M is the mid-point of AB. $PQ \perp CM$ meets AD at P and CB produced at Q. Prove that PA = BQ.

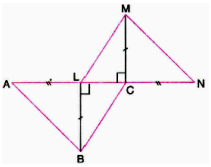


326) In figure, $\angle QPR = \angle PQR$ and M and N are respectively points on sides QR and PR of $\triangle PQR$, such that QM = PN. Prove that OP = OQ, where O is the point of intersecting of PM and QN.



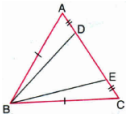
327) Prove that the medians of an equilateral triangle are equal.

328) In the given figure $BL \perp AC$, $MC \perp LN$, AL = CN and BL = CM. Prove that $\triangle ABC \cong \triangle NML$

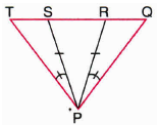


329) Prove that the angles opposite to equal sides of a triangle are equal. Is the converse true?

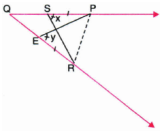
330) In figure, AB = BC, AD = EC.Prove that $\triangle ABE \cong \triangle CBD$



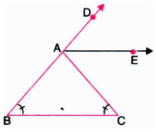
331) In figure, if PS = PR, $\angle TPS = \angle QPR$ then prove that PT = PQ



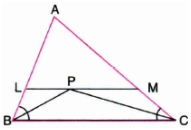
332) In figure, $\angle x = \angle y$ and PQ = QR.Prove that PE = RS.



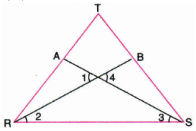
333) In the given figure , AE bisects $\angle DAC$ and,$\angle B = \angle C$ Prove that $AE \parallel BC$



334) In figure in the t1 ABC, bisectors of $\angle B$ and $\angle C$ meet at P. Through P, a line LM is drawn parallel to BC, meeting AB at Land AC at M.Show that LM = BL + CM.

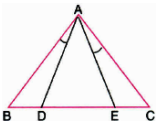


335) In figure, it is given that RT = TS, $\angle 1 = 2\angle 2$ and $\angle 4 = 2\angle 3$. Prove that
(i) $\triangle RBT \cong \triangle SAT$
(ii) RB = AS



336) Suppose line segments AB and CD intersect at 0 in such a way that AO = OD and OB = OC. Prove that AC = BD but AC may not be parallel to BD

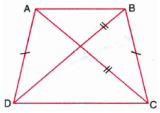
337) In the figure, D and E are points on the base BC of a $\triangle ABC$ such that AD = AE and $\angle BAD = \angle CAE$ .prove that AB = AC



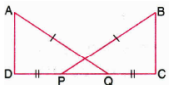
338) In an isosceles triangle ABC with AB = AC, BD and CE are two medians. Prove that BD = CE.

339) If the bisector of the vertical angle of a triangle bisects the base of the triangle, then prove that the triangle is isosceles.

340) In the given figure, AD = BC and BD = AC.Prove that
(i) $\angle ADB = \angle BCA$ (ii) $\angle DAB = \angle CBA$

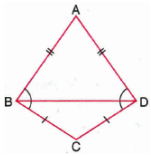


341) In figure, AD⊥CD and BC⊥CD.If AQ = BP and DP = CQ, prove that ∠DAQ=∠CBP.



342) In Δ Abc, D is the mid-point of BC The perpendiculars from D to AB and AC are equal.Prove that ΔABC is isosceles.

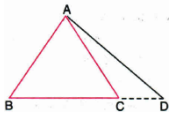
343) In figure, ΔABD and ΔBCD are isosceles triangles on the same base BD. Prove that ∠ABC = ∠ADC.



344) Prove that in a ΔABC, if AB > AC and D is any point in the side BC, then AB > AD.

345) In ΔABC, ΔABC > ΔACB. Sides AB and AC are extended to points P and Q respectively. Prove that ∠PBC < ∠QCB.

346) In figure, D is any point on the base BC produced of an isosceles triangle ABC. Prove that AD > AB.



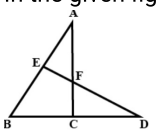
347) A biscuit is in the form of quadrilateral as shown in figure. Anuj gives I part to his sister and II part to his brother. In quadrilateral ACBD, AC = AD and AB bisects LA.
(i) Show that $\triangle ABC \equiv \triangle ABD$
(ii) Show that BC = BD
(iii) Is distribution fair? Justify it.
(iv) What moral values have been shown by Anuj?

