FOUNDATION (V_2)

Class: 7th : MATHEMATICS

1. CONGRUENCY AND INEQUALITIES ON SIDES OF TRIANGLES.

TEACHING TASK

JEEMAINS LEVEL

01. $AB = PQ = 5.2\,cm$

$BC = QR = 4\,cm$

$CA = RP = 3.5\,cm$

$\therefore$

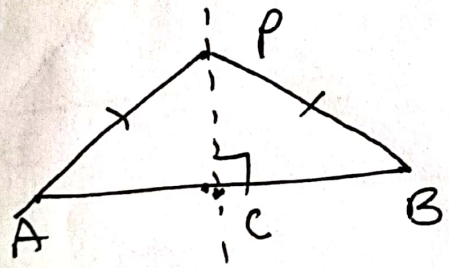
$\therefore \triangle ABC \cong \triangle PQR$ (By S.S.S) Ans: C

02 $\angle A = 50^\circ$, $\angle B = 70^\circ \Rightarrow \angle C = 60^\circ$

$\therefore \angle Q = \angle C = 60^\circ$

Ans: D

03



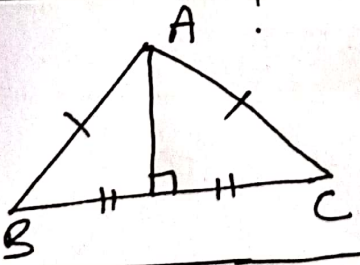
$PA = PB$

$\angle APC = \angle BPC$

$\angle PAC = \angle PBC$

Ans: D

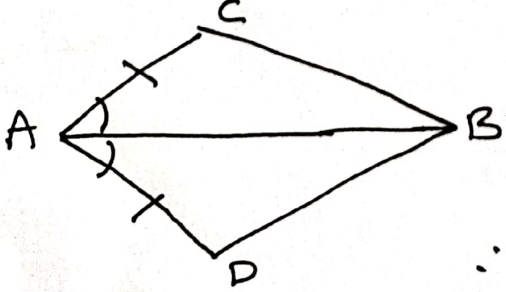
04



Conceptual

Ans: D

05



$AC = AD$ (given)

$\angle CAB = \angle BAD$ (given)

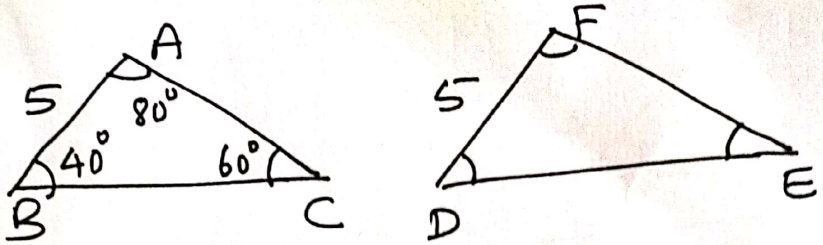
$AB = AB$ (Common side)

$\therefore \triangle ABC \cong \triangle ABD$ (SAS)

