

Angles in Triangle



Example

Find the unknown in the following, giving brief reasons:

a



$$\mathbf{a} \quad x + 38 + 19 = 180 \quad \{\text{angle sum of a triangle}\}$$

$$\therefore x = 180 - 38 - 19$$

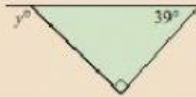
$$\therefore x = 123$$

b

$$y = 39 + 90 \quad \{\text{exterior angle of a triangle}\}$$

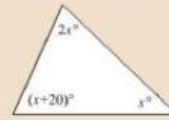
$$\therefore y = 129$$

b



Find the values of the unknowns in each triangle, giving a brief reason:

a



$$\mathbf{a} \quad 2x + x + (x + 20) = 180 \quad \{\text{angles of a triangle}\}$$

$$\therefore 4x + 20 = 180$$

$$\therefore 4x = 160$$

$$\therefore x = 40$$

b

$$a + 140 = 180 \quad \{\text{angles on a line}\}$$

$$\therefore a = 180 - 140 = 40$$

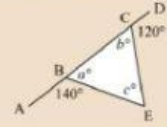
$$\text{Likewise } b = 180 - 120 = 60$$

$$\text{But } a + b + c = 180 \quad \{\text{angles of a triangle}\}$$

$$\therefore 40 + 60 + c = 180$$

$$\therefore 100 + c = 180$$

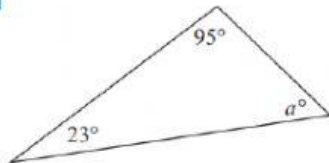
$$\therefore c = 80$$



Exercise:

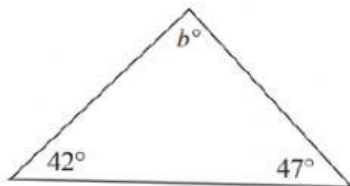
1) Find the unknown in the following, give brief reasons:

a



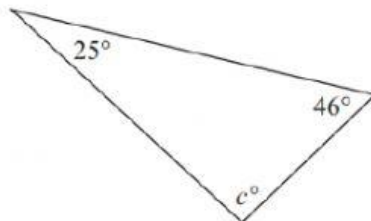
Reason:

b



Reason:

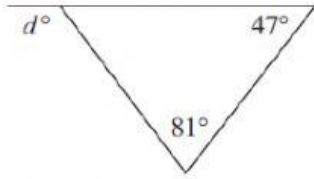
c



Reason:

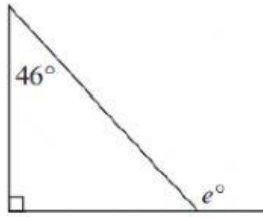


d



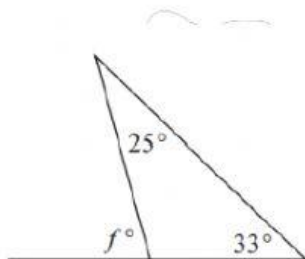
Reason:

e



Reason:

f



Reason:

2) The three angles of a scalene triangle are x° , $(x - 12)^\circ$ and $(2x + 6)^\circ$. What are the sizes of these angles?