RD Sharma Solutions

Class 7

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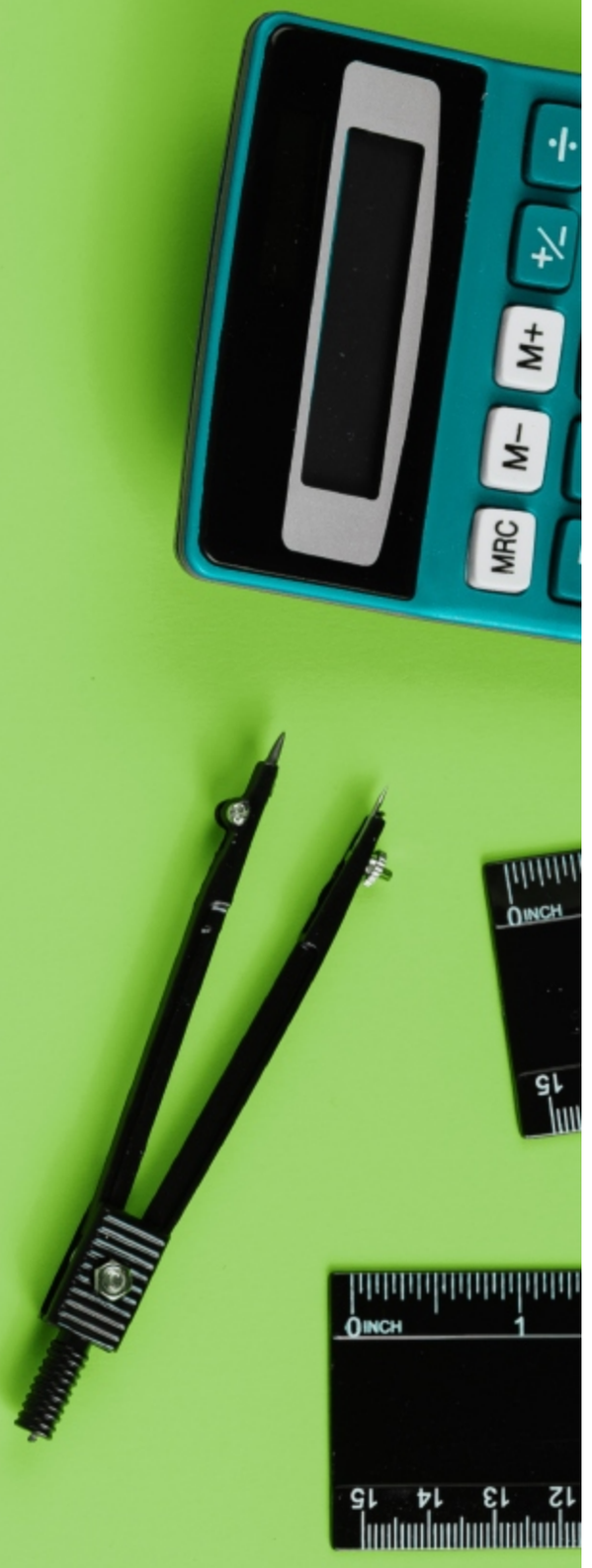
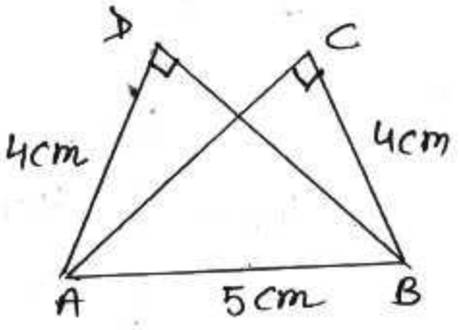


Exercise 16.5

Q.1 In each of the following pairs of right triangle the measure of some parts are indicated along side. State by the application of RHS congruence condition which are congruent. State each result in symbolic form.

(i)



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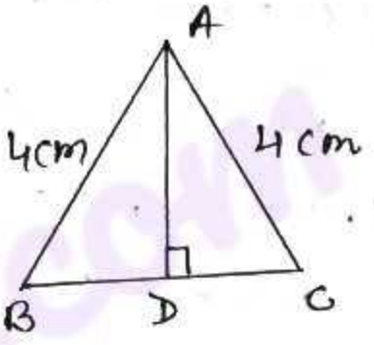

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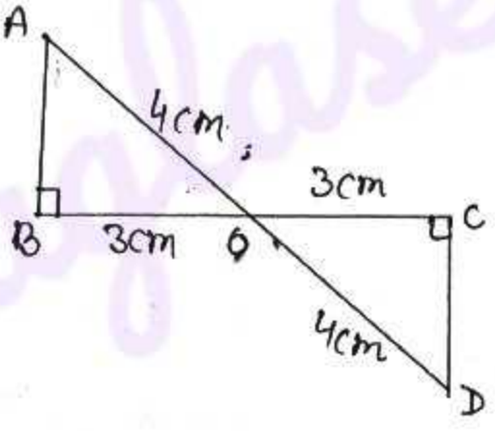