$BC = BD$

Ans: D

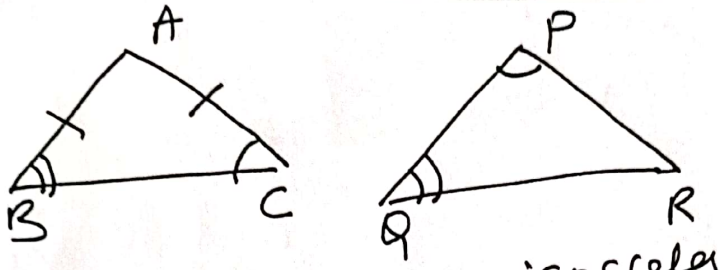
06



$\angle E = 60°$

Ans: B

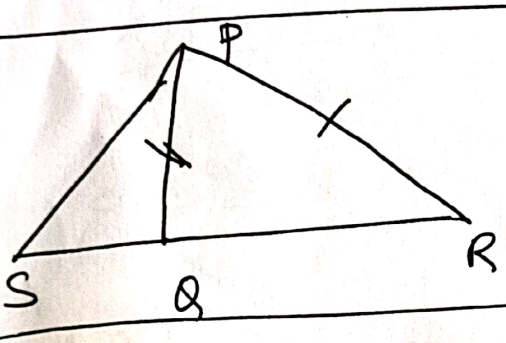
07



Both triangles are isosceles but not congruent

Ans: A

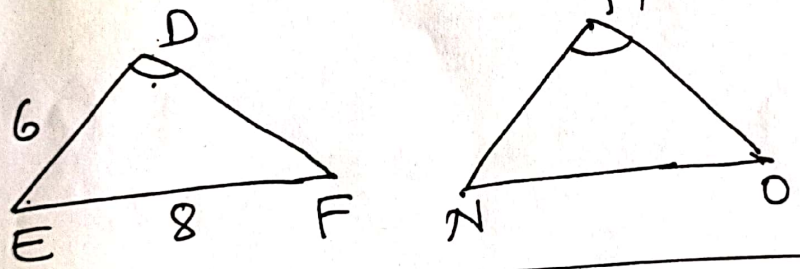
08



$SP > PQ$

Ans: D

09



$MN = DE = 6\,cm$

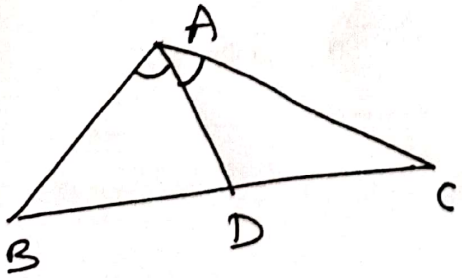
~~Ans: A~~

Ans: B

10 Conceptual

JEE ADVANCED LEVEL

11.

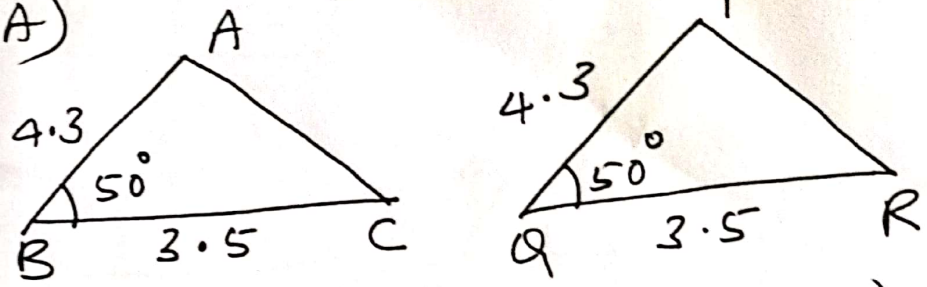


A) $AB > AD$ ✓

B) $AC > CD$ ✓

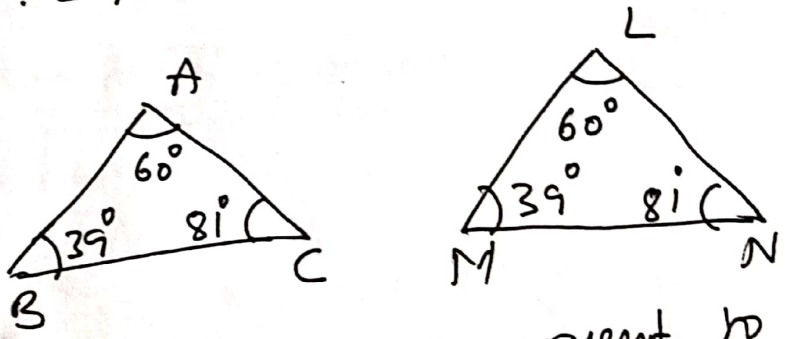
Ans: A, B

12. A)



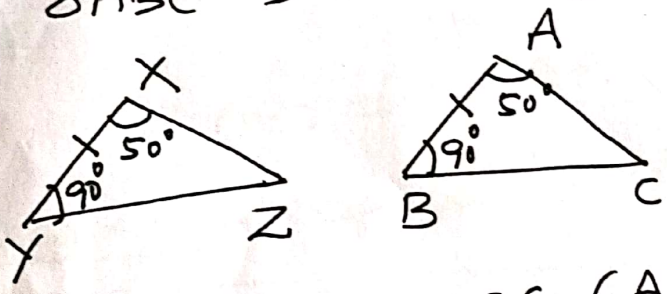
$\therefore \triangle ABC \cong \triangle PQR$ (SAS) ✓

