

All measurements are in centimetres. x is an integer. The total volume of the cuboid is less than 2000 cm^3 . Show that $x \leq 6$

$$4x \times x \times 2x < 2000$$

$$8x^3 < 2000$$

$$x^3 < 250$$

$$x < \sqrt[3]{250}$$

$$x < 6.2996 \dots$$

As x is an integer

$$\frac{16+13}{2} \times 7 = 101.5 \text{ cm}$$

$$2x \leq 6$$

$$18x - 6 = 14x + 8$$

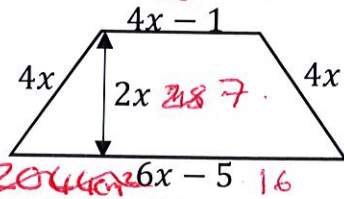
$$2x - 6 = 8$$

$$2x = 14$$

$$x = 7$$

$$P = 18x - 6$$

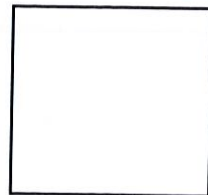
$$P = 14x + 8$$



$2(18x-6) = 2(14x+8)$
 $36x-12 = 28x+16$
 $8x = 28$
 $x = 3.5$

$$3x + 5 = 18.5 \text{ cm}$$

The diagram shows a square. All the lengths are measured in centimetres. Use an algebraic method to find the length of one side of the square.



$$5x - 4 = 3x + 5$$

$$2x - 4 = 5$$

$$2x = 9$$

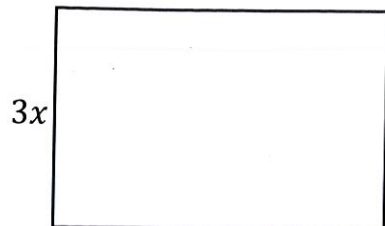
$$x = 4.5$$

b) Calculate the area of the rectangle.

$$43 \times 39 = 1677 \text{ cm}^2$$

$$26 + 17 = 43$$

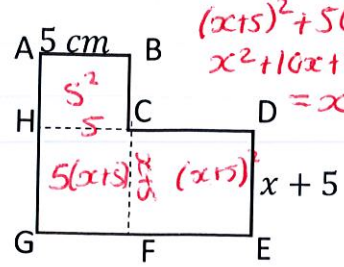
$$2x + 17$$



$$3 \times 13 = 369$$

$$3x$$

$$4x - 9$$



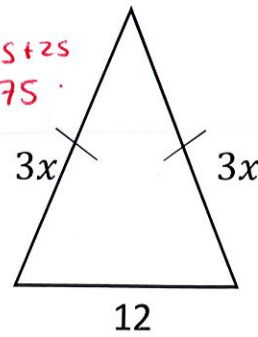
ABCH is a square.
 HCFG is a rectangle
 CDFE is a square.

They are joined to make an L-shape. Show that the total area of the L-shape, in cm^2 , is $x^2 + 15x + 75$.

$$(x+5)^2 + 5(x+5) + 5^2$$

$$x^2 + 10x + 25 + 5x + 25 + 25$$

$$= x^2 + 15x + 75$$



a) Find an expression for the perimeter of the shape.

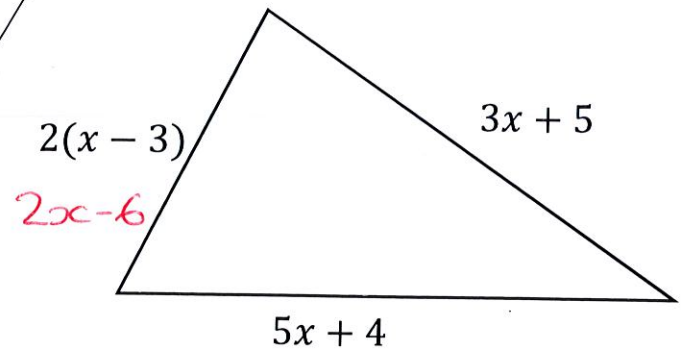
$$6x + 12$$

b) The perimeter is 42 cm . Work out the value of x .

$$6x + 12 = 42$$

$$6x = 30$$

$$x = 5$$



a) Write down, in terms of x , an expression for the perimeter of the triangle.

$$10x + 3$$

b) The perimeter of the triangle is 45 cm . Work out the value of x .

$$10x + 3 = 45$$

$$10x = 42$$

$$x = 4.2$$

a) Find an expression, in terms of y , for the perimeter of the quadrilateral.

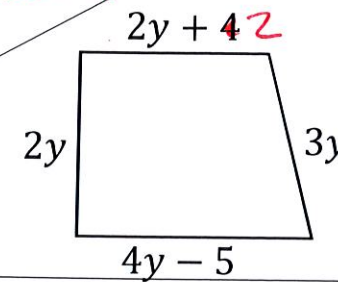
$$11y - 3$$

b) The perimeter of the quadrilateral is 118 cm . Work out the value of y .

$$11y - 3 = 118$$

$$11y = 121$$

$$y = 11$$



a) Use this information to write down an equation in terms of x .