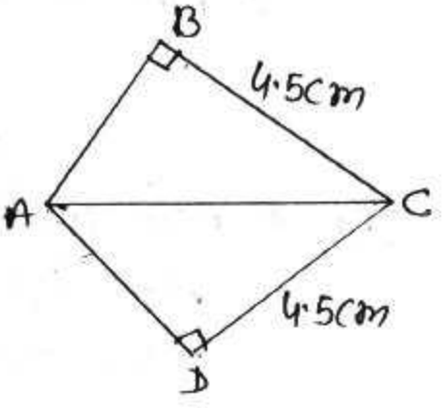

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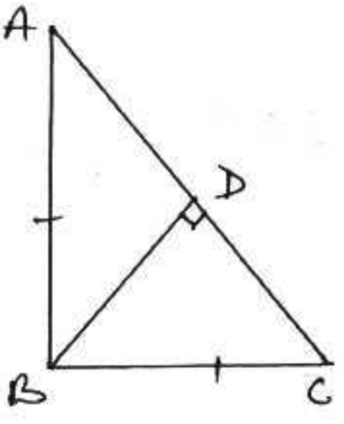

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Solution (i) In $\triangle ABD$ and $\triangle BAC$

$AD = BC = (4cm)$

$AB = AB = (5cm)$

$\angle ADB = \angle ACD \quad (90°)$

By RHS $\triangle ABD \cong \triangle BAC$

(ii) In $\triangle ABD$ and $\triangle ACD$

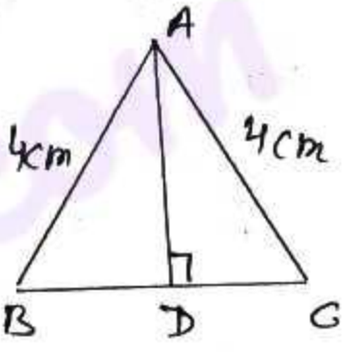
$AB = AC = (4cm)$

$\angle ADB = \angle ADC \quad (90°)$

$AD = AD$ (common)

By RHS

$\triangle ABD \cong \triangle ACD$



(iii) In $\triangle AOB$ and $\triangle COD$

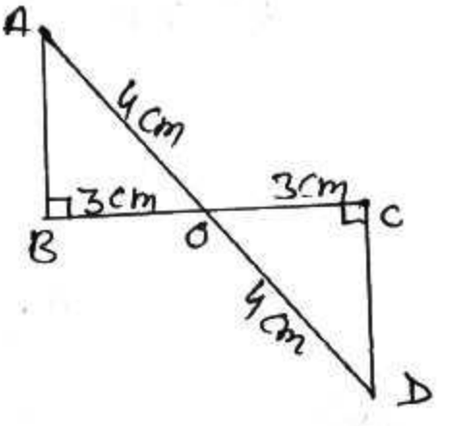
$AO = OD \quad (4cm)$

$BO = OC \quad (3cm)$

$\angle ABO = \angle OCD$

$\therefore$ By RHS

$\triangle AOB \cong \triangle DOC$



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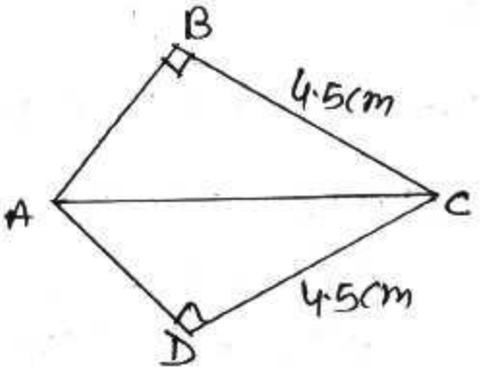
(iv)



In ΔABC and ΔADC

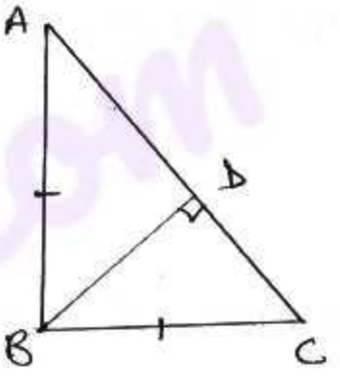
$\angle ABC = \angle ADC$ (90°)

$AC = CA$ (common)

$BC = DC = (4.5\ cm)$

By RHS $\Delta ABC \cong \Delta ADC$

(v) In ΔABD and ΔCBD



$\angle ADB = \angle BDC$ (90°)

$AB = BC$ (given)

$BD = BD$ (common)

By RHS $\Delta ABD \cong \Delta CBD$

<u>Q.2</u> ΔABC is isosceles with $AB = AC$. AD is the altitude from A on BC.

(i) Is $\Delta ABD \cong \Delta ACD$?