B)



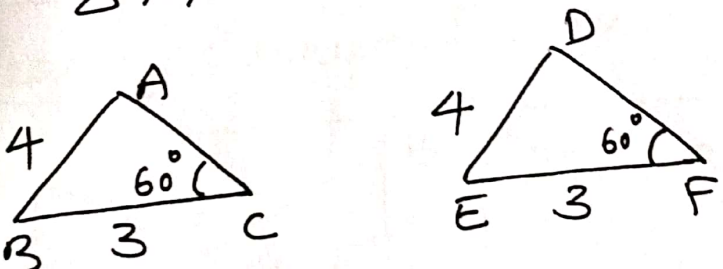
$\therefore \triangle ABC$ is not congruent to $\triangle LMN$

C)



$\triangle XYZ \cong \triangle ABC$ (ASA) ✓

D)



$\triangle ABC$ ~~$\cong$~~ $\triangle DEF$ Not Congruent

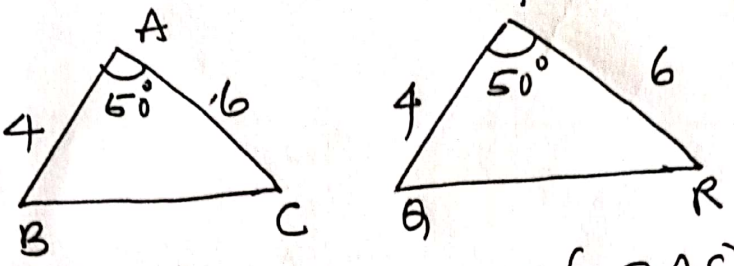
Ans: A, C

13 Statement I: Conceptual (True)

Statement II: Conceptual (True)

Ans: A

14 Statement I:

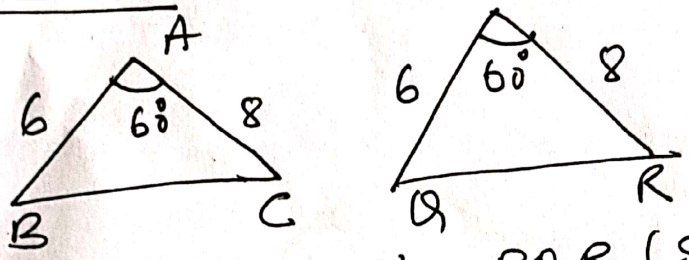


$\triangle ABC \cong \triangle PQR$ (SAS) (True)

Ans: A

Statement II: Conceptual (True)

15 Assertion:



$\triangle ABC \cong \triangle PQR$ (SAS) True

Ans: A

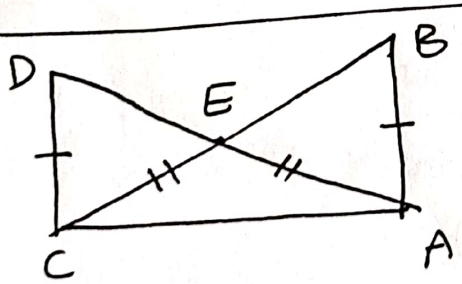
Reason: Conceptual (True)

16 Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

17



In $\triangle ABC$, $\triangle ADC$

$AB = CD$ (given)

$AD = CB$ (given)

$AC = AC$ (Common)

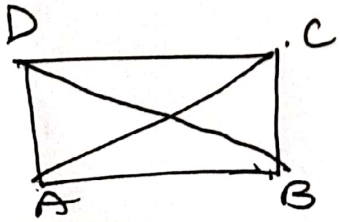
$\therefore \triangle ABC \cong \triangle ADC$ (S.S.S)

(OR) $\triangle ADC \cong \triangle CBA$

Ans:

