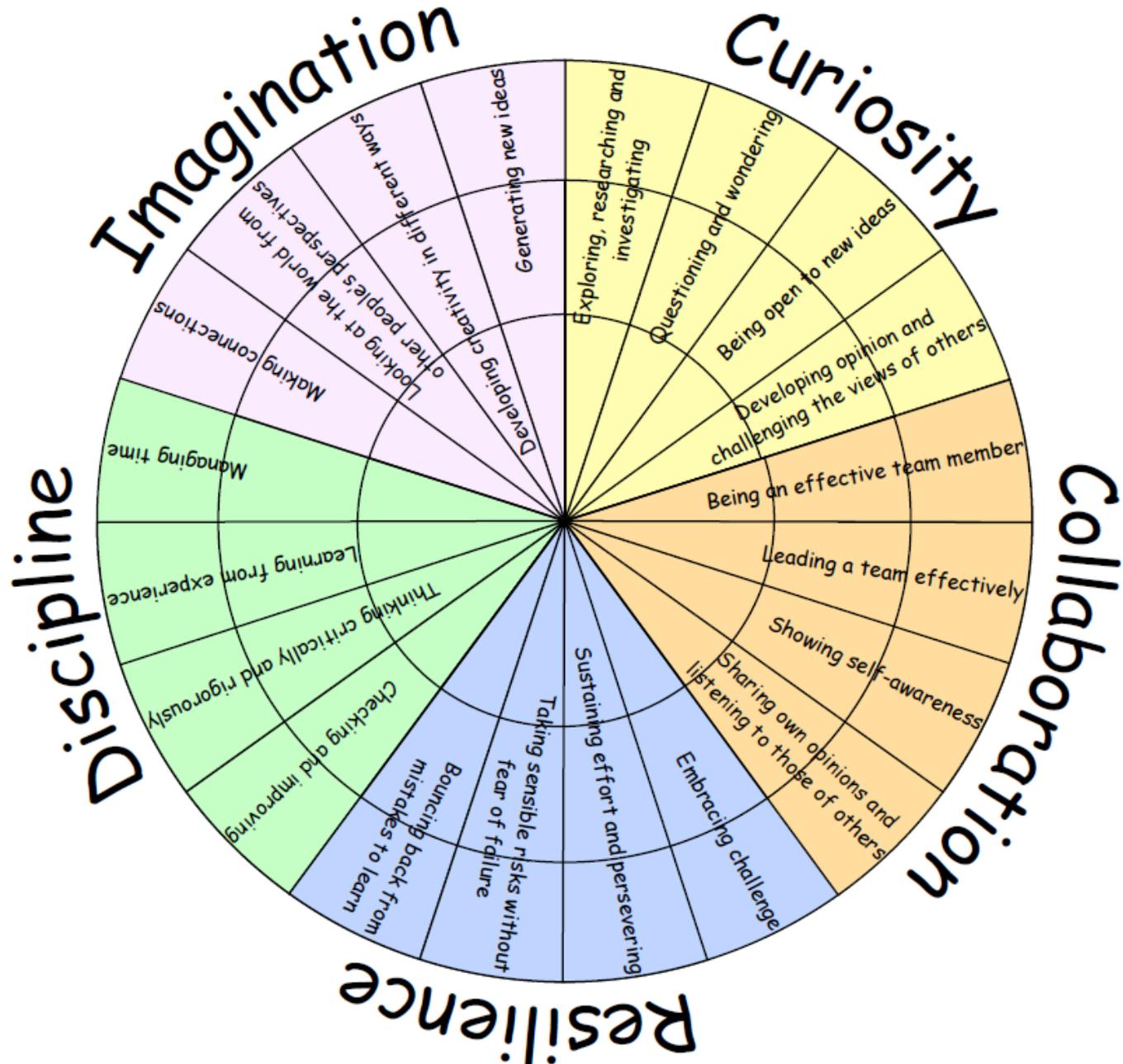


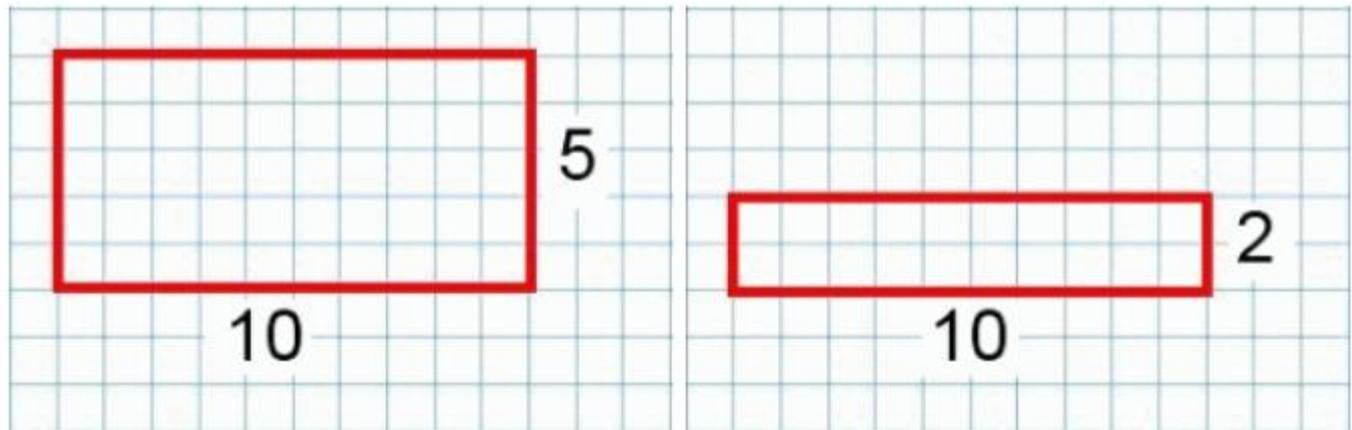
I CAN INVESTIGATE  
RELATIONSHIPS BETWEEN  
AREA AND PERIMETER

PERIMETER AND AREA (29I)

# LEARNING HABITS?



# GUIDED PRACTICE



Charlie has drawn some rectangles.

The first rectangle has an area of  $50\text{cm}^2$  and a perimeter of  $30\text{cm}$ .

The second one has a perimeter of  $24\text{cm}$  and an area of  $20\text{cm}^2$ .

Can you find a rectangle with one side of  $10\text{cm}$  (like the ones above) whose perimeter and area have the same numerical value?

A table will help - look on the next page...

