

Area of a parallelogram

Notes and guidance

In this small step, children explore the area of a parallelogram, identifying and using a formula.

Children look at the properties of a parallelogram and compare to a rectangle. Using the “cut-and-move method”, they explore how the parts of the parallelogram can be rearranged to make a rectangle in which the length and width correspond to the base and perpendicular height of the parallelogram. Through this, they recognise that the area of a parallelogram can be found by using the formula $\text{area} = \text{base} \times \text{perpendicular height}$.

As they did for triangles, children need to be able to identify the base and perpendicular height when given more than the required measurements. This needs to be carefully modelled so that children do not believe that $\text{area} = l \times w$. It may be useful to compare all the formulas they know for finding the areas of shapes.

Things to look out for

- When finding the area of a parallelogram, children may try to use the formula for finding the area of a rectangle or a triangle.
- Children may struggle to identify the base and perpendicular height.

Key questions

- How could you change the parallelogram into a rectangle? How will this help you to find the area?
- How can you count the squares accurately to find the area?
- How do you know you have found the base/perpendicular height?
- What is the formula for finding the area of a parallelogram?
- When you have different units, what is your first step?

Possible sentence stems

- The base of the parallelogram is _____ cm.
The perpendicular height of the parallelogram is _____ cm.
The area of the parallelogram is _____ \times _____ = _____ cm^2

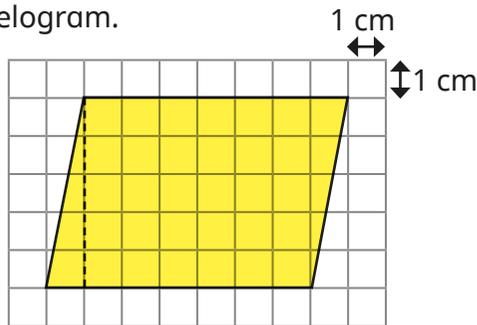
National Curriculum links

- Recognise when it is possible to use formulae for area and volume of shapes
- Calculate the area of parallelograms and triangles

Area of a parallelogram

Key learning

- Here is a parallelogram.



- ▶ Copy the parallelogram onto centimetre squared paper.

Estimate its area by counting squares.

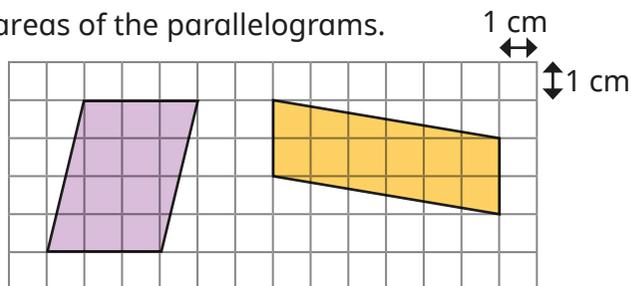
- ▶ Now cut along the dotted line.

Move the triangle to make a rectangle.

What is the area of the rectangle?

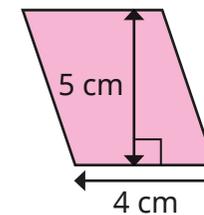
What do you notice?

- Work out the areas of the parallelograms.



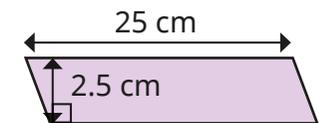
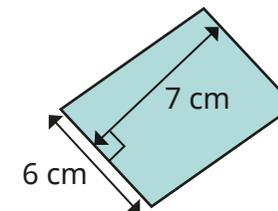
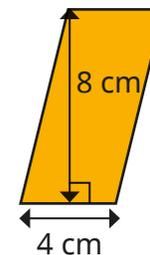
Explain your method to a partner.

- Annie has worked out the area of this parallelogram.

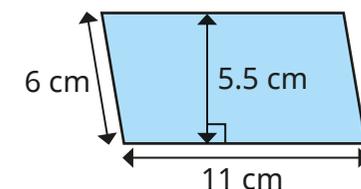
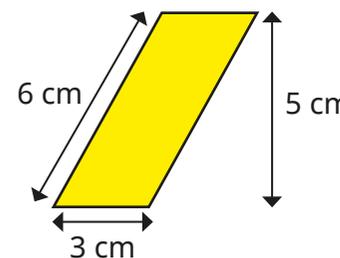


$$\begin{aligned} \text{area} &= \text{base} \times \text{perpendicular height} \\ &= 4 \text{ cm} \times 5 \text{ cm} \\ &= 20 \text{ cm}^2 \end{aligned}$$

Use Annie's method to find the areas of the parallelograms.



- Label the base b and perpendicular height h on each parallelogram. Then find the area of each shape.

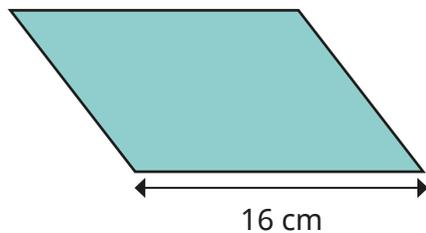
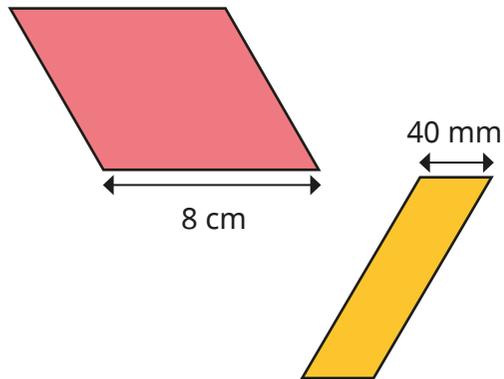


Area of a parallelogram

Reasoning and problem solving

These parallelograms each have an area of 40 cm^2

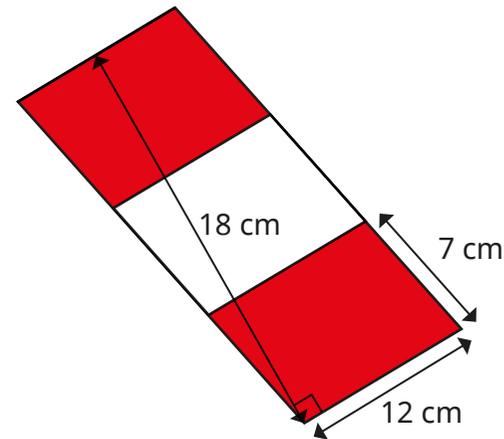
Find the perpendicular height of each shape.



- 5 cm
- 10 cm
- 2.5 cm

All the parallelograms have the same area.

Find the total area of the shaded parallelograms.



- 144 cm^2

- 7 cm

Which measurement is not needed?

Find more than one method to work out the answer.

Which was more efficient?