Ans: D

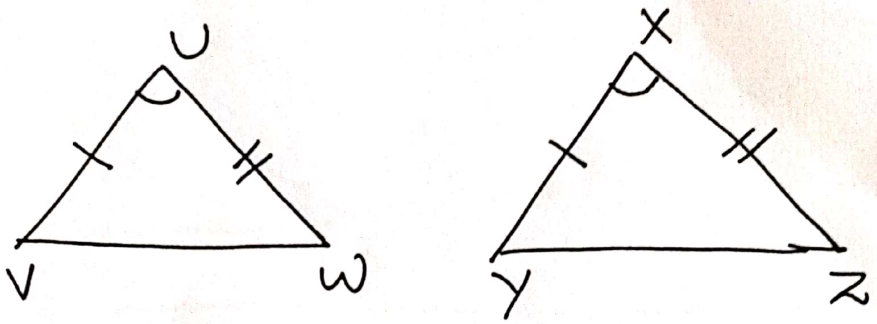
18



$\angle ABC = 90°$

Ans: B

19.



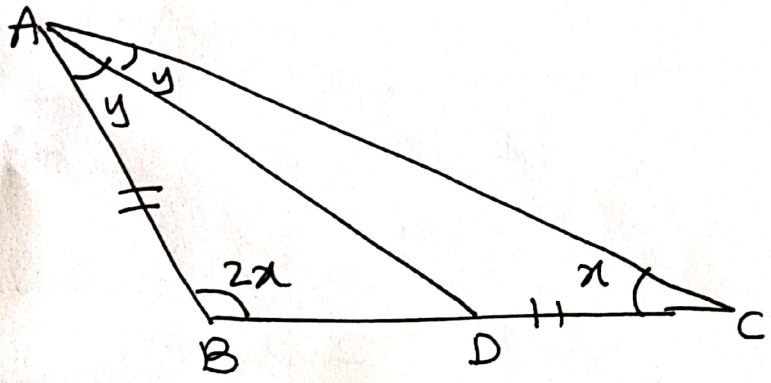
clearly ASA

Ans: A

20 $\angle W = \angle Z$

Ans: B

21.



Let $\angle C = x \Rightarrow \angle B = 2x$.

From figure, $\angle A + \angle B + \angle C = 180^\circ$

$\Rightarrow 2\angle y + 2\angle x + \angle x = 180^\circ$

$\Rightarrow 2\angle y + 3\angle x = 180^\circ$

Since, AD is the angle bisector and $AB = CD$

We have $\angle x = \angle y$

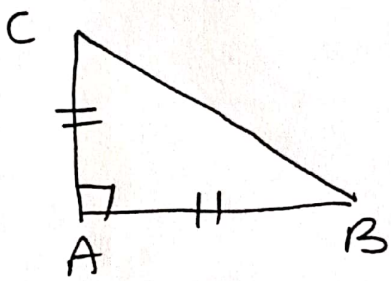
$\therefore 2\angle y + 3\angle y = 180^\circ$

$\Rightarrow 5\angle y = 180^\circ$

$\Rightarrow \angle y = 36^\circ$

$\therefore \angle BAC = 2 \times 36^\circ = 72^\circ$

Ans: 72

22 

$AB = AC$

$\Rightarrow \angle C = \angle B = 45^\circ$

Ans: 45°

23 a) S.S.S (t)
b) R.H.S (p)
c) A.S.A (r)
d) SAS (q)

Ans: t, p, r, q

24 a) $AB + BC > AC$ (s)
b) $DE < DF + EF$ (p)
c) $|PQ - QR| < PR$ (q)
d) $YZ > XY + YZ$ (t)

Ans: s, p, q, t

LEARNERS TASK (CUQ's)

01. Conceptual — Ans: A

02 $\triangle ABC \cong \triangle PSR$
(NOTE: Asume sides are also equal) — Ans: C

