

Congruence Ex 16.4 Q1

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Answer:
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1) We have
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Since \angle ABO = \angle CDO = 45^{\circ} and both are alternate angles,
∠BAO = ∠DCO (alternate angle , AB || CD and AC is a transversal line)
\angle ABO = \angle CDO = 45^{\circ} (given in the figure)
Also, AB = DC (Given in the figure)
Therefore, by ASA \triangle AOB \cong \triangle DOC
2)
In \( \triangle ABC \),
Now AB = AC (Given)
\angle ABD = \angle ACD = 40^{\circ} (Angles opposite to equal sides)
∠ABD +∠ACD+∠BAC=180° (Angle sum property)
40^{\circ} + 40^{\circ} + \angle BAC = 180^{\circ}
∠BAC=180°-80°=100°
∠BAD +∠DAC=∠BAC
∠BAD=∠BAC-∠DAC=100°-50°=50°
\angle BAD = \angle CAD = 50^{\circ}
Therefore, by ASA, \triangleABD \cong\triangleADC
 In∆ABC,
 \angle A + \angle B + \angle C = 180^{\circ} (Angle sum property)
 \angle C=180\degree-\angle A-\angle B
 ∠C=180°-30°-90°=60°
 In∆PQR,
 \angle P + \angle Q + \angle R = 180^{\circ} (Angle sum property)
 \angle P = 180^{\circ} - \angle Q - \angle R
 ∠P=180°-60°-90°=30°
 \angle BAC = \angle QPR = 30^{\circ}
 \angle BCA = \angle PRQ = 60^{\circ}
 and AC = PR (Given)
 Therefore, by ASA, \triangleABC \cong\trianglePQR
We have only BC =QR but none of the angles of \triangleABC AND \trianglePQR are equal.
Therefore, \triangle ABC \ncong \triangle PRQ
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Congruence Ex 16.4 Q2

Answer:

- (i) Yes, \triangle ADB $\cong \triangle$ ADC, by ASA criterion of congruency
- (ii) We have used $\angle BAD = \angle CAD$

$$\angle ADB = \angle ADC = 90^{\circ} \text{ since } AD \perp BC$$

and AD = DA

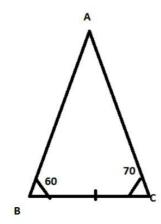
(iii) Yes, BD = DC since, $\triangle ADB \cong \triangle ADC$

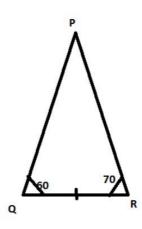
Congruence Ex 16.4 Q3

Answer:

We have drawn

 \triangle ABC with \angle ABC = 60° and \angle ACB = 70° We now construct \triangle PQR \cong \triangle ABC \triangle PQR has \angle PQR = 60° and \angle PRQ = 70° Also we construct \triangle PQR such that BC = QR Therefore by ASA the two triangles are congruent





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