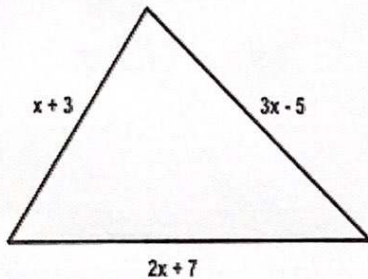




## QT Forming and Solving Equations

1. The lengths of the sides of a triangle are  $x + 3$ ,  $2x + 7$  and  $3x - 5$ .
- (a) Write down an expression for the perimeter of the triangle
- (b) The perimeter of the triangle is 29cm. Calculate the value of  $x$ .
- (c) Calculate the length of each side of the triangle.



$$(a) \quad x+3 + 2x+7 + 3x-5 \\ = \underline{\underline{6x+5}}$$

$$(b) \quad 6x+5 = 29 \\ 6x = 24 \\ \underline{\underline{x = 4}}$$

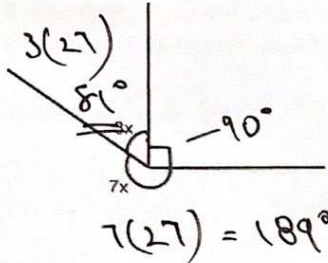
$$(c) \quad 2x+7 \\ 2(4)+7 \\ \underline{\underline{15 \text{ cm}}}$$

$$x+3 \\ 4+3 \\ = \underline{\underline{7 \text{ cm}}}$$

$$3x-5 \\ 3(4)-5 \\ \underline{\underline{7 \text{ cm}}}$$



2. Find the value of each of the angles.



$$90 + 7x + 3x = 360$$

$$90 + 10x = 360$$

$$10x = 270$$

$$x = 27$$

3. The diagram shows a triangle. The size of the angles, in degrees, are

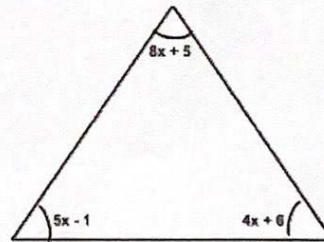
$$8x + 5$$

$$4x + 6$$

$$5x - 1$$

(a) work out the value of  $x$

(b) the value of each of the angles.



$$(a) 8x + 5 + 4x + 6 + 5x - 1 = 180^\circ$$

$$17x + 10 = 180$$

$$17x = 170$$

$$x = \underline{\underline{10}}$$

$$(b) \begin{array}{l} 8x + 5 \\ 8(10) + 5 \\ 85^\circ \\ \underline{\underline{85^\circ}} \end{array}$$

$$\begin{array}{l} 4x + 6 \\ 4(10) + 6 \\ 46^\circ \\ \underline{\underline{46^\circ}} \end{array}$$

$$\begin{array}{l} 5x - 1 \\ 5(10) - 1 \\ 49^\circ \\ \underline{\underline{49^\circ}} \end{array}$$





4. The diagram shows a right-angled triangle. All of the angles are in degrees. Find the value of the smallest angle in the triangle.

$$2x + 20 + 3x + 90 = 180^\circ$$

$$5x + 110 = 180$$

$$5x = 70$$

$$x = 14$$

$$2x + 20$$

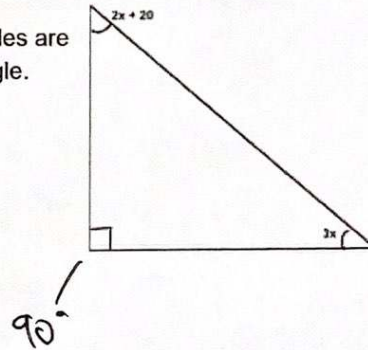
$$2(14) + 20$$

$$\underline{\underline{48^\circ}}$$

$$3x$$

$$3(14)$$

$$\underline{\underline{42^\circ}}$$



Smallest  $42^\circ$

5. Alice has some sweets.

Bailie has twice as many sweets as Alice.

Charlie has 10 more sweets than Bailie.

In total they have 35 sweets.

How many sweets does Alice have?

A

B

C

x

2x

2x + 10

$$x + 2x + 2x + 10 = 35$$

$$5x + 10 = 35$$

$$5x = 25$$

$$x = 5$$

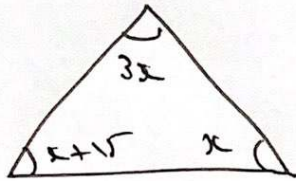
Alice has  
5 sweets.



6. The largest angle in a triangle is three times the size of the smallest angle. The other angle is  $15^\circ$  more than the smallest angle.

Work out, in degrees, the size of each angle in the triangle.

You must show your working.



$$\begin{aligned}x + 15 + x + 3x &= 180 \\5x + 15 &= 180 \\5x &= 165 \\x &= 33\end{aligned}$$

