

Jender Heart High School, Sec. -33B chd.

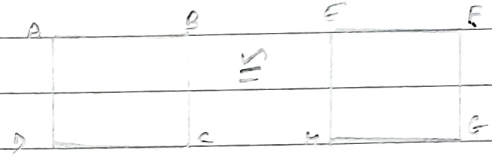
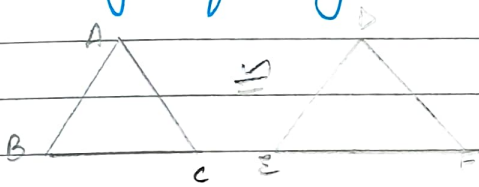
Class: VII

Teacher: Deepthi

Subject: Mathematics

Topic: Chapter - 2 : Congruence

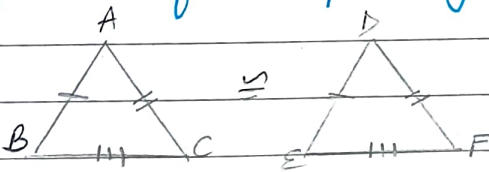
The two figures are said to be Congruent, if they are exactly of same shape and size. The sign of congruent is ($\cong$)



So, $\triangle ABC \cong \triangle DEF$

$ABCD \cong EFGH$

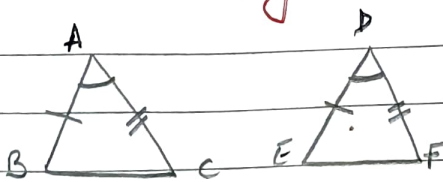
Two triangles are said to be Congruent, if the pairs of corresponding sides and angles are equal.



$AB = DE ; BC = EF ; AC = DF$
 $\angle A = \angle D ; \angle B = \angle E ; \angle C = \angle F$

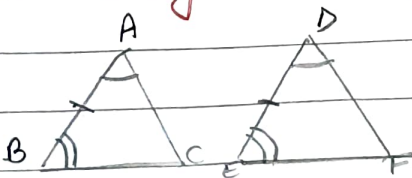
Condition for Congruency of triangles: To check two triangles are congruent or not, we need three pairs of corresponding parts are equal or not.

1. **SAS (Side-Angle-Side)**: If two sides and one angle (centre) is equal.



$AB = DE , AC = DF , \angle A = \angle D$

2. **ASA (Angle-Side-Angle)**: If two angles, and the included side are equal



$AB = DE , \angle A = \angle D \text{ and } \angle B = \angle E$

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Topic: Chapter - 21: Congruence

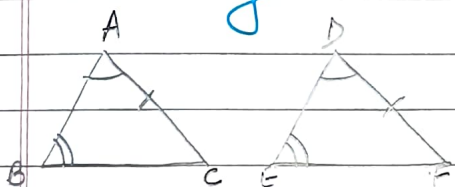
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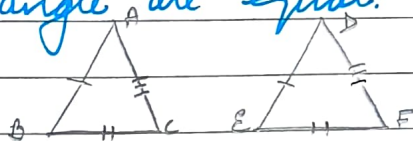
Teacher: Deepti

3. A.A.S (Angle-Angle-Side): If two angles and any one side of the triangle are equal.



$$\angle A = \angle D, \angle B = \angle E, AC = DF$$

4. S.S.S (Side-Side-Side): If three sides of a triangle are equal.

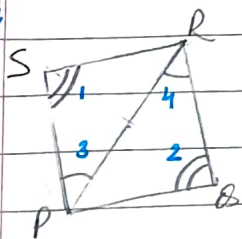


$$AB = DE; BC = EF; AC = DF$$

- To prove that two triangles are congruent or not, we need three pairs (parameters) to be equal.

Exercise - 21A

Sol'n 5



In $\triangle PSR$ and $\triangle RBP$

$$\angle 1 = \angle 2$$

$$\angle 3 = \angle 4$$

$$PR = PR$$

{ Given }

(Common)

$$\triangle PSR \cong \triangle RBP \text{ (by AAS)}$$

$$(i) PB = RS$$

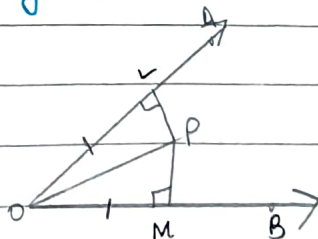
$$(ii) PS = BR \text{ (by C.P.C.T.)}$$

Sol'n 8 (i) To prove: $\triangle OLP \cong \triangle OMP$

$$\angle OLP = \angle OMP \text{ (each } 90^\circ)$$

$$OP = OP \text{ (Common)}$$

$$OL = OM \text{ (Given)}$$



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$$\triangle OLP \cong \triangle OMP \text{ (by RHS)}$$

$$(ii) PL = PM \text{ (C.P.C.T)}$$

$$(iii) \angle LOP = \angle MOP \text{ (C.P.C.T)}$$

Solⁿ 11. AB is the median

$$\Rightarrow BD = DC$$

(i) In $\triangle ADB$ and $\triangle ADC$

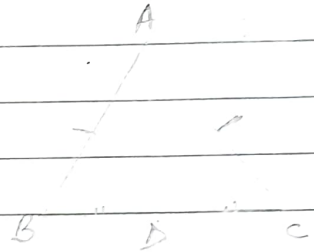
$$AB = AC \text{ (Given)}$$

$$BD = DC \text{ (AD is the median)}$$

$$AD = AD \text{ (Common)}$$

$$\Rightarrow \triangle ADB \cong \triangle ADC \text{ (by SSS)}$$

$$(ii) \angle BAD = \angle CAD \text{ (by C.P.C.T)}$$



Solⁿ 12. Given: AD is the bisector of $\angle A$

$$AB = AC$$

(i) In $\triangle ADB$ and $\triangle ADC$

$$AB = AC \text{ (Given)}$$

$$AD = AD \text{ (Common)}$$

$$\angle 1 = \angle 2 \text{ (AD is the bisector of } \angle A)$$

$$\therefore \triangle ADB \cong \triangle ADC \text{ (by SAS)}$$

$$(ii) \angle B = \angle C \text{ (by C.P.C.T)}$$

$$(iii) BD = DC \text{ (by C.P.C.T)}$$

$$(iv) \angle 3 = \angle 4 \text{ (by C.P.C.T)}$$

$$\angle 3 + \angle 4 = 180^\circ$$

$$\angle 3 + \angle 3 = 180^\circ$$

$$2\angle 3 = 180^\circ$$

$$\angle 3 = 90^\circ$$

$$\therefore AD \perp BC$$