03 $\triangle CBA \cong \triangle RDE$ — Ans: A

04 Conceptual — Ans: D

05 Conceptual — Ans: D

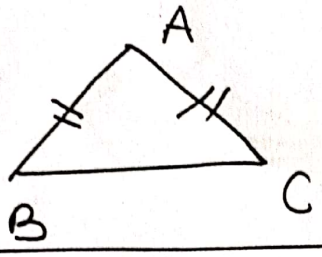
06 Conceptual — Ans: C

07 $AC = PR \Rightarrow$, $\angle CAB = \angle QPR$ — Ans: D

08 ASA Congruency

Ans. A

09

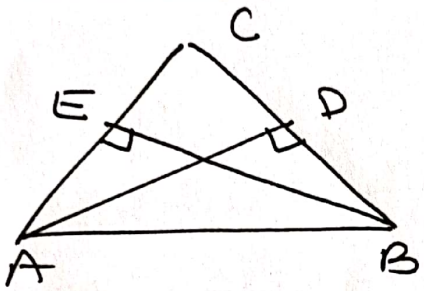


$AB = AC$

$\Rightarrow \angle C = \angle B$

Ans: C

10.



In $\triangle AEB$, $\triangle ADB$

$\angle AEB = \angle ADB$ (each 90°)

$AB = AB$ (Common side)

$AE = BD$ (Given)

$\therefore \triangle AEB \cong \triangle ADB$ (RHS)

$\Rightarrow AD = BE$

Ans: D

JEE MAINS LEVEL

01 $\triangle PQR \cong \triangle UVW$

$\Rightarrow \angle P = \angle U, \angle Q = \angle V, \angle R = \angle W$

Also $PQ = UV, QR = VW, PR = UW$

Ans. D

02 Conceptual

Ans. A

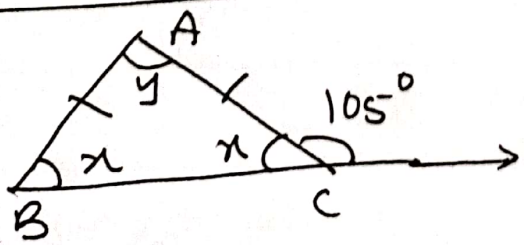
03 From figure

$\triangle AOC \cong \triangle BOD$, $AC = BD$, $AC \parallel BD$

(SAS)

Ans. D

04



Clearly $x = 75°$

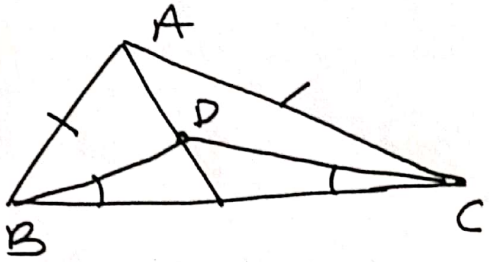
$\therefore 75° + 75° + y = 180°$

$\Rightarrow y = 30°$

Ans. B

05 Conceptual

06



Given $AB = AC$

$\Rightarrow \angle ABC = \angle ACB$

Given $\angle BDC = \angle DCB$

$\Rightarrow BD = CD$

Also, $\angle ABD = \angle ACD$

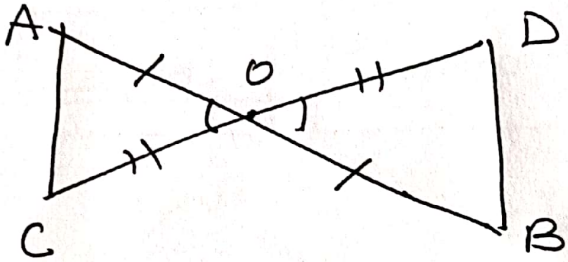
$\therefore \triangle ABD \cong \triangle ACD$ (SAS)

$\Rightarrow \angle BAD = \angle CAD$

$\Rightarrow$ AD bisects $\angle BAC$

Ans. C

07.