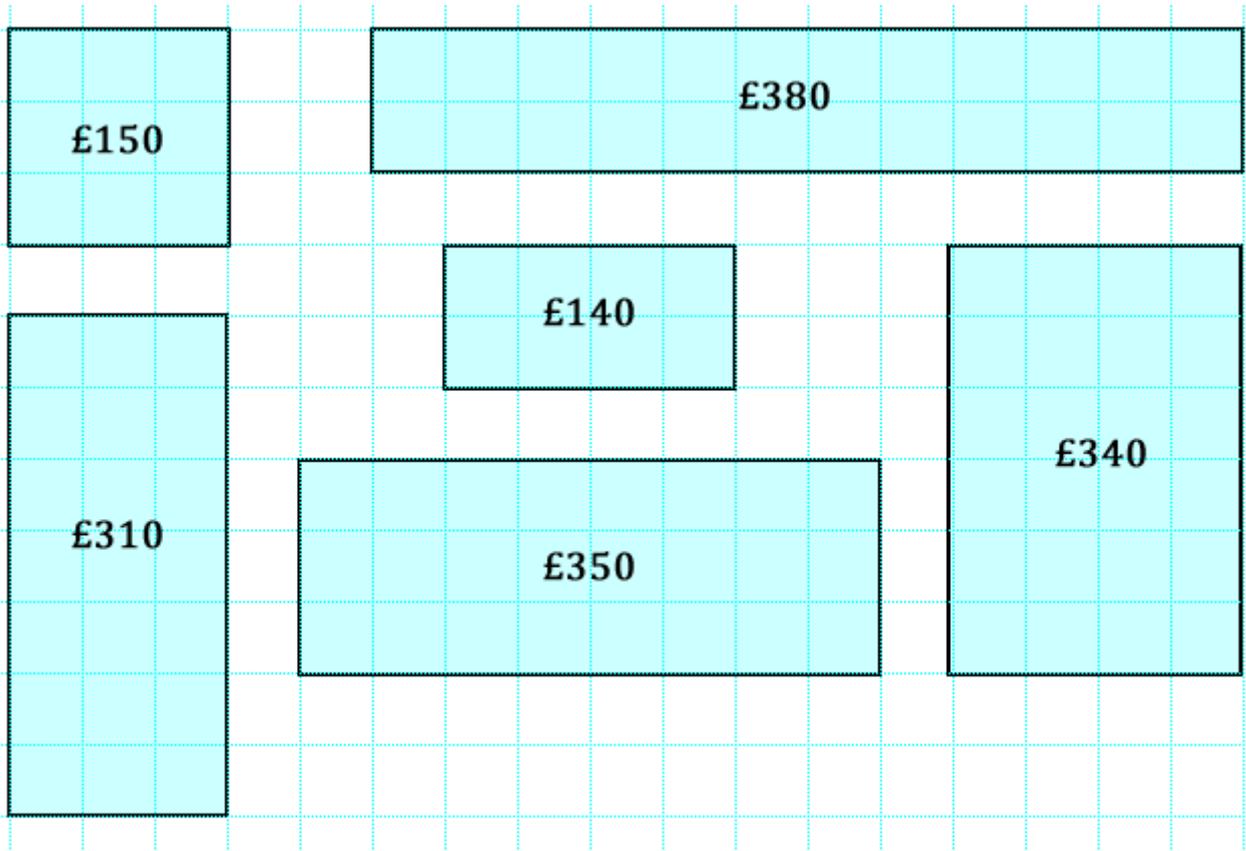
Rectangle	Length (cm)	Width (cm)	Area (cm <sup>2</sup> )	Perimeter (cm)
1				
2				
3				
4				
5				
6				

Rectangle	Length (cm)	Width (cm)	Area (cm <sup>2</sup> )	Perimeter (cm)
1	10	5	50	30
2	10	4	40	28
3	10	3	30	26
4	10	2	20	24
5	10	1	10	22
6	10	2.5	25	25

# DIVE DEEPER 1

The store in my town which sells windows calculates the price of windows according to the area of glass used and the length of frame needed.

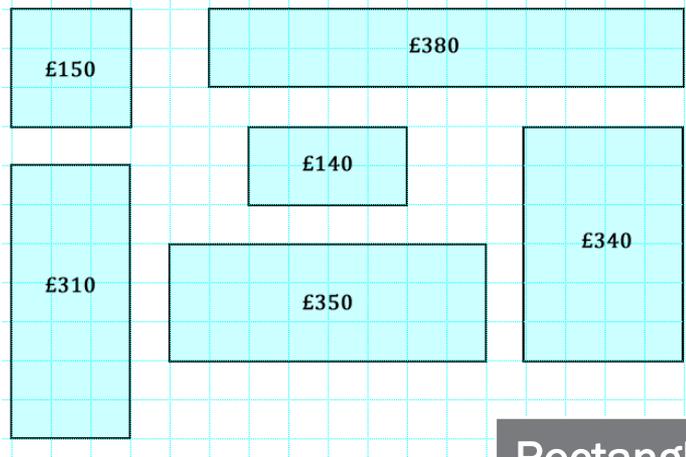
1) Can you work out how they arrived at the prices?



