12C / 12E LESSON 3

TRIGONOMETRY

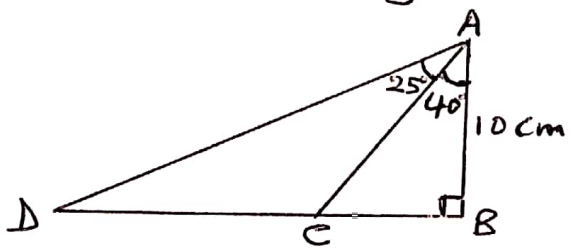
Example

In $\triangle ABD$, $AB = 10cm$, $\angle DAC = 25°$ and $\angle CAB = 40°$. Calculate the lengths of:

(a) BD

(b) BC

(c) DC



Solution

(a) $\angle DAB = 25° + 40° = 65°$

$$\tan \angle DAB = \frac{opp}{adj} = \frac{BD}{AB}$$

$$\tan 65° = \frac{BD}{10}$$

$$BD = 10 \times \tan 65°$$

$$BD = 21.45\ cm$$

(b) $$\tan \angle CAB = \frac{opp}{adj} = \frac{BC}{AB}$$

$$\tan 40° = \frac{BC}{10}$$

$$BC = 10 \times \tan 40°$$

$$BC = 8.39\ cm$$

(c) $$DC = BD - BC$$

$$= 21.45 - 8.39$$

$$= 13.06\ cm$$

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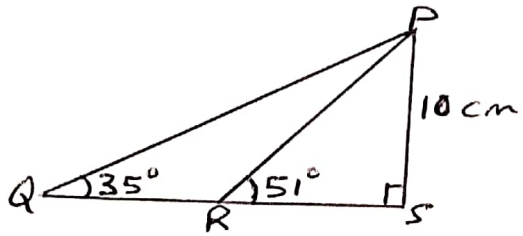
Exercise

1. In ΔPQS below, $PS = 10cm$, $\angle PQR = 35°$ and $\angle PRS = 51°$.



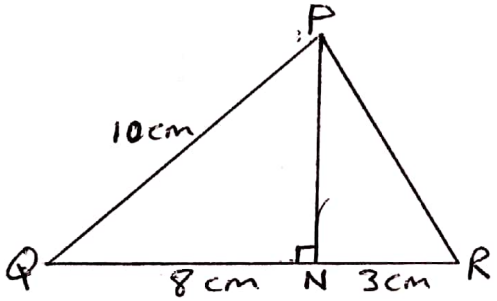
calculate the lengths of:

(a) QS

(b) RS

(c) QR

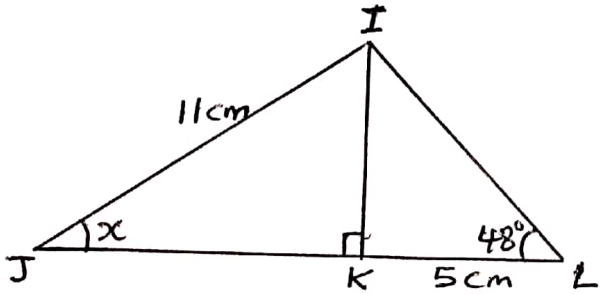
2. In ΔPQR below, $PQ = 10cm$, $QN = 8cm$ and $NR = 3cm$.



(a) Calculate the length of PN

(b) Calculate the size of $\angle PRN$.

3. Calculate the size of the angle x in the triangle below.



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