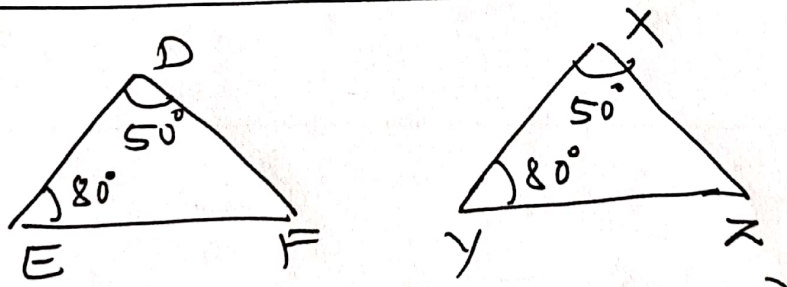
$\triangle OAC \cong \triangle ODB$ (SAS)

Ans. A

08 Conceptual

Ans. B

09



Given $\triangle DEF \cong \triangle XYZ \Rightarrow \angle Z = 50^\circ$

Ans. B

10 Conceptual

Ans: C

JEE ADVANCED

11. Conceptual

Ans: B, C

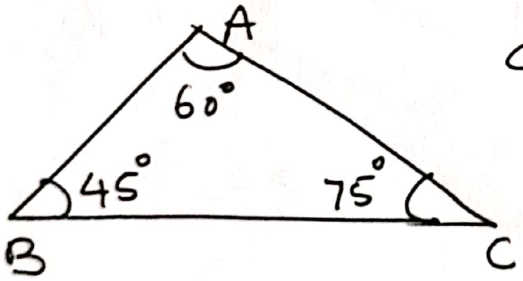
12 | conceptual | Ans. A

13 | statement I: Conceptual (True)
statement II: Conceptual (True) | Ans. A

14 | statement I: Conceptual (True)
statement II: Conceptual (True) | Ans: A

15 | Assertion: ASA Conceptual (True)
Reason: Conceptual (True) | Ans. B

16 | Assertion: ASA Conceptual (True)
Reason: Conceptual (True) | Ans: A

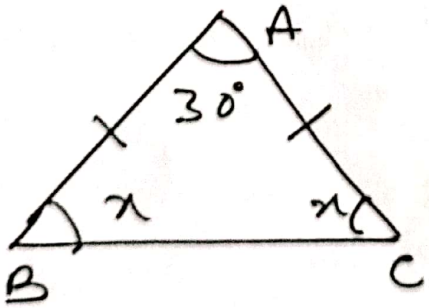
17 

cleary $\angle B < \angle A < \angle C$

$\Rightarrow AC < BC < AB$

(or) $AB > BC > AC$

Ans: C

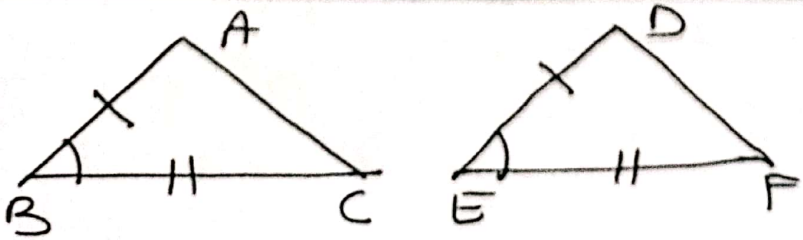
18. 

$x + x + 30^\circ = 180^\circ$

$\Rightarrow x = 75^\circ$

$\therefore \angle B = \angle C$, $\angle B = \angle C = 75^\circ$

Ans. D

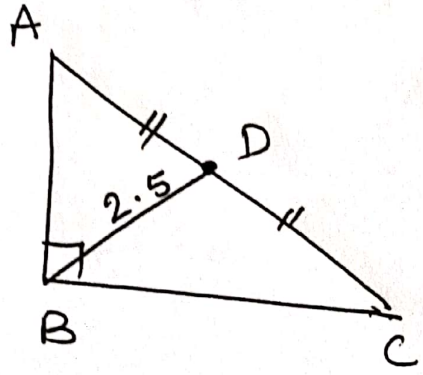
19 

$\triangle ABC \cong \triangle DEF$ (SAS)

Ans: C

20. $\angle A = \angle D$ Ans. B

21.