# DIVE DEEPER 1 ANSWERS

The store in my town which sells windows calculates the price of windows according to the area of glass used and the length of frame needed.

1) Can you work out how they arrived at the prices?



Look at rectangles 5 and 6. The difference is 2 in the perimeter and £10 in the cost, so each piece of perimeter must cost £5.

For rectangle 1, the perimeter = £60 so the area must be £90. There are 9 pieces of area so each area piece = £10.

Rectangle	Cost (£)	Perimeter	Area
1	150	12	9
2	310	20	21
3	380	28	24
4	140	10	8
5	350	22	24
6	340	20	24

## DIVE DEEPER 2

2) Here are the dimensions of two rectangles with an area of  $24\text{cm}^2$ . They have different perimeters.

How many other possible perimeters can you find, for a rectangle with an area of  $24\text{cm}^2$ ?

Rectangle	Perimeter
4cm × 6cm	20cm
2cm × 12cm	28cm
...	...

3) If the side lengths are fractions, it is possible to have a perimeter which is odd.

What other odd perimeters can you find?

Rectangle	Perimeter
$1\frac{1}{2}$ cm × 16cm	35cm
...	...

Things to consider:

- What is the smallest perimeter you can make if the area is  $24\text{cm}^2$ ?
- What about the largest?
- Which perimeters in between is it possible to make?

## DIVE DEEPER 2 ANSWERS

2) Here are the dimensions of two rectangles with an area of  $24\text{cm}^2$ . They have different perimeters.

How many other possible perimeters can you find, for a rectangle with an area of  $24\text{cm}^2$ ?

Rectangle	Perimeter
1 x 24	50
2 x 12	28
3 x 8	22
4 x 6	20

3) If the side lengths are fractions, it is possible to have a perimeter which is odd.

What other odd perimeters can you find?

Rectangle	Perimeter
0.5 x 48	97
1.5 x 16	35

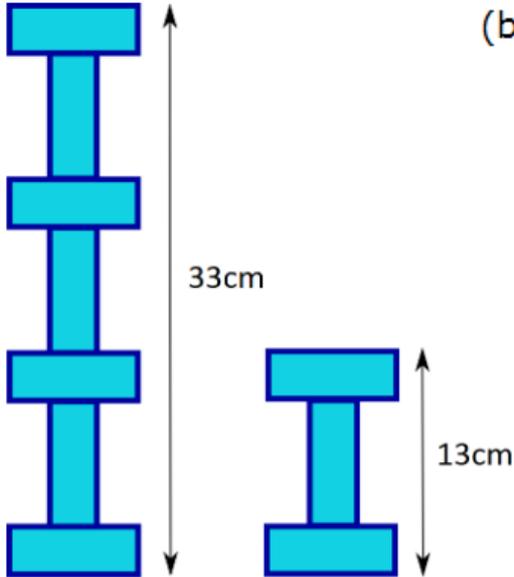
Things to consider:

- What is the smallest perimeter you can make if the area is  $24\text{cm}^2$ ?
- What about the largest?
- Which perimeters in between is it possible to make?

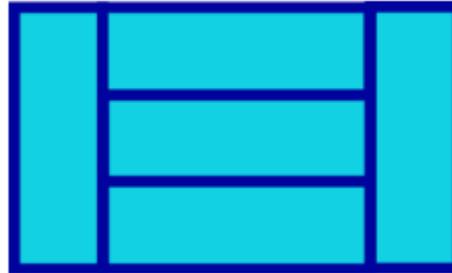
# DIVE DEEPER 3

4) In each of the following diagrams: work out the perimeter of one small rectangle (it will be different each time):

(a)

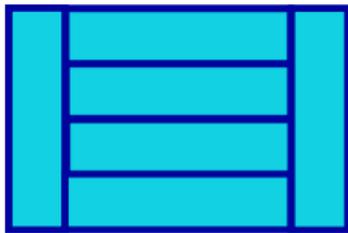


(b)



