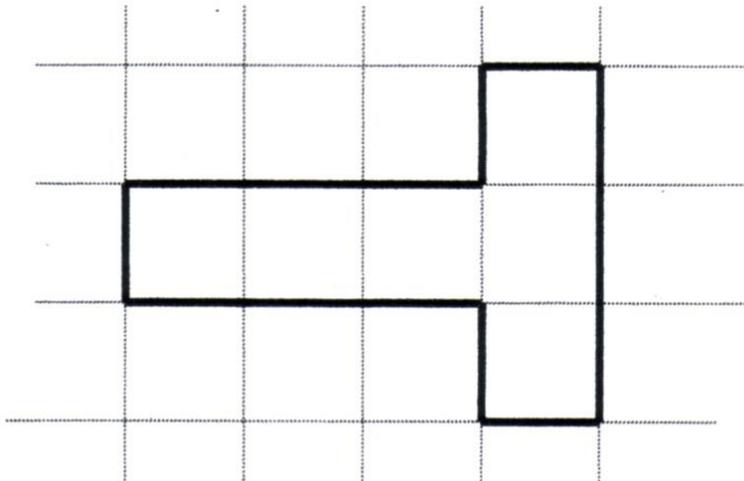
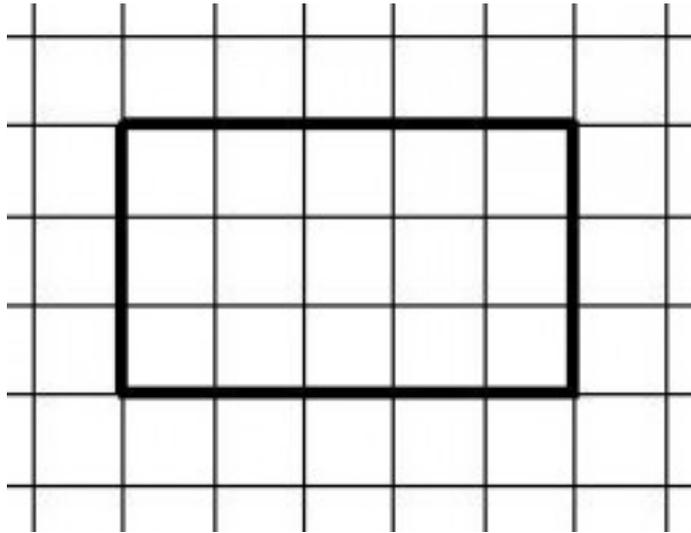


Introduction: Discussion Questions

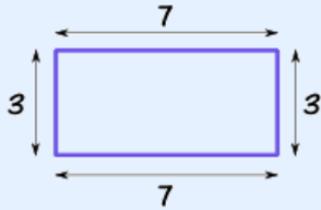


1. What is perimeter?
2. How can you calculate the perimeter of different shapes?
3. What is area?
4. How can you calculate the area of different shapes?
5. How would you calculate the perimeter of the two shapes on the left?
6. How would calculate the area of the two shapes on the left?
7. When you write your answer for perimeter, what units do you need to include?
8. When you write your answer for area, what units do you need to include?

Perimeter Definition

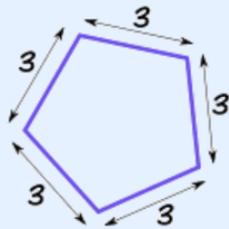
Perimeter is the distance around a two-dimensional shape.

Example: the perimeter of this rectangle is $7+3+7+3 = 20$



Example: the perimeter of this regular [pentagon](#) is:

$$3+3+3+3+3 = 5 \times 3 = 15$$



Area Definition

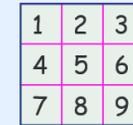
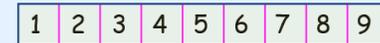
Area is the term used to define the amount of space taken up by a 2D shape or surface.

