

What should I already know?

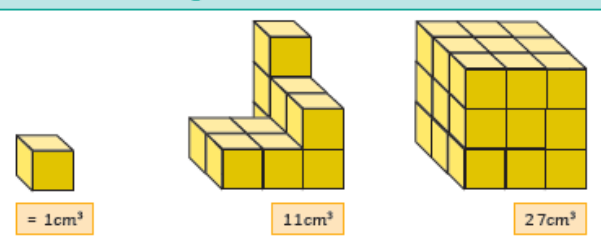
- How to measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- How to calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes
- How to estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water]

What will I know by the end of the unit?

- How to explain that shapes with the same areas can have different perimeters and vice versa.
- How to explain when it is possible to use formulae for area of shapes.
- How to explain when it is possible to use formulae for volume of shapes.
- How to calculate the area of parallelograms.
- How to calculate the area of triangles.
- How to calculate, estimate and compare volume of cubes and cuboids.

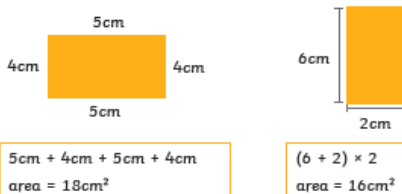
Key Information/Diagrams

Volume - Counting Cubes



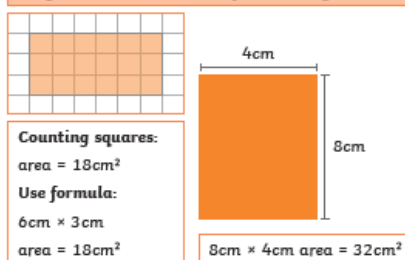
Perimeter of Rectangles

perimeter = length + width + length + width or (length + width) \times 2



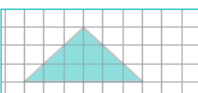
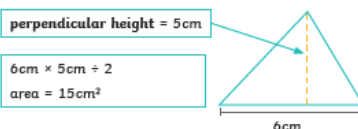
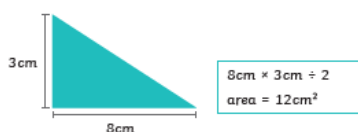
Area of Rectangles

length \times width = area of a rectangle



Area of Triangles

base \times perpendicular height \div 2 = area of a triangle

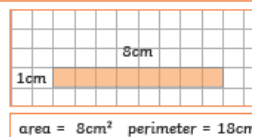
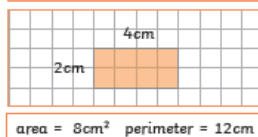


Counting squares:
6 whole squares = 6cm^2
6 half squares = 3cm^2
 $6\text{cm}^2 + 3\text{cm}^2 = 9\text{cm}^2$
area = 9cm^2

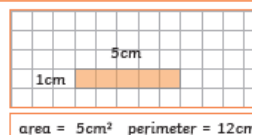
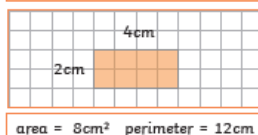
Using formula:
 $6\text{cm} \times 3\text{cm}$
 $\div 2 = 9\text{cm}^2$

Perimeter and Area

Shapes with the same area can have different perimeters.



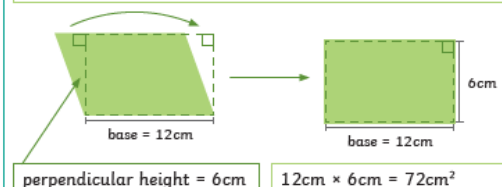
Shapes with the same perimeter can have different areas.



Area of Parallelograms

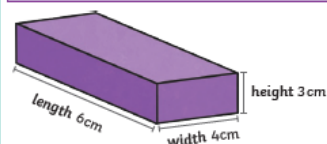
base \times perpendicular height = area of a parallelogram

A parallelogram can be transformed into a rectangle.



Volume of Cuboids

length \times width \times height = volume of a cuboid



Multiply dimensions in **any** order:
 $3\text{cm} \times 6\text{cm} \times 4\text{cm}$
volume = 72cm^3



Key Questions

What do we need to know in order to work out the area of a shape?

Why is it useful to know your times-tables when calculating area?

Can you have a square with an area of 48 cm^2 ? Why?

How can factors help us draw rectangles with a specific area?

What is the difference between the area and perimeter of a shape?

How do we work out the area and perimeter of shapes?
Can you show this as a formula?

Can you have 2 rectangles with an area of 24 cm^2 but different perimeters?

How many whole squares can you see?

How many part squares can you see?

What could we do with the parts?

What does estimate mean?

Why is your answer to this question an **estimate** of the area?

Revisit the idea that a square is a rectangle when generalising how to calculate the area of a triangle.

Can you identify the length, width and height of the cuboid?

If the length of a cuboid is 5 cm and the volume is 100 cm^3 , what could the width and height of the cuboid be?

What knowledge can I use to help me calculate the missing lengths?

What is the same/different about the rectangle and triangle?

What is the relationship between the area of a rectangle and the area of a right-angled triangle?

What is the formula for working out the area of a rectangle or square?

How can you use this formula to work out the area of a right-angled triangle?

What does the word perpendicular mean?

What do we mean by perpendicular height?

What formula can you use to calculate the area of a triangle?

If there is more than one triangle making up a shape, how can we use the formula to find the area of the whole shape?

How do we know which length tells us the perpendicular height of the triangle?

Describe a parallelogram.

What do you notice about the area of a rectangle and a parallelogram?

What formula can you use to work out the area of a parallelogram?

What's the same and what's different between area and volume?

Can you explain how you worked out the volume?
What did you visualise?

What units of measure could we use for volume? (Explore cm^3 , m^3 , mm^3 etc.)

Vocabulary

Perimeter	Cubic units	Length	Parallelogram
Area	Cuboid	Rectangle	Perpendicular Height
Volume	Width	Rectilinear	

Investigate/Homework tasks

- Homework will be set by your teacher using google classroom
- You should complete at least 30 minutes of maths tasks using the website and log in provided by your teacher. Please attend help sessions if you do not have access to the internet at home
- Additional work you could complete:
 - Find out more about the meaning of the vocabulary list using <http://www.amathsdictionaryforkids.com/>
- To challenge yourself: Answer the key questions to deepen your knowledge