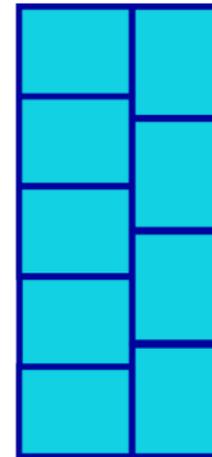
Area of whole rectangle  
=  $60\text{cm}^2$

(c)



Area of whole rectangle  
=  $600\text{mm}^2$

(d)

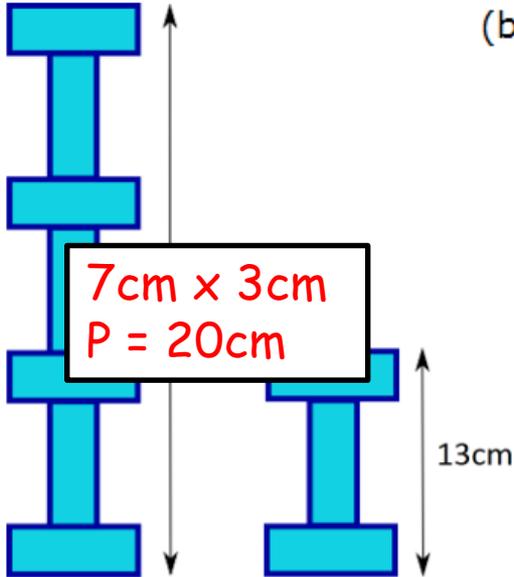


Area of whole rectangle  
=  $180\text{cm}^2$

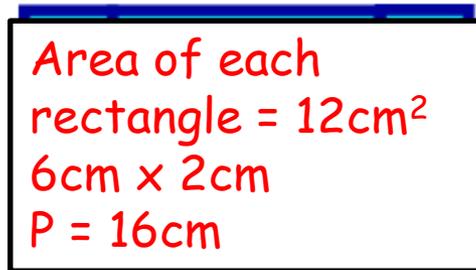
# DIVE DEEPER 3 ANSWERS

4) In each of the following diagrams: work out the perimeter of one small rectangle (it will be different each time):

(a)

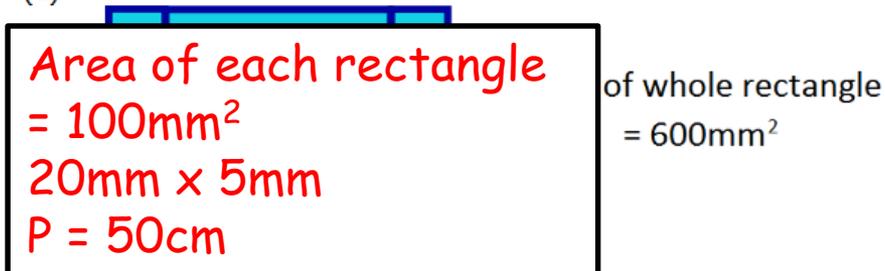


(b)

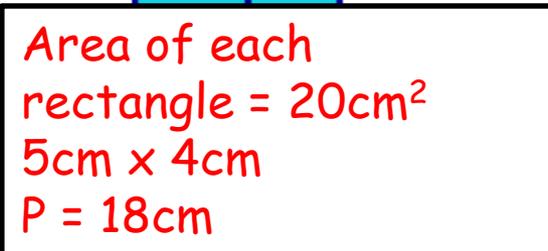
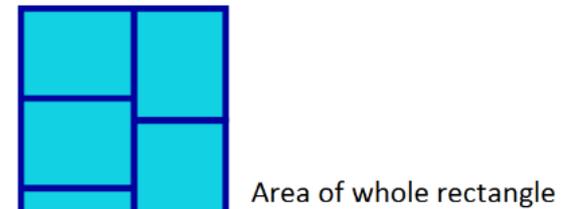


