



Exercise 16A

Q1

Answer :

We have to state the correspondence between the vertices, sides and angles of the following pairs of congruent triangles.

(i) $\triangle ABC \cong \triangle EFD$

Correspondence between vertices :

$$A \leftrightarrow E, B \leftrightarrow F, C \leftrightarrow D$$

Correspondence between sides :

$$AB = EF, BC = FD, CA = DE$$

Correspondence between angles :

$$\angle A = \angle E, \angle B = \angle F, \angle C = \angle D$$

(ii) $\triangle CAB \cong \triangle QRP$

Correspondence between vertices :

$$C \leftrightarrow Q, A \leftrightarrow R, B \leftrightarrow P$$

Correspondence between sides :

$$CA = QR, AB = RP, BC = PQ$$

Correspondence between angles :

$$\angle C = \angle Q, \angle A = \angle R, \angle B = \angle P$$

(iii) $\triangle XZY \cong \triangle QPR$

Correspondence between vertices :

$$X \leftrightarrow Q, Z \leftrightarrow P, Y \leftrightarrow R$$

Correspondence between sides :

$$XZ = QP, ZY = PR, YX = RQ$$

Correspondence between angles :

$$\angle X = \angle Q, \angle Z = \angle P, \angle Y = \angle R$$

(iv) $\triangle MPN \cong \triangle SQR$

Correspondence between vertices :

$$M \leftrightarrow S, P \leftrightarrow Q, N \leftrightarrow R$$

Correspondence between sides :

$$MP = SQ, PN = QR, NM = RS$$

Correspondence between angles :

$$\angle M = \angle S, \angle P = \angle Q, \angle N = \angle R$$

Q2

Answer :

$$(i) \triangle ACB \cong \triangle DEF$$

(SAS congruence property)

$$(ii) \triangle RPQ \cong \triangle LNM$$

(RHS congruence property)

$$(iii) \triangle YXZ \cong \triangle TRS$$

(SSS congruence property)

$$(iv) \triangle DEF \cong \triangle PNM$$

(ASA congruence property)

$$(v) \triangle ACB \cong \triangle ACD$$

(ASA congruence property)

Q3

Answer :

Given :

$$PL \perp OA$$

$$PM \perp OB$$

$$PL = PM$$

To prove :

$$\triangle PLO \cong \triangle PMO$$

Proof :

In $\triangle PLO$ and $\triangle PMO$:

$$\angle PLO = \angle PMO \quad (90^\circ \text{ each})$$

$$PO = PO \quad (\text{common})$$

$$PL = PM \quad (\text{given})$$

By RHS congruence property :

$$\triangle PLO \cong \triangle PMO$$

Q4

Answer :

Given :

$$AD = BC$$

$$AD \parallel BC$$

We have to show that $AB = DC$.

Proof :

$$AD \parallel BC$$

$$\therefore \angle BCA = \angle DAC \quad (\text{alternate angles})$$

In $\triangle ABC$ and $\triangle CDA$:

$$BC = DA \quad (\text{given})$$

$$\angle BCA = \angle DAC \quad (\text{proved above})$$

$$AC = AC \quad (\text{common})$$

By SAS congruence property :

$$\triangle ABC \cong \triangle CDA$$

$$\Rightarrow AB = CD \quad (\text{corresponding parts of the congruent triangles})$$

***** END *****