

Sine/Cosine Rule, Trigonometric Equations

FOUNDATION YEAR.

Q1. Solve triangle ABC completely in each of the following:

(a) $AB = 17.5 \text{ mm}$, $BC = 12 \text{ mm}$, $AC = 9.7 \text{ mm}$

(b) $\hat{C} = 59^\circ$, $\hat{B} = 48^\circ$, $AB = 11 \text{ cm}$.

(c) $AB = 31 \text{ cm}$, $AC = 25 \text{ cm}$, $\hat{A} = 35^\circ$.

(d) $AB = 30 \text{ mm}$, $AC = 21 \text{ mm}$, $BC = 26 \text{ mm}$.

Solutions

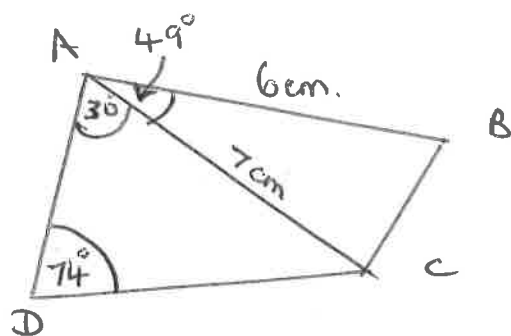
(a) $\hat{C} = 107.02^\circ$, $\hat{B} = 32.01^\circ$, $\hat{A} = 40.97^\circ$

(b) $\hat{A} = 73^\circ$, $AC = 9.537 \text{ cm}$, $BC = 12.272 \text{ cm}$.

(c) $BC = 17.785 \text{ cm}$, $\hat{B} = 57.73^\circ$, $\hat{C} = 91.268^\circ$.

(d) $\hat{B} = 43.32^\circ$, $\hat{A} = 58.14^\circ$, $\hat{C} = 78.54^\circ$.

Q2.



Calculate (i) BC

(ii) DC

(iii) $\hat{BCA}$

Give answers to 1 significant figure.

Solutions

(i) $BC = 5 \text{ cm}$

(ii) $CD = 4 \text{ cm}$

(iii) $\hat{BCA} = 60^\circ$

Q3 Solve the following trigonometric equations for all values of x between 0° and 360° inclusive i.e. $0^\circ \leq x \leq 360^\circ$

(i) $\cos x = 0.25$

(ii) $\sin x = -0.35$

(iii) $\tan x = 2.5$

(iv) $\cos x = -0.8660$

(v) $\tan x = -0.5$

(vi) $\sin x = 1$

(vii) $2 \cos x = 1$

(viii) $3 \tan x = -5$

(ix) $4 \sin x = -1$

(x) $\tan 2x = 1$