Area of whole rectangle  
=  $60\text{cm}^2$

(c)



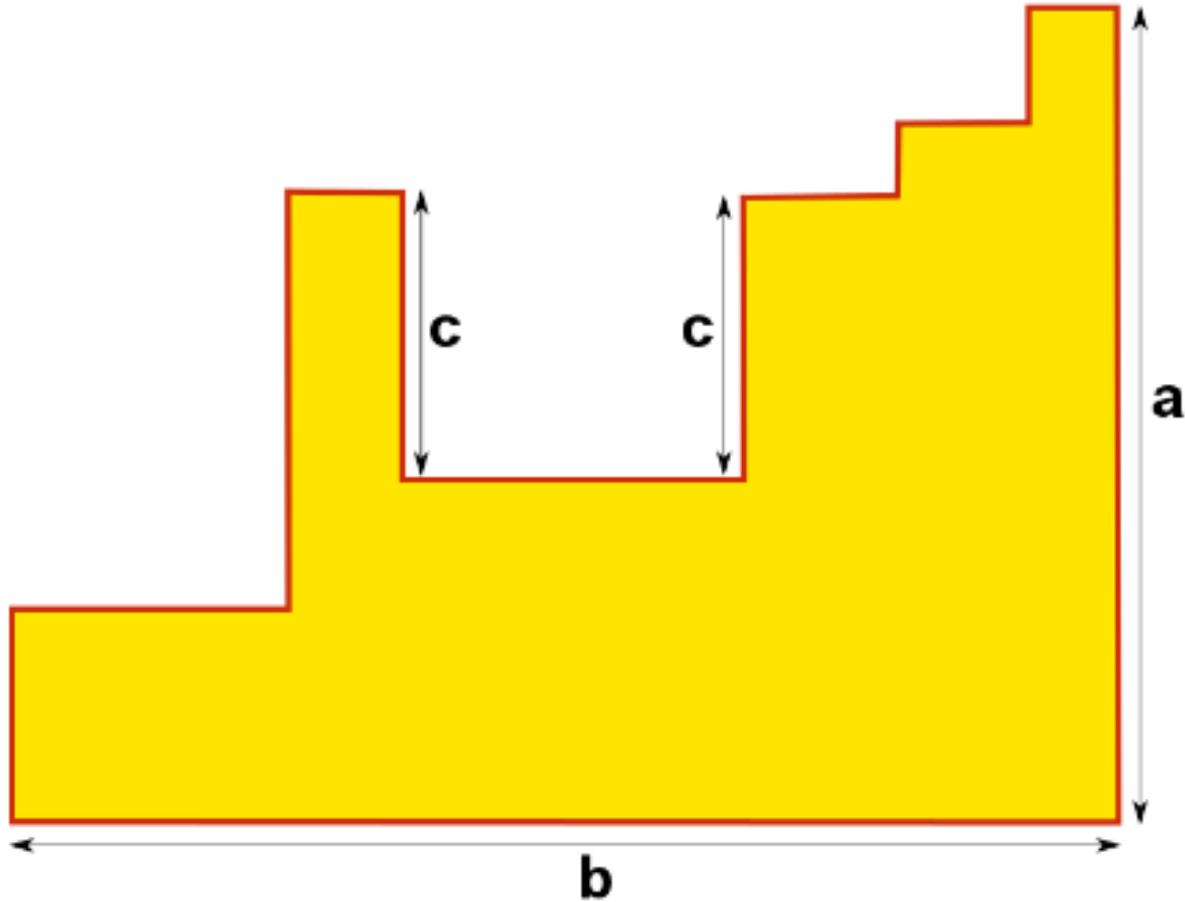
(d)



# DIVE DEEPER 4

5) Algebra time (for Dylan):