(ii) State the pairs of matching parts you have used to answer (i)

(iii) Is it true to say that $BD = DC$?

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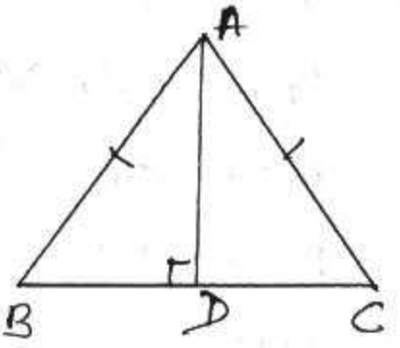
Solution:

(i) Yes, $\triangle ABD \cong \triangle ACD$



(ii) $\angle ADB = \angle ADC$ (90°)

$AB = AC$

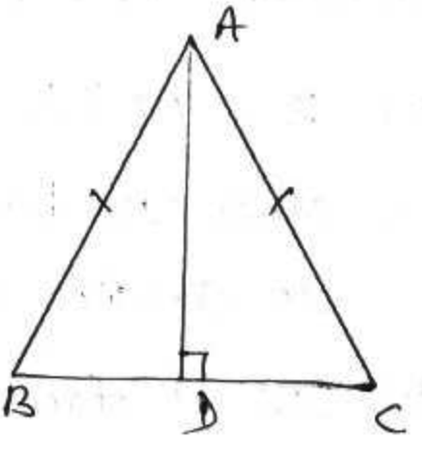
$AD = AD$ (common)

By RHS $\triangle ABD \cong \triangle ACD$

(iii) Yes, $BD = DC$ ($\because$ Corresponding parts of congruent triangles are equal)

Q3 $\triangle ABC$ is isosceles with $AB = AC$. Also $AD \perp BC$ meeting BC in D. Are the two triangles ABD and ACD congruent? State in symbolic form. Which congruence condition do you use? Which side of $\triangle ADC$ equals to BD? Which angle of $\triangle ADC$ equals $\angle B$?

Solution: In $\triangle ABD$ and $\triangle ACD$



$\angle ADB = \angle ADC$ (90°)

$AB = AC$ (given)

$AD = DA$ (common)

By RHS $\triangle ABD \cong \triangle ACD$

Yes $\triangle ABD \cong \triangle ACD$

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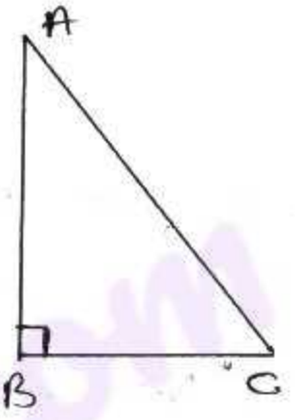
$\angle ACD$ is equals to $\angle B$

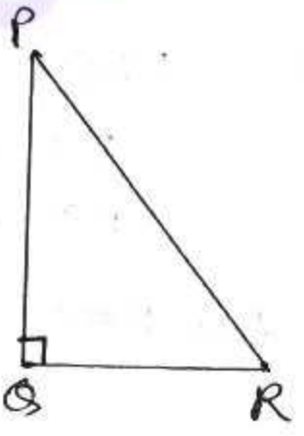
Q4 Draw a right triangle ABC. Use RHS Condition to construct another triangle congruent to it

Solution:



let ΔABC is a right triangle right angled at B.

We draw a line $QR = BC$, and draw a perpendicular PQR.



Then cut an arc by taking R as centre and radius equals to AC. let this arc cuts PQ at point P.

Join PB, PR.

This ΔPQR is a right triangle congruent to ΔABC.

Q.5 In fig. 47, BD and CE are altitudes of ΔABC and $BD = CE$

(i) Is $\Delta BCD \cong \Delta CBE$

(ii) State the three pairs of matching parts you have used to answer (i)

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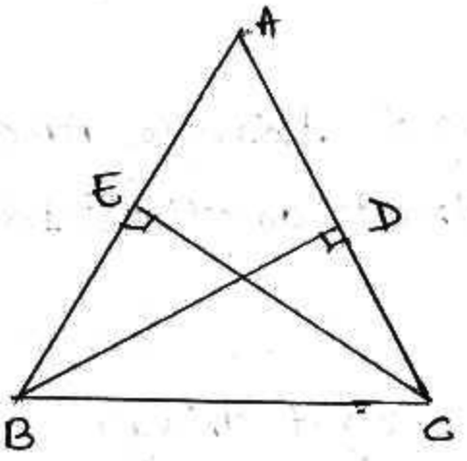

here we are given, $BD \perp AC$, $CE \perp AB$

also $BD = CE$

(i) yes $\triangle BCD \cong \triangle CBE$

(ii) $\angle BDC = \angle BEC$

$BC = BC$ (common)

$BD = CE$ (given)

By RHS $\triangle BCD \cong \triangle CBE$

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