348) There is a triangular field ABC whose corner angles A, Band C have been measured as 50°,60° and 70°, respectively. Three friends Rashmi, Salma and Arun go on morning walk daily along AB, BC and AC, respectively.
(i) Who walks maximum distance among these three?
(ii) Who walks the least?
(iii) What value is indicated from this action?

349) Two lines I and M intersect at the point 0 and Pis a point on a line n passing through the point a such that P is equidistant from 1 and ill Prove that n is e bisector of the angle formed by land m.

350) 0 is a point in the interior of a square ABCD such that OAB is an equilateral triangle. Show that fl.COD is an isosceles triangle

351) In the given figure, if AB = AC, then prove that AF > AE



352) A point 0 is taken inside an equilateral four sided square ABCD such that its distance from the angular points D and B are equal. Show that AO and OC are in one and the same straight line.

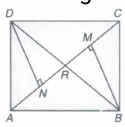
353) Line segment joining the mid-points M and N of parallel sides AB and DC, respectively of a trapezium ABCD is perpendicular to both the sides AB and De. Prove that AD = BC

354) Prove that the sum of any two sides of a triangle is greater than twice the median with respect to the third side.

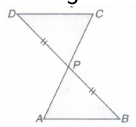
355) Prove that in a triangle other than an equilateral triangle, angle opposite to the longest side is greater than $\frac{2}{3}$ of a right angle.

356) Two friends Rahim and Meera constructed their houses in the same colony. Rahim wanted to make a bamboo stair to go on the roof of his house. He called a carpenter for taking a measurement of the stair to be constructed. He took the measurement and constructed. Now, Rahim's friend Meera desires to have a stair for her roof. She measures the heights of the two buildings and finds that they are the same. What criterion of congruence can use to make her bamboo stair without taking measurement of the bamboo stair equal. Show that the length of the stairs are equal. What value is depicted by this question?

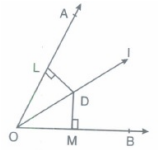
357) In the figure, BM and DN are both perpendicular to AC and BM = DN. Prove that AC bisects BD.



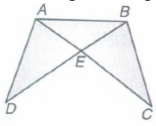
358) In the given figure, if AB II DC and P is the midpoint of BD, prove that P is also the mid-point of AC.



359) In figure, line 1 is the bisector of ∠AOB. D is a point on l. DL.⊥OA and DM⊥OB. Prove that:
(i) $\triangle OMD \cong \triangle OLD$
(ii) DM = DL

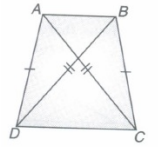


360) In the given figure, ∠EAB = ∠EBA and AC = BD. Prove that AD = BC.



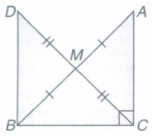
361) In the given figure AD = BC and BD = AC. Prove that, ∠ADB = ∠BCA and ∠DAB = ∠CBA.

362) In the given figure AD = BC and BD = AC. Prove that ∠DAB = ∠CBA.

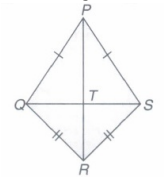


363) AD, BE and CF, the altitudes of △ABC are equal. Prove that △ABC is an equilateral triangle.

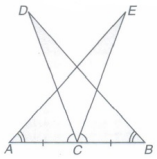
364) In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B. Show that:
(i) $\triangle AMC \cong \triangle BMD$
(ii) △DBC is a right angle



365) In the figure, if PQ = PS, RQ = RS, then show that $\triangle PQR \cong \triangle PSR \; and \; \triangle RQT \cong \triangle RST.$

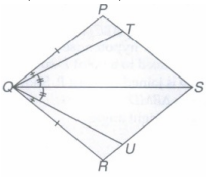


366) In the given figure, if AC = BC, ∠DCA = ∠ECB and ∠DBC = ∠EAC, then prove that BD = AE.

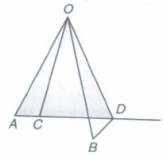


367) In a rhombus ABCD, O is any interior point such that OA = OC. Then prove that D, O and B are collinear.

368) In the given figure, PQRS is a quadrilateral and T and U are points on PS and RS respectively, such that PQ = RQ, ∠PQT = ∠RQU and ∠TQS = ∠UQS. Prove that: QT = QU.

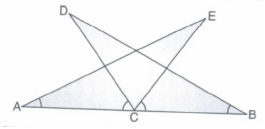


369) In the figure, OA = OB, OC = OD and ∠AOB =∠COD. Prove that AC = BD.

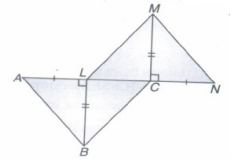


370) In △ABC and △PQR, AB = PQ, AC = PR and altitude AM and PN are equal. Show that, $\triangle ABC \cong \triangle PQR.$

371) In given figure, AC == BC, ∠DCA = ∠ECB and ∠DBC = ∠EAC Prove that ∠DBC =∠EAC and hence DC = EC and BD = AE.



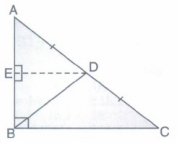
372) In the figure, BL⊥AC, MC⊥LN, AL = CN and BL = CM. Prove that $\triangle ABC \cong \triangle NML.$



373) If two isosceles triangles have a common base. Prove that the line joining their vertices bisects them at right angles

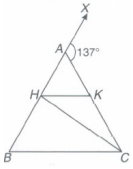
374) ABC and OBC are two isosceles triangle on the same base BC such that A and D lies on' the opposite sides of BC Show that AD is the perpendicular bisector of BC.

375) If D is the mid-point of the hypotenuse AC of a right triangle ABC, prove that BD = $\frac{1}{2}$ AC.



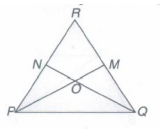
376) Prove that two triangles are congruent if any two angles and the included side of one triangle is equal to any two angles and the included side of the other triangle.

377) In figure, AB = AC, CH = CB and HK II BC If ∠CAX = 137°, then find ∠CHK.

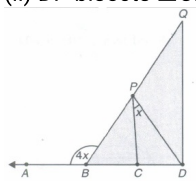


378) ABC and DBC are two isosceles triangle on the same base BC and vertices A and D on the same side of BC. AD is extended to intersect BC at P,
show that:
(i) $\triangle ABD \cong \triangle ACD$
(ii) AP is perpendicular bisector of BC.

379) In the given figure, RP = RQ and M and N are respectively points on sides QR and PR of △ PQR, such that QM = PN. Prove that OP = OQ, where o is the point of intersection of PM and QN.

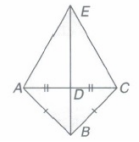


380) In the given figure, ABCD are BPQ are straight lines. If BP = BC and DQ is parallel to CP prove that:
(i) CP = CD
(ii) DP bisects ∠CDQ

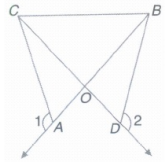


381) ABCD is a square and ABE is an equilateral triangle outside the square prove that ∠ACE = $\frac{1}{2}$ ∠ABE.

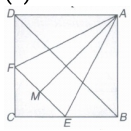
382) In the given figure, AB = BC, AD = CD. Prove that ∠ADE is a right angle and AE and EC are equal.



383) In figure, OA = OD and ∠1 = ∠2. Prove that △OCB is an isosceles triangle.



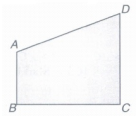
384) In figure, ABCD is a square and EF is parallel to diagonal BD and EM = FM. Prove that:
(i) DF = BE
(ii) AM bisects ∠BAD.



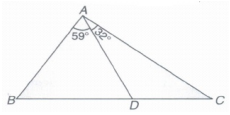
385) Diagonals AC and BD of a quadrilateral ABCD intersect each other at O. Prove that:
AB + BC + CD + DA > AC + BD.

386) Show that sum of all sides of a quadrilateral is greater than the sum of its diagonals.

387) In the figure, AB and CD are respectively the smallest and longest sides of a quadrilateral ABCD. Show that $\angle A > \angle C$.



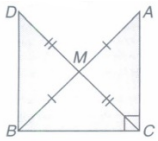
388) In the given figure, AD = BD. Prove that BD < AC.



389) ABCD is a quadrilateral in which AB and CD are smallest and longest sides respectively. Prove that $\angle A > \angle C$ and $\angle B > \angle D$.

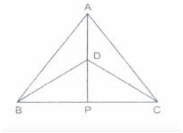
5 Marks 38 x 5 = 190

390) In right angled MBC, right angled at C,M is the mid-point of hypotenuse AB. Cis joined to M and produced to a point D such that DM = CM. Point Dis joined to point B (see figure).



Show that
(i) $\triangle AMC = \triangle BMD$
(ii) $\angle DBC$ is a right angle
(iii) $\angle DBC = \cong \triangle ACB$
(iv) CM = $\frac{1}{2}AB$

391) ΔABC and ΔDBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC (see figure}.If is extended to intersect BC at P. show that
(i) ΔABD ≅ ΔACD
(ii) ΔABP ≅ ΔACP
iii) AP bisects ∠A as well as ∠D
(iv) AP is the perpendicular bisector of BC.



392) AB is a line-segment. P and Q are points on opposite sides of AB such that each of them is equidistant from the points A and B (see Fig). Show that the line PQ is the perpendicular bisector of AB.

393) P is a point equidistant from two lines l and m intersecting at point A (see Fig.). Show that the line AP bisects the angle between them.

394) Two triangles are congruent if two angles and the included side of one triangle are equal to two angles and the included side of other triangle.

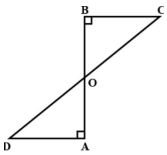
395) Angles opposite to equal sides of an isosceles triangle are equal.

396) If three sides of one triangle are equal to the three sides of another triangle, then the two triangles are congruent.

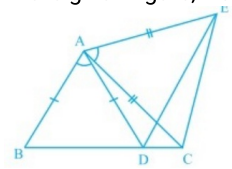
397) In any triangle, the side opposite to the larger (greater) angle is longer.

398) The sum of any two sides of a triangle is greater than the third side.

399) AD and DC are equal perpendiculars in a line segment AB (see Figure), show that CD bisects AB



400) In the given figure, AC = AE, AB = AD and$\angle BAD = \angle EAC$. Show that BC = DE.



First, show that $\triangle ABC \cong \triangle ADE$ by using SAS rule and then use CPCT to show given result

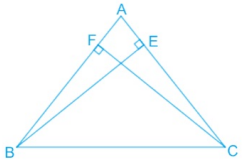
401) In the given figure $\angle ACB$ is a right angle, AC = CD and CDEF is a parallelogram. If $\angle DCE = 10^0$

402) In an isosceles MBC with AB = AC, the bisectors of LB and LC intersect each other at O. Join A to O. Show that
(i) OB = OC
(ii) AO bisects LA

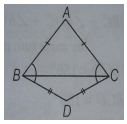
403) ABC is the land of a school. Students thought of a planting trees ill and around the school to reduce air pollution. What value are they showing by doing so? If AB = AC, Dis the point in the interior of MBC such that LDBC = LDCB, then prove that AD bisects .Use the result that angles opposite to equal Sides of a triangle are equal and its converse to show part (i) and show MBO = MCO by using SAS congruence rule and then use CPCT for part (ii).

404) In MBC, AD is the perpendicular bisector o BC (see figure). Show that MBC is an isosceles triangle in which AB = AC.

405) $\triangle ABC$ in which altitudes BE and CF are drawn to equal sides AC and AB, respectively (see figure). Show that these altitudes are equal.

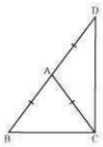


406) $\triangle ABD = \angle DBC$ are two isosceles triangles on the same base BC (see figure). Show that $\triangle ABD = \angle ACD$

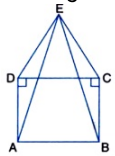


Use the result that angles opposite to equal sides of a triangle are equal in both $\triangle ABD = \angle DBC$ and then add these results to show the required result.

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



408) In the given figure, ABCD is a square ΔDEC an equilateral triangle. Prove that

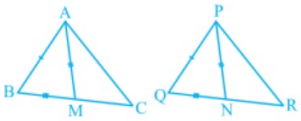


(i) ΔAD E≅ ΔBCE
(ii) AE = BE
(iii) ∠DA = 15^0

409) $\triangle ABC$ is a right angled triangle in which $\angle A = 90^0$ and AB = AC Find use the result that angles opposite to equal sides are equal and then apply the property that sum of angles of a triangle is 180o, to get the required angles.

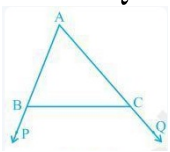
410) AD is an altitude of an isosceles $\triangle ABC$ in which AB = AC. Show that
(i) AD bisects BC. (ii) AD bisects LA. Use RHS congruence rule to show $\triangle ADB \equiv \triangle ADC$ and then use CPCT to prove given parts

411) Two sides AB, BCand median AM of $\triangle ABC$ are respectively equal to sides POQ and median PN of $\triangle PQR$. Show that
$\triangle ABM = \triangle PQN$
$\triangle ABC = \triangle PQR$



We know that, median bisects the opposite side. Use this property and then show the given parts by using SSS and SAS congruence rules, respectively.