It is measured in square units : cm^2 or m^2 .

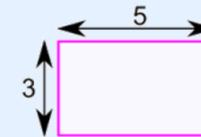
Area is calculated by multiplying the length of a shape by its width.

Example:

These shapes all have the same area of 9:



Example: What is the area of this rectangle?



The formula is:

$$\begin{aligned} \text{Area} &= w \times h \\ w &= \text{width} \\ h &= \text{height} \end{aligned}$$

The width is 5, and the height is 3, so we know $w = 5$ and $h = 3$:

$$\text{Area} = 5 \times 3 = 15$$

Activity 1: Perimeter Recap

Mathematical Talk

What is perimeter of a shape?

What's the same/different about these shapes?

Do we need to measure every side?

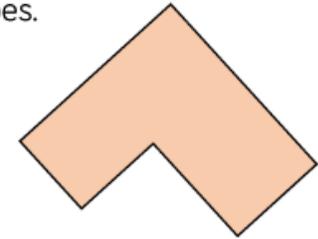
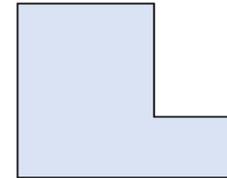
Once we have measured each side, how do we calculate the perimeter?

Varied Fluency

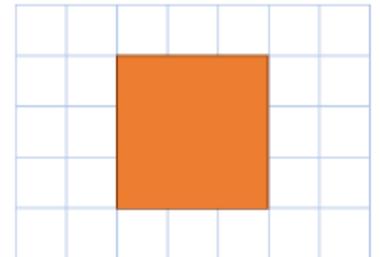
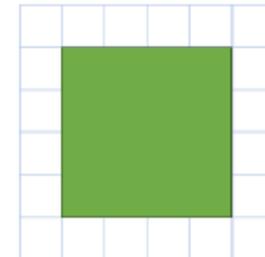
Measure the perimeter of the rectangles.



Measure the perimeter of the shapes.



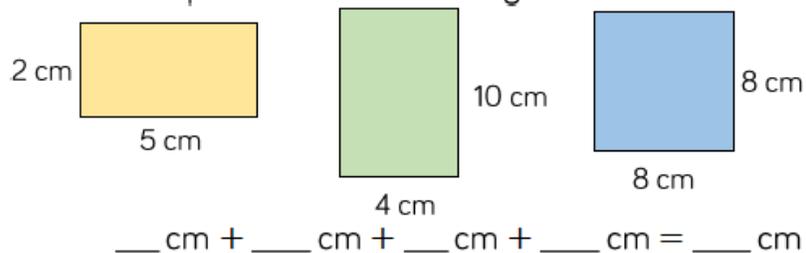
Calculate the perimeter of the shapes.



Activity 2: Perimeter Practice

Varied Fluency

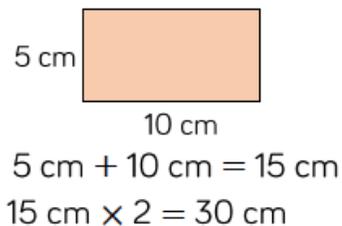
Calculate the perimeter of the rectangles.



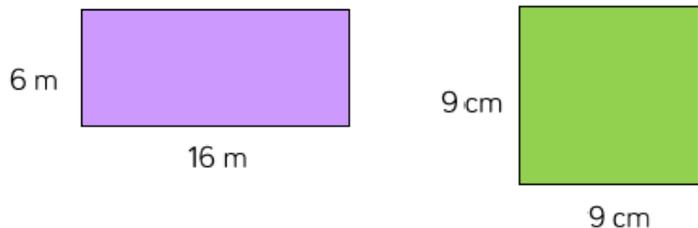
Eva is finding the perimeter of the rectangle.



