

Angles in Triangle



Example

Find the unknown in the following, giving brief reasons:

a



$$\mathbf{a} \quad x + 38 + 19 = 180$$

{angle sum of a triangle}

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

$$\therefore x = 123$$

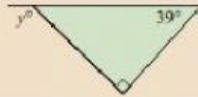
b

$$y = 39 + 90$$

{exterior angle of a triangle}

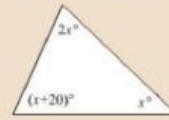
$$\therefore y = 129$$

b



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

a



$$\mathbf{a} \quad 2x + x + (x + 20) = 180$$

{angles of a triangle}

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

$$\therefore 4x = 160$$

$$\therefore x = 40$$

b

$$a + 140 = 180$$

{angles on a line}

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

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

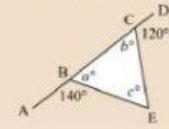
$$\text{But } a + b + c = 180$$

{angles of a triangle}

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

$$\therefore 100 + c = 180$$

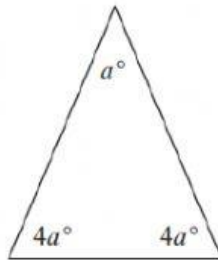
$$\therefore c = 80$$



Exercise:

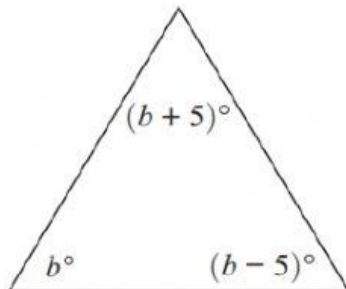
1) Find the values of the unknowns in each triangle, give a brief reasons:

a



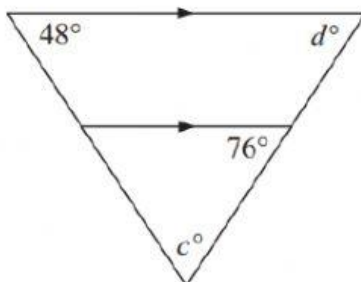
Reason:

b



Reason:

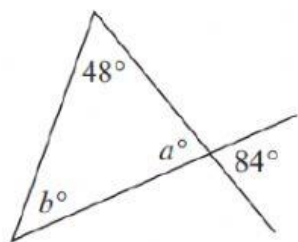
c



Reason:

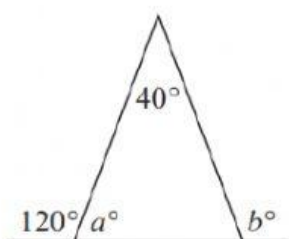


d



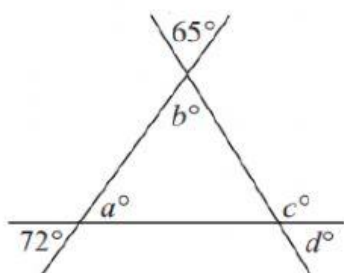
Reason:

e



Reason:

f



Reason:

2) State whether the following statements are true or false:

- The sum of the angles of a triangle is equal to two right angles.
- A right angled triangle can contain an obtuse angle.
- The sum of two angle of a triangle is always greater than the third angle.
- The two smaller angles of a right angled triangle are supplementary.
- A concave triangle is impossible

T	F
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