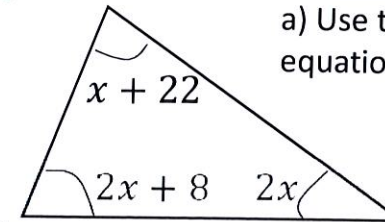
$$5x + 30 = 180$$

b) Use your answer to part (a) to work out the value of x .

$$5x + 30 = 180$$

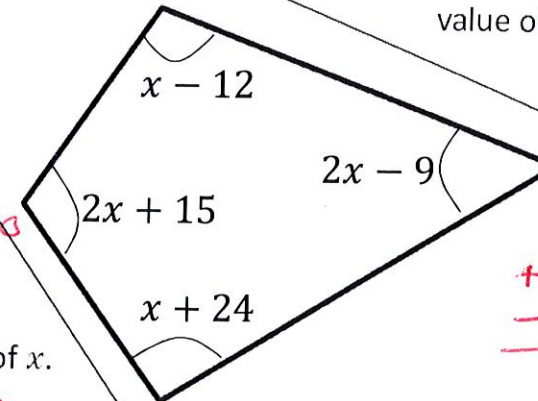
$$5x = 150$$

$$x = 30^\circ$$



b) Use your answer to part (a) to work out the value of x .

$$\begin{array}{r} +39 \\ -21 \\ \hline 18 \end{array}$$



a) Use this information to write down an equation in terms of x .

$$6x + 18 = 360$$

$$6x = 342$$

$$x = 57^\circ$$

b) Work out the value of x .

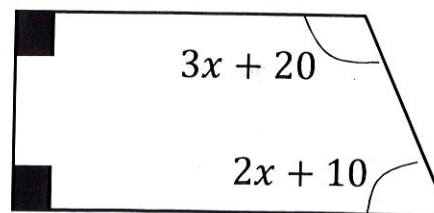
$$x = 57^\circ$$

a) Use this information to write down an equation in terms of x .

$$5x + 210 = 360$$

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$$x = 57^\circ$$

a) Find the value of x .

$$2x + 17 = 4x - 9$$

$$17 = 2x - 9$$

$$26 = 2x$$

$$13 = x$$

a) Explain why $3x + 8 = 2x + 27$

Because in an isosceles triangle two sides are equal length (The ones with markings).

b) Calculate the perimeter of the triangle.

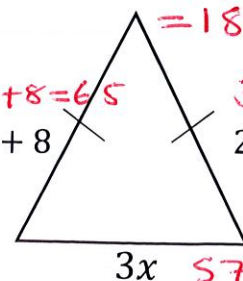
$$65 + 65 + 57 = 187 \text{ cm}$$

$$57 + 8 = 65$$

$$3x + 8$$

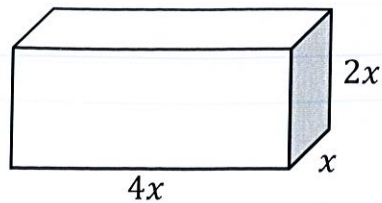
$$38 + 27 = 65$$

$$2x + 27$$



$$3x = 57$$

Algebra in Shapes



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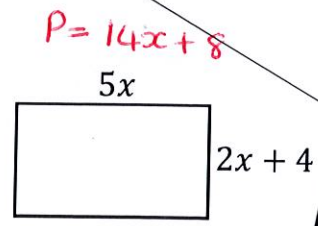
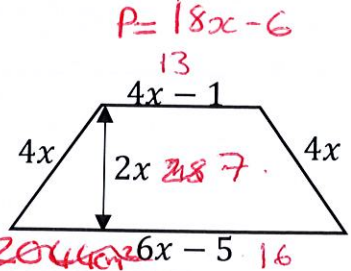
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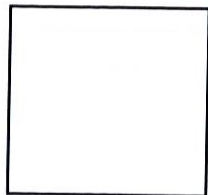
$$4x = 14$$

$$x = 3.5$$



$2 \frac{1}{2} \times 10 \times 7 = 175$
 $2 \frac{1}{2} \times 10 \times 6 = 150$
 $175 - 150 = 25$
 $25 \times 7 = 175$