I added the length and width together and then multiplied by 2

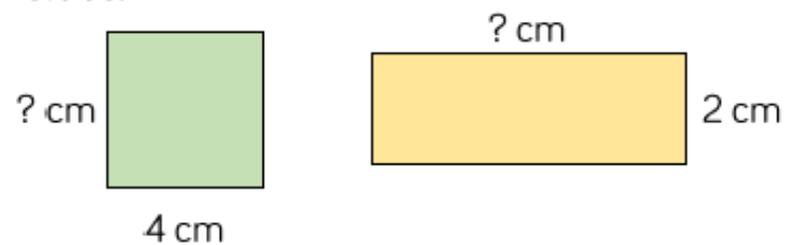


Use Eva's method to find the perimeter of the rectangles.



Each of the shapes have a perimeter of 16 cm.

Calculate the lengths of the missing sides.



Always, Sometimes, Never

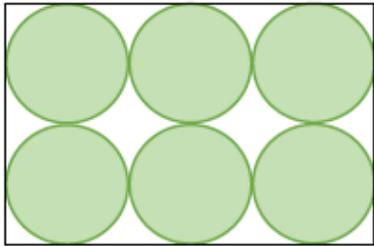
When all the sides of a rectangle are odd numbers, the perimeter is even.

Prove it.

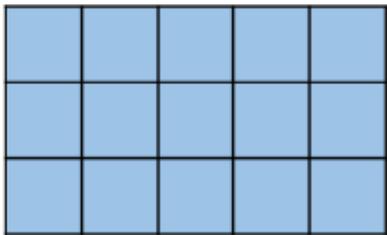
Activity 3: Area Recap

Teddy and Eva are measuring the area of the same rectangle.

Teddy uses circles to find the area.



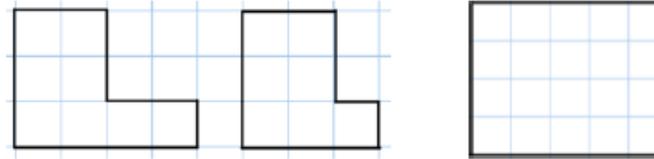
Eva uses squares to find the area.



Whose method do you think is more reliable?
Explain why.

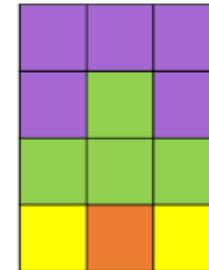
Varied Fluency

Complete the sentences for each shape.



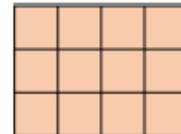
The area of the shape is ___ squares.

Here is a patchwork quilt.
It is made from different coloured squares.
Find the area of each colour.



Purple = ___ squares Green = ___ squares
Yellow = ___ squares Orange = ___ squares

Jack uses his times-tables to count the squares more efficiently.

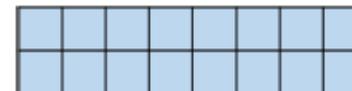


There are 4 squares in 1 row.

There are 3 rows altogether.

3 rows of 4 squares = 12 squares

Use Jack's method to find the area of this rectangle.



Activity 4: Area Practice

Mathematical Talk

How many whole squares can you see?

How many part squares can you see?

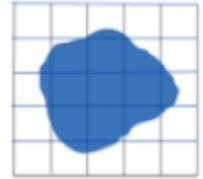
Can you find any part squares that you could be put together to make a full square?

What will we do with the parts?

What does approximate mean?

Varied Fluency

- Estimate the area of the pond.
Each square = 1 m^2

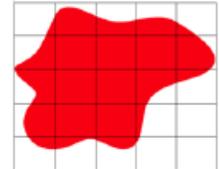
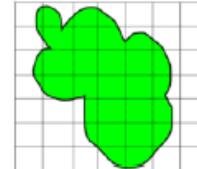
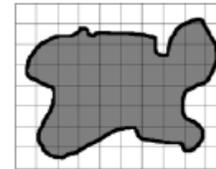


Ron's answer is 4 whole squares and 11 parts.