$BD = \frac{1}{2} AC$

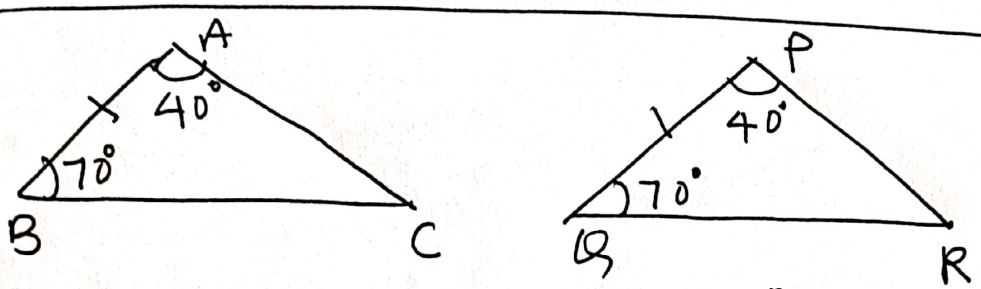
$\Rightarrow AC = 2 \times BD$

$= 2 \times 2.5$

$= 5 cm$

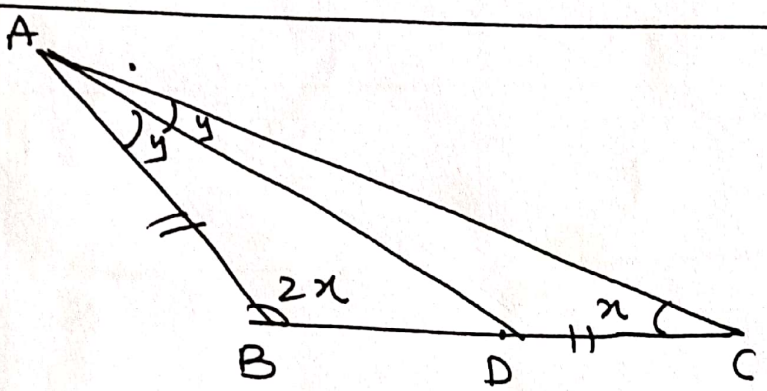
Ans: 5

22



$\therefore \angle R = 180° - (40° + 70°) = 70°$ Ans. 70°

23



Let $\angle C = x \Rightarrow \angle B = 2x$

From figure $\angle A + \angle B + \angle C = 180°$

$\Rightarrow 2y + 2x + x = 180°$

$\Rightarrow 2y + 3x = 180° \rightarrow (1)$

Since, AD is the angle bisector and $AB = CD$

We have $x = y$

$\therefore (1) \Rightarrow 2y + 3y = 180° \Rightarrow y = 36°$

Also $(1) \Rightarrow 2 \times 36° + 3x = 180° \Rightarrow x = 36°$

. From figure

a) $\angle BAC = 2y = 2 \times 36^\circ = 72^\circ$ (q)

b) $\angle ABC = 2x = 2 \times 36^\circ = 72^\circ$ (q)

c) $\angle ADC = 180^\circ - (x + y)$

$= 180^\circ - (36^\circ + 36^\circ) = 180^\circ - 72^\circ$

$= 108^\circ$ (r)

d) $\angle ADB = 180^\circ - (y + 2x)$

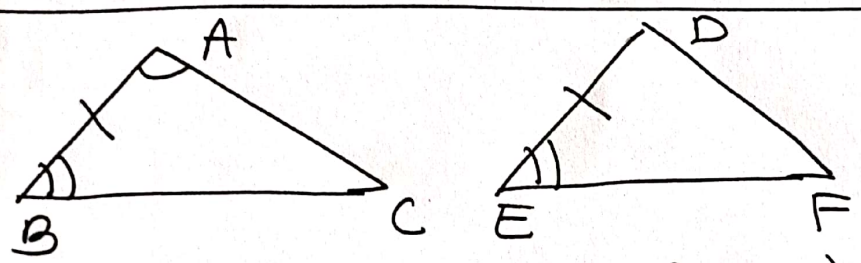
$= 180^\circ - (36^\circ + 2 \times 36^\circ)$

$= 180^\circ - 108^\circ$

$= 72^\circ$ (q)

Ans. q, q, r, q

24



A) $\triangle ABC \cong \triangle DEF$ (ASA) (r)

b) SSS (s)

c) RHS (q)

d) SAS (p)

Ans. r, s, q, p

⇒ TIME END ∈