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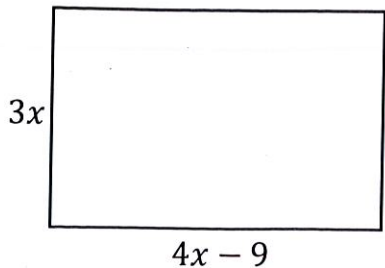
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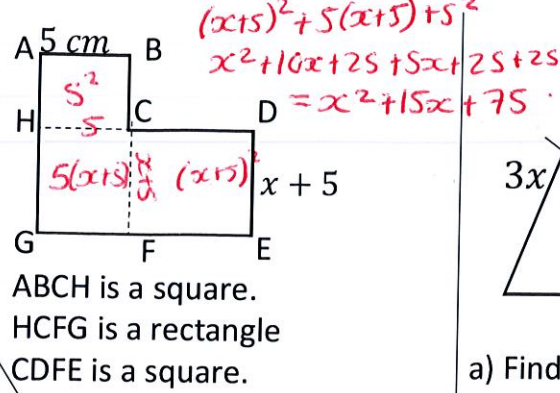
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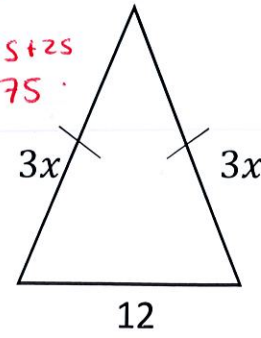
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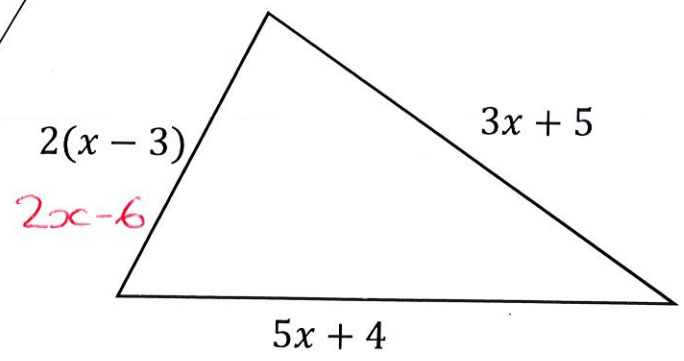
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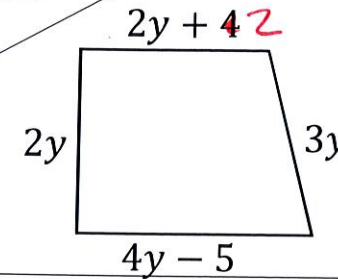
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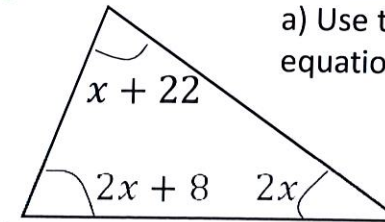
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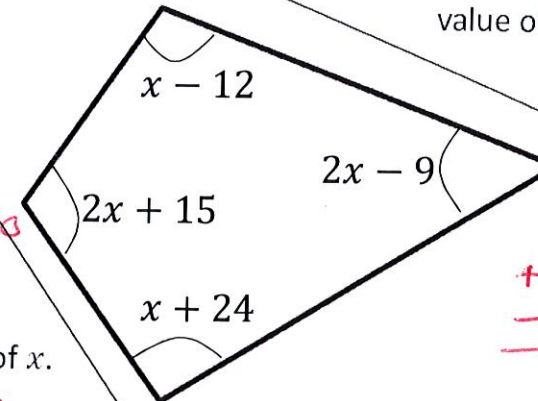
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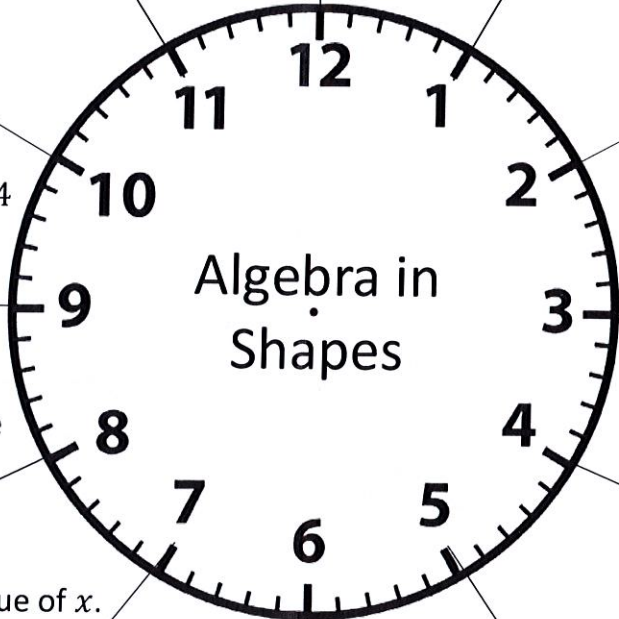
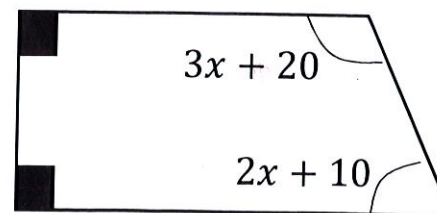
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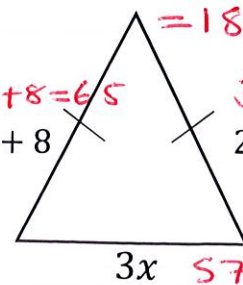
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$$\sqrt[6]{342} = 57$$