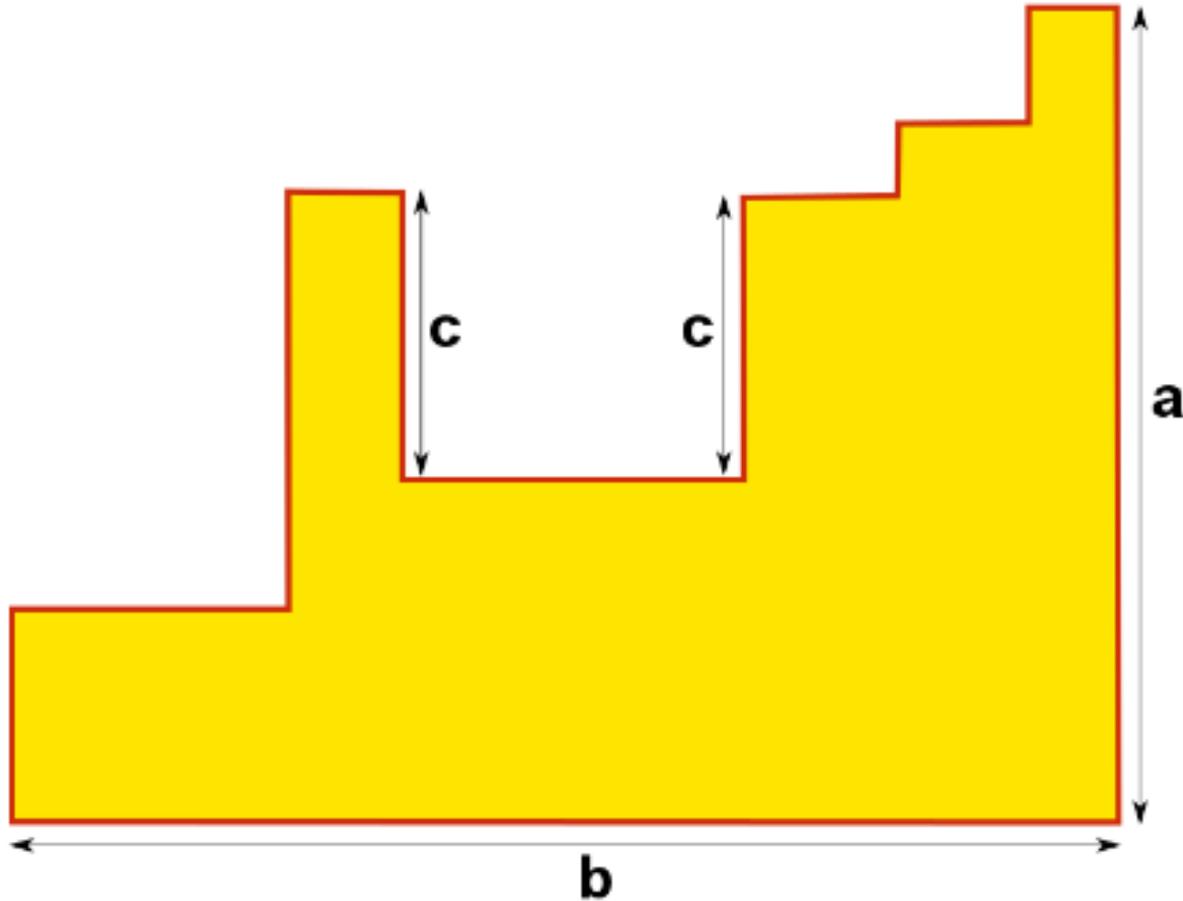
Can you find the perimeter of this shape?



# DIVE DEEPER 4 ANSWERS

5) Algebra time (for Dylan):

Can you find the perimeter of this shape?



$$\text{Perimeter} = 2a + 2b + 2c$$

# SELF-ASSESSMENT

- **Some will even be able to reason using algebra**
  - **Some will be able to apply logic to find perimeters of shapes**
  - **Most will find dimensions for given perimeters**
  - **All will find area and perimeter**
- 