

Knowledge Organiser

Year Group	Subject	Topic
6	Mathematics	Areas, perimeters and volume

The Big Picture

In this unit, children review previous learning about shapes' areas and perimeters. They explore areas and perimeters of rectangles and rectilinear shapes, as well as the area of triangles by counting squares and focusing on right-angled triangles. They extend this knowledge to find the area of any triangle. Additionally, they delve into volume, starting with understanding it as the space a solid object occupies. They progress from counting cubes to measuring volume in cubic centimetres (cm³) and finding the volumes of cuboids using multiplication and formulas.

Enquiry Question

What is perimeter? What is area?

How can you find the area of this shape? Is there more than one way?

How is finding the area of a triangle similar to finding the area of a rectangle when counting squares?

How is it different?

How can you split the rectangle into two right-angled triangles?

What is the formula for the area of a triangle?

How can you find the area of this shape? Is there more than one way?

How could you change the parallelogram into a rectangle? How will this help you to find the area?

Key Vocabulary

perimeter

area

volume

cubic units (e.g. cm³)

cuboid

width

length

rectangle

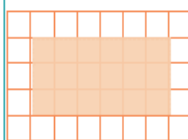
rectilinear

parallelogram

perpendicular height

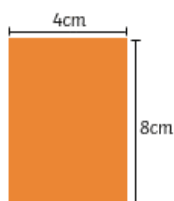
Area of Rectangles

length \times width = area of a rectangle



Counting squares:
area = 18cm²

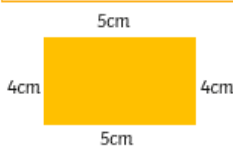
Use formula:
6cm \times 3cm
area = 18cm²



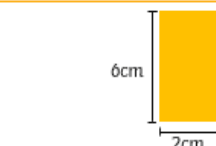
8cm \times 4cm area = 32cm²

Perimeter of Rectangles

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



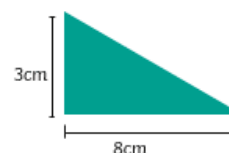
5cm + 4cm + 5cm + 4cm
perimeter = 18cm



(6 + 2) \times 2
perimeter = 16cm

Area of Triangles

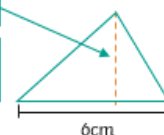
base \times perpendicular height \div 2 = area of a triangle



8cm \times 3cm \div 2
area = 12cm²

perpendicular height = 5cm

6cm \times 5cm \div 2
area = 15cm²



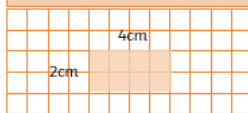
Counting squares:
6 whole squares = 6cm²
6 half squares = 3cm²
6cm² + 3cm² = 9cm²
area = 9cm²

Using formula:
6cm \times 3cm
 \div 2 = 9cm²

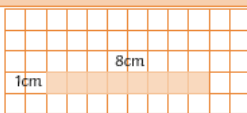
Images not drawn to scale

Perimeter and Area

Shapes with the same area can have different perimeters.

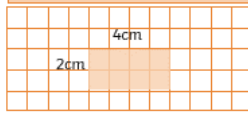


area = 8cm^2 perimeter = 12cm

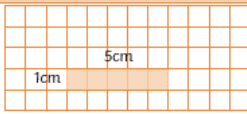


area = 8cm^2 perimeter = 18cm

Shapes with the same perimeter can have different areas.



area = 8cm^2 perimeter = 12cm

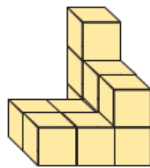


area = 5cm^2 perimeter = 12cm

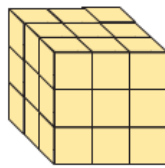
Volume – Counting Cubes



1cm^3



11cm^3

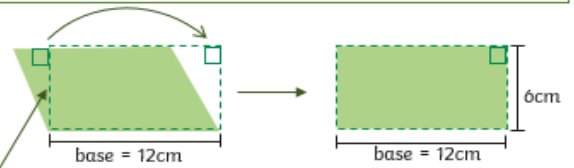


27cm^3

Area of Parallelograms

base \times perpendicular height = area of a parallelogram

A parallelogram can be transformed into a rectangle.

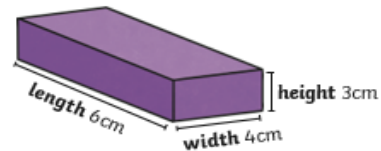


perpendicular height = 6cm

$12\text{cm} \times 6\text{cm} = 72\text{cm}^2$

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

Images not drawn to scale

What can my child do at home?

- ✓ Have a look through the Knowledge Organiser and study the key terminology, ensuring that they understand what they mean.
- ✓ Use the useful links above, particularly if there is a unit that you find more difficult to grasp
- ✓ Learn weekly times tables and number facts. These will be tested on the same day as spellings.
- ✓ Login to Mathletics to revise topics taught.