Is this an acceptable answer?

What can we do with the parts to find an approximate answer?

- If all of the squares are 1 cm in length, which shape has the greatest area?

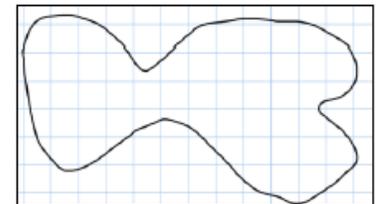


Is the red shape the greatest because it fills more squares?

Why or why not?

What is the same about each image? What is different about the images?

- Each square is ___ m^2
Work out the approximate area of the shape.

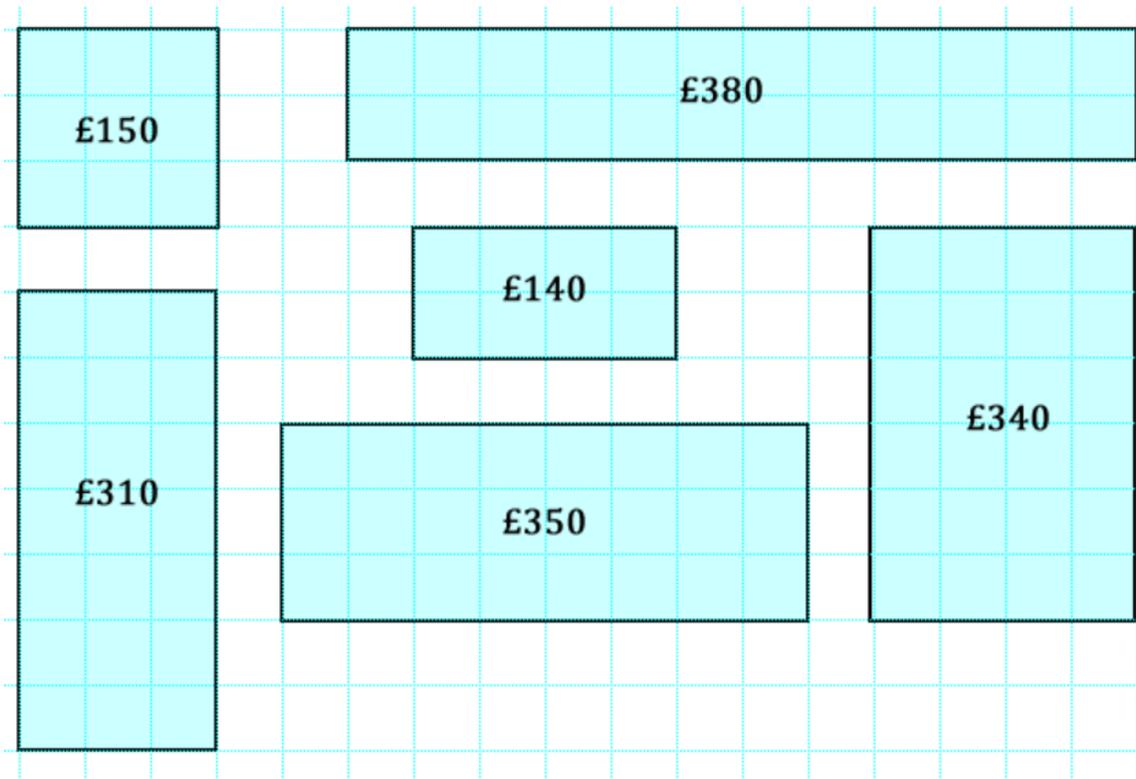


Activity 5: Investigation

Through the Window

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.

Can you work out how they arrived at the prices of the windows below?



Getting Started

- Are there any windows that use the same amount of glass? How do their frame lengths differ?
- Are there any windows that use the same amount of frame? How do their glass areas differ?

<https://nrich.maths.org/10344>