

Area of any triangle

Notes and guidance

In this small step, children extend their knowledge of finding the area of a right-angled triangle to find the area of any triangle.

Children use the same formula as before, but now need to identify that the perpendicular height is not always the length of one of the sides. Initially, they find the areas of triangles where only the base and perpendicular height are given, before looking at triangles where more measurements are given.

Children need to understand that the base is not always at the bottom of a triangle and sometimes there may be more than one possible calculation they could use to find the area.

Things to look out for

- Children may not identify the base and perpendicular height correctly.
- Children may think that the base is always at the bottom of the triangle.
- Children may think that the measurement giving the perpendicular height is always labelled inside the triangle.
- If given more than two measurements, children may multiply the incorrect lengths.

Key questions

- What is the formula for the area of a triangle?
- How do you know which side is the base?
- How do you know what the perpendicular height is?
- How do you know that you are using the correct lengths?
- Is there more than one way to find the area of this triangle?
- Is the base always at the bottom of the triangle?

Possible sentence stems

- The formula for the area of a triangle is ...
- The base is _____ cm.

The perpendicular height is _____ cm.

$$\text{Area} = \frac{\boxed{}}{\boxed{}} \times \text{_____} \times \text{_____}$$

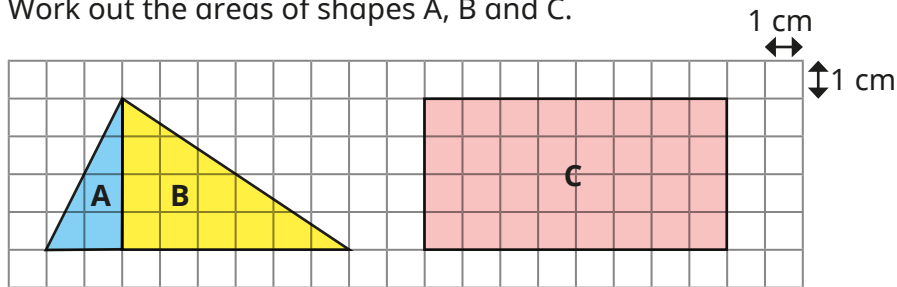
National Curriculum links

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

Area of any triangle

Key learning

- