DEVESH TEDIA CLASSES

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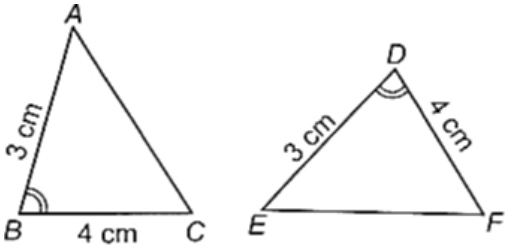
D.T.CLASSES

Class 09 - Mathematics

Section A

1. If the given triangles are congruent, then which of the following options is CORRECT? **[1]**



a) $\triangle ABC \cong \triangle EDF$ b) $\triangle ABC \cong \triangle ADE$

c) $\triangle ABC \cong \triangle FDE$ d) $\triangle ACB \cong \triangle EDF$

2. If the sides of a triangle are produced in order, then the sum of the three exterior angles so formed is **[1]**

a) 90° b) 360°

c) 270° d) 180°

3. In $\triangle DEF$ and $\triangle PQR$, DE = DF, $\angle F = \angle P$ and $\angle E = \angle Q$. The two triangles are **[1]**

a) Isosceles and congruent b) Neither congruent nor isosceles

c) Congruent but not isosceles d) Isosceles but not necessarily congruent

4. If AB = QR, BC= PR and CA = PQ, then **[1]**

a) $\triangle BAC \cong \triangle RPQ$ b) $\triangle ABC \cong \triangle PQR$

c) $\triangle PQR \cong \triangle BCA$ d) $\triangle CBA \cong \triangle PRQ$

5. In $\triangle ABC$ and $\triangle PQR$, AB = PR and $\angle A = \angle P$. Then, the two triangles will be congruent by SAS axiom if: **[1]**

a) AC = QR b) AC = PQ

c) BC = QR d) BC = PQ

6. If the altitudes from two vertices of a triangle to the opposite sides are equal then the triangle is **[1]**

a) isosceles b) scalene

c) right angled d) equilatera

7. In triangles ABC and PQR three equality relations between some parts are as follows: AB = QP, $\angle B = \angle P$, BC = PR. State which of the congruence conditions applies: **[1]**

a) ASA b) AAS

c) SAS

d) SSS

8. If triangle ABC is obtuse angled and $\angle C$ is obtuse, then **[1]**

a) AB < BC

b) AB = BC

c) AC > AB

d) AB > BC

9. If $\Delta PQR \cong \Delta EFD$, then ED = **[1]**

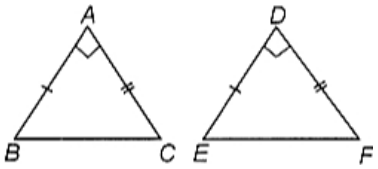
a) PQ and QR

b) PR

c) PQ

d) QR

10. If AB = DE, AC = DF, $\angle A = \angle D = 90°$ and BC = 5 cm, then EF is equal to _____. **[1]**



a) 5.5 cm

b) Can't be determined

c) 5 cm

d) 4.5 cm

11. $\triangle ABC \cong \triangle PQR$, then which of the following is true? **[1]**

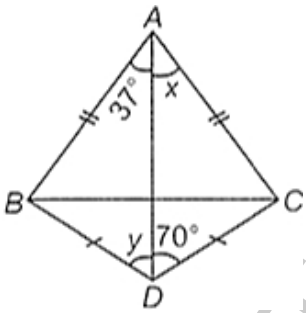
a) AB = RP

b) CA = RP

c) CB = QP

d) AC = RQ

12. In the given figure, x and y are _____. **[1]**



a) x + y = 117°

b) x = 70°, y = 37°

c) x - y = 100°

d) x = 37°, y = 70°

13. In a $\triangle ABC$, if $3\angle A = 4\angle B = 6\angle C$ then A : B : C = ? **[1]**

a) 3 : 4 : 6

b) 6 : 4 : 3

c) 2 : 3 : 4

d) 4 : 3 : 2

14. It is not possible to construct a triangle when its sides are: **[1]**

a) 6 cm, 7 cm, 7 cm

b) 3 cm, 5 cm, 5 cm

c) 5.4 cm, 2.3 cm, 3.1 cm

d) 8.3 cm, 3.4 cm, 6.1 cm

15. In $\Delta ABC, \angle A = 40°$ and $\angle B = 60°$ Then, the longest side of $\triangle ABC$ is **[1]**

a) AC

b) AB

c) BC

d) cannot be determined

16. In $\triangle$ABC, $\angle A$ = 50^{o}, $\angle B$ = 60^{o}, Find the longest side of the triangle **[1]**

a) Cannot be determined

b) AB

c) CA d) BC

17. An exterior angle of a triangle is equal to 100° and two interior opposite angles are equal. Each of these angles is equal to **[1]**

a) 40° b) 80°

c) 75° d) 50°

18. AD, BE and CP, the altitudes of $\triangle$ABC are equal. Then **[1]**

a) AB = BC b) AD = AB

c) AB =- CF d) AC = BC

19. If $\triangle PQR \equiv \triangle EFD$, then $\angle E =$ **[1]**

a) $\angle Q$ b) $\angle P$

c) $\angle Q$ and $\angle R$ d) $\angle R$

20. Which of the following is not possible in case of triangle ABC? **[1]**

a) AB = 5cm, BC = 8cm, CA = 7cm. b) AB = 2 cm, BC = 4 cm, CA = 7 cm.

c) $\angle$A = 50°, $\angle$B = 60°, $\angle$C = 70° d) AB = 3cm, BC = 4cm, CA = 5cm.

21. In $\triangle \mathrm{PQR}$, if $\angle \mathrm{R} > \angle \mathrm{Q}$, then **[1]**

a) PQ < PR b) QR < PR

c) PQ > PR d) QR > PR

22. in ΔABC and ΔDEF it is given that AB = DE and BC = EF in order that $\Delta ABC \cong \Delta DEF$, we must have **[1]**

a) $\angle B = \angle E$ b) $\angle C = \angle F$

c) $\angle C = \angle E$ d) $\angle A = \angle D$

23. If the bisectors of the acute angles of a right triangle meet at O, then the angle at O between the two bisectors is **[1]**

a) 135° b) 45°

c) 90° d) 95°

24. In $\triangle$ABC, if $\angle$A = 45^o and $\angle$B = 70^o, then the shortest and the longest sides of the triangle are _____. **[1]**

a) AB, BC b) BC, AC

c) BC, AB d) AB, AC

25. The cost of turfing a triangular field at the rate of Rs. 45 per 100 m^2 is Rs. 900. If the double the base of the triangle is 5 times its height, then its height is **[1]**

a) 40 m b) 32 m

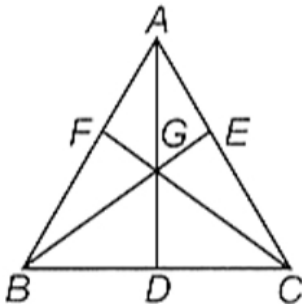
c) 44 m d) 42 m

26. In $\triangle ABC$, $\angle C$ = $\angle A$ and BC = 6 cm and AC = 5 cm. Then the length of AB is: **[1]**

a) 3 cm b) 6 cm

c) 2.5 cm d) 5 cm

27. In △ABC, the medians AD, BE and CP passes through G. If BG = 6 units, then BE is _____. **[1]**



a) 1 unit b) 9 units

c) 6 units d) 3 units

28. Which of the following is **not** the criterion for similarity of triangles? **[1]**

a) SSS b) LCM

c) SAS d) AAA

29. If triangle PQR is right angled at Q, then **[1]**

a) PR > PQ b) PR = PQ

c) PR < PQ d) PR < QR

30. If △ABC ≅△PQR by SSS congruence rule, then: **[1]**

a) BC = QR b) BC = PQ

c) AC = QR d) AC = PQ

31. The length of two sides of a triangle are 7 units and 10 units. Which of the following length can be the length of the third side? **[1]**

a) 19 cm b) 13 cm

c) 17 cm d) 3 cm

32. The base BC of triangle ABC is produced both ways and the measure of exterior angles formed are 94° and 126°. Then, ∠BAC = **[1]**

a) 54° b) 40°

c) 44° d) 94°

33. The bisector of exterior angles at B and C of △ABC meet at O. If ∠A = x°, then ∠BOC = **[1]**

a) $180^\circ - \frac{x^\circ}{2}$ b) $90^\circ - \frac{x^\circ}{2}$

c) $180^\circ + \frac{x^\circ}{2}$ d) $90^\circ + \frac{x^\circ}{2}$

34. Two sides of a triangle are of length 4 cm and 2.5 cm. The length of the third side of the triangle cannot be **[1]**

a) 6.5 cm b) 6 cm

c) 6.3 cm d) 5.5 cm

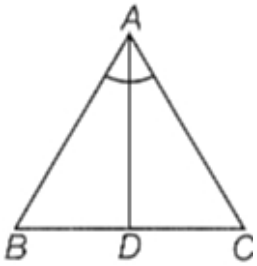
35. If $\triangle ABC \cong \triangle LKM$, then side of △LKM equal to side AC of △ABC is **[1]**

a) LK b) LM

c) LK and KM

d) KM

36. If AD is bisector of $\angle$A and it is perpendicular to BC. Then $\triangle$ABC is _____ triangle. **[1]**



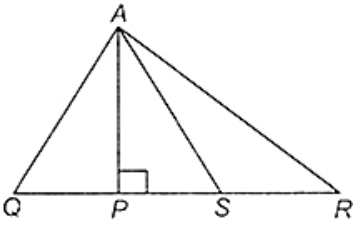
a) Isosceles

b) Scalene

c) Acute triangle

d) Equilateral

37. In the given figure, AP $\perp$ QR, PR > PQ and PS = PQ. Then **[1]**



a) AP = QP

b) $\angle$APS > $\angle$APQ

c) AR > AQ

d) AP > QP

38. $\angle x$ and $\angle y$ are exterior angles of a triangle ABC at the points B and C respectively, Also, $\angle B > \angle C$, then the relation between $\angle x$ and $\angle y$ is: **[1]**

a) $\angle x \neq \angle y$

b) $\angle x = \angle y$

c) $\angle x < \angle y$

d) $\angle x > \angle y$

39. D, E, F are the mid-point of the sides BC, CA and AB respectively of $\triangle$ABC. Then $\triangle$DEF is congruent to triangle **[1]**

a) AFE, FBD, EDC

b) ABC

c) BFD, DCE

d) AEF

40. D is a point on the side BC of a $\triangle ABC$ such that AD bisects $\angle BAC$ then: **[1]**

a) CD>CA

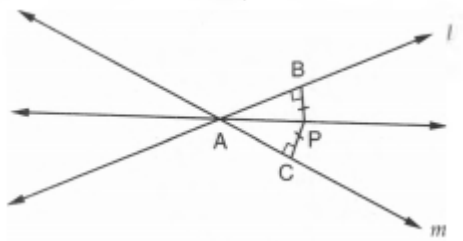
b) BA >BD

c) BD = CD

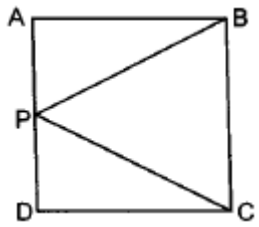
d) BD>BA

Section B

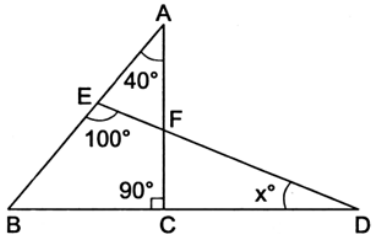
41. P is a point equidistant from two lines l and m intersecting at point A (see figure). Show that the line AP bisects the angle between them. **[2]**



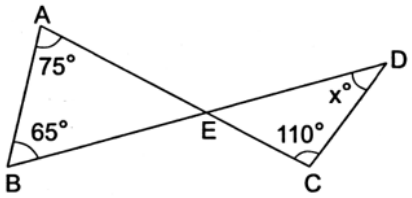
42. In given figure, ABCD is a square and P is the midpoint of AD. BP and CP are joined. Prove that $\angle$PCB = $\angle$PBC. **[2]**



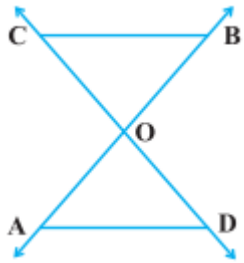
43. Calculate the value of x in the figure given below: **[2]**



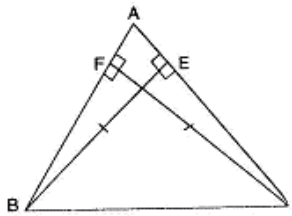
44. Calculate the value of x in the figure. **[2]**



45. In Fig., two lines AB and CD intersect each other at the point O such that BC || DA and BC = DA. Show that O is the midpoint of both the line-segments AB and CD. **[2]**



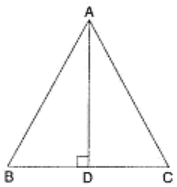
46. Prove that △ABC is an isosceles triangle, if altitude BE = altitude CF. **[2]**



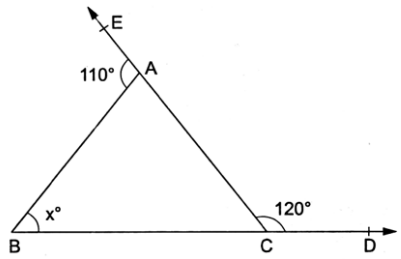
47. Two angles of a triangle are equal and the third angle is greater than each one of them by 18°. Find the angles. **[2]**

48. 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. **[2]**

49. In △ABC, AD is the perpendicular bisector of BC (see figure). Show that △ABC is an isosceles triangle in which AB = AC. **[2]**



50. Calculate the value of x in each of the the given figure. **[2]**

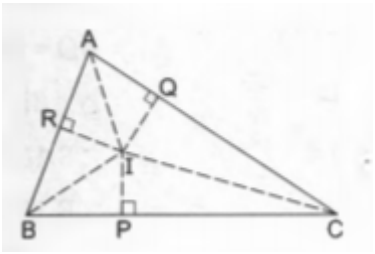


Section C

51. In the given figure, the bisectors of $\angle B$ and $\angle C$ of $\triangle$ABC meet at I if $IP \perp BC$, $IQ \perp CA$ and $IR \perp AB$ **[3]**

i. IP = IQ = IR and

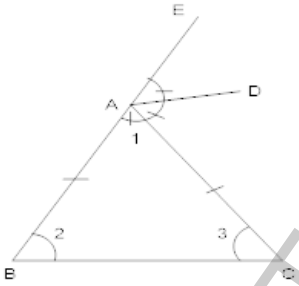
ii. IA bisects $\angle A$.



52. Prove that the angle between internal bisector of one base angle and the external bisector of the other base angle of a triangle is equal to one-half of the vertical angle. **[3]**

53. ABCD is a square. X and Y are points on sides AD and BC respectively such that AY = BX. Prove that BY = AX and $\angle$BAY = $\angle$ABX. **[3]**

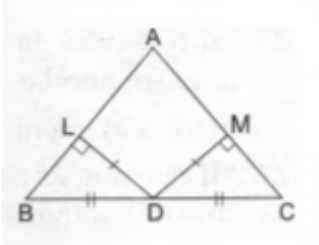
54. $\triangle$ABC is an isosceles triangle with AB = AC. AD bisects the exterior $\angle$A. prove that AD || BC. **[3]**



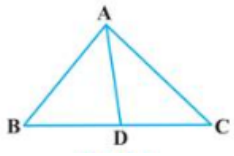
55. S is any point on side QR of a $\triangle$PQR. Show that: PQ + QR + RP > 2PS. **[3]**

56. ABC is an isosceles triangle with AB = AC and BD and CE are its two medians. Show that BD = CE. **[3]**

57. In $\Delta ABC, D$ is the midpoint of BC. if $DL \perp AB$ and $DM \perp AC$ such that DL = DM. prove that AB = AC. **[3]**



58. In the given figure, AD is the bisector of $\angle BAC$. Prove that AB > BD. **[3]**



59. In $\triangle$ABC, $\angle$ABC = $\angle$ACB and the bisectors of $\angle$ABC and $\angle$ACB intersect at O such that $\angle$BOC = 120^o. Show that $\angle$A = $\angle$B = $\angle$C = 60^o. **[3]**

60. AD is an altitude of an isosceles triangle ABC in which AB = AC. Show that **[3]**

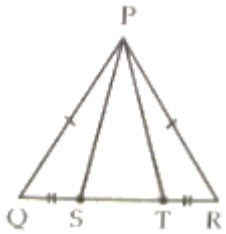
i. AD bisects BC

ii. AD bisects ∠A.

Section D

61. **Read the following text carefully and answer the questions that follow:** **[4]**

A children's park is in the shape of isosceles triangle said PQR with PQ = PR, S and T are points on QR such that QT = RS.



i. Which rule is applied to prove that congruency of △PQS and △PRT. (1)

ii. Name the type of △PST. (1)

iii. If PQ = 6 cm and QR = 7 cm, then find perimeter of △PQR. (2)

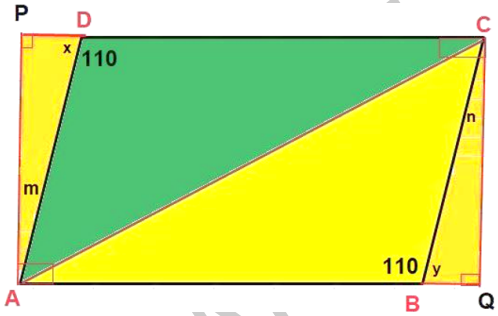
OR

If ∠QPR = 80^o find ∠PQR? (2)

62. **Read the following text carefully and answer the questions that follow:** **[4]**

In the middle of the city, there was a park ABCD in the form of a parallelogram form so that AB = CD, AB||CD and AD = BC, AD || BC.

Municipality converted this park into a rectangular form by adding land in the form of ΔAPD and Δ BCQ. Both the triangular shape of land were covered by planting flower plants.



i. Show that ΔAPD and ΔBQC are congruent. (1)

ii. PD is equal to which side? (1)

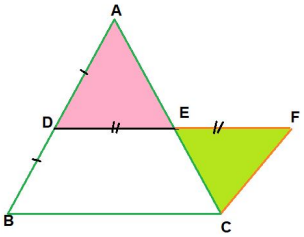
iii. Show that ΔABC and ΔCDA are congruent. (2)

OR

What is the value of ∠m? (2)

63. **Read the following text carefully and answer the questions that follow:** **[4]**

Haresh and Deep were trying to prove a theorem. For this they did the following



i. Draw a triangle ABC

ii. D and E are found as the mid points of AB and AC

iii. DE was joined and DE was extended to F so DE = EF

iv. FC was joined.

Questions:

i. △ADE and △EFC are congruent by which criteria? (1)

ii. Show that CF || AB. (1)

iii. Show that CF = BD. (2)

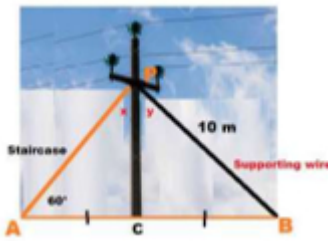
OR

Show that DF = BC and DF || BC. (2)

64. **Read the following text carefully and answer the questions that follow:** **[4]**

As shown In the village of Surya there was a big pole PC. This pole was tied with a strong wire of 10 m length. Once there was a big spark on this pole, thus wires got damaged very badly. Any small fault was usually repaired with the help of a rope which normal board electricians were carrying on bicycles.

This time electricians need a staircase of 10 m so that it can reach at point P on the pole and this should make 60^{o} with line AC.



i. Show that △APC and △BPC are congruent. (1)

ii. Find the value of ∠x. (1)

iii. Find the value of ∠y. (2)

OR

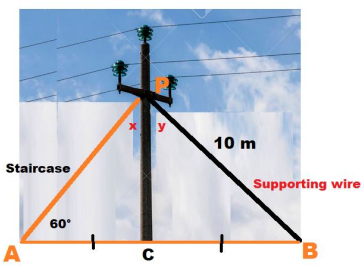
What is the value of ∠PBC? (2)

65. **Read the following text carefully and answer the questions that follow:** **[4]**

As shown In the village of Surya there was a big pole PC. This pole was tied with a strong wire of 10 m length.

Once there was a big spark on this pole, thus wires got damaged very badly. Any small fault was usually repaired with the help of a rope which normal board electricians were carrying on bicycles.

This time electricians need a staircase of 10 m so that it can reach at point P on the pole and this should make 60° with line AC.



i. Show that ΔAPC and ΔBPC are congruent. (1)

ii. Find the value of ∠x. (1)

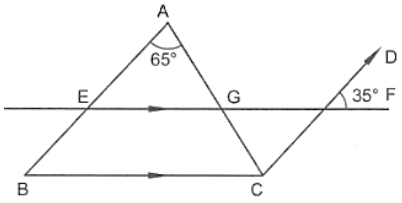
iii. What is the value of ∠PBC? (2)

OR

Find the value of ∠y. (2)

Section E

66. In Fig, if AB || CD, EE || BC, ∠BAC = 65° and ∠DHF = 35°, find ∠AGH. **[5]**



67. ABCD is a quadrilateral in which AB = AD, BC = DC and diagonals intersect at point E. Prove that **[5]**

i. AC bisects each of the angles A and C.

ii. BE = ED

iii. ∠ABC = ∠ADC. Is AE = EC ?

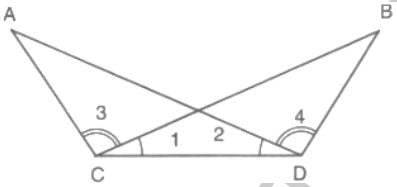
68. Bisectors of the angles B and C of an isosceles triangle ABC with AB = AC intersect each other at O. Show that external angle which is adjacent to ∠ ABC is equal to ∠ BOC. **[5]**

69. In a right triangle, prove that the line-segment joining the mid-point of the hypotenuse to the opposite vertex is half the hypotenuse. **[5]**

70. △ABC circumscribes a circle of radius r such that ∠B = 90^{o}. If AB = 3 cm and BC = 4 cm, then find the value of r. **[5]**

71. If the bisector of an angle of a triangle bisects the opposite side, prove that the triangle is isosceles. **[5]**

72. In figure, ∠BCD = ∠ADC and ∠ACB = ∠BDA. Prove that AD = BC and ∠A = ∠B. **[5]**



73. 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. **[5]**

Show that:

i. △AMC ≅ △BMD

ii. ∠DBC is a right angle

iii. △DBC ≅ △ACB

iv. CM = $\frac{1}{2}$AB

74. ABCD is quadrilateral such that AB = AD and CB = CD. Prove that AC is the perpendicular bisector of BD. **[5]**

75. ΔABC is an isosceles triangle in which AB = AC. Side BA is produced to D such that AD = AB (See figure). Show that ∠BCD is a right angle. **[5]**