412) In the given figure, sides AB and AC of $\triangle ABC$ are extended to points P and Q, respectively. Also $\angle PBC \angle QCR$ Show that AC > AB



Use the inequality that the side opposite to the larger angle is longer, to show the inequality.

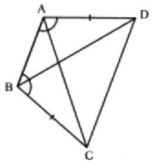
413) In the given figure, $\angle B \angle A \ AND \ \angle C < \angle D$ then show that AD

414) AB and- CD are respectively the smallest and longest sides of a quadrilateral ABCD (see figure). Show that $\angle A \angle C \ \angle B > \angle D$

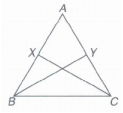
415) Prove that all the line segments that can be drawn to a given line, from a point not lying on it, the perpendicular line segment is the shortest.

416) In a triangle, locate a point in its interior, which is equidistant from all the sides of the triangle

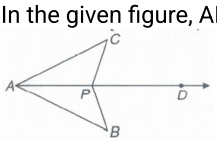
417) ABCD is a quadrilateral in which AD = BC and ∠DAB =∠CBA (see figure). Prove that
(i) $\triangle ABD \cong \triangle BAC$
(ii) BD-AC
(iii) ∠ABD =∠BAC



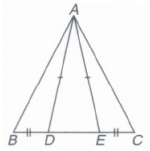
418) In the figure below, ABC is a triangle in which AB = AC. X and Yare points on AB and AC such that AX = AY. Prove that $\triangle ABY \cong \triangle ACX$.



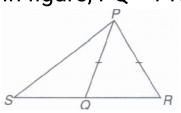
419) In the given figure, AD is the bisector of ∠BAC and ∠CPD = ∠BPD. Prove that$\triangle CAP \cong \triangle BAP$ and CP = BP.



420) In the figure, AD = AE, BD = EC. Prove that △ABC is an isosceles triangle.



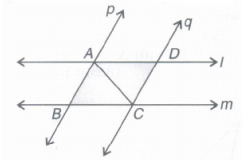
421) In figure, PQ = PR. Show that PS > PQ.



422) In △ABC, if AB is the greatest side, then prove that LC > 60°.

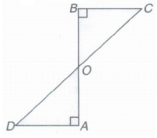
423) For spreading the message "Save Girl Child Save Future" a rally was organized by some students of a school. They were given triangular cardboard piece PQR which they divided in to two parts by drawing the angle bisectors QO and RO of base angles Q and R and wrote a slogan. Prove that ∠QOR = 90° + $\frac{1}{2}$∠P. What is the benefit of these types of rallies?

424) I and m are two parallel equal lines intersected by another pair of parallel lines p and q (see figure) :



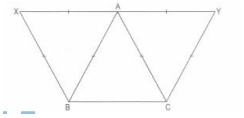
(i) Show that $\triangle ABC \cong \triangle CDA$
(ii) Which mathematical concept is used in this problem?
(iii) What is its value?

425) AD and BC are equal perpendiculars to a line segment AB (see figure).



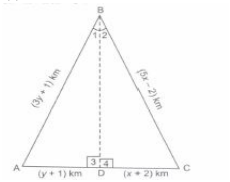
(i) Show that CD bisects AB.
(ii) Which mathematical concept is used in this problem?
(iii) What is its value?

426) In a group-discussion on "Save Water" five students Shagun, Preeti, Deepak, Nitin and Piyush are possitioned at A, B, C, X and Y respectively as shown in the following figure such that AB = AX = BX and AC = AY and CY. Also, ΔABC is an equilateral triangle.



(i) Show that CX = BY.
(ii) Which mathematical concept is used in the above problem?
(iii) By arranging a group discussion on 'save-water', which values are depicted by the school?

427) Rajat and Shankar live together at B. Their work places are at A and C respectively, such that A, Band C form a triangle. BD, the bisector of ∠ABC, meets AC at right angle. Various distances are expressed in terms of x and y as shown in the following figure. They use bicycles instead of cars to go to their work places:
(i) Find the distance between 'A' and 'C '.



(ii) Which mathematical concept is used in the above problem?
(iii) By using bicycles instead of cars, which values are depicted by Rajat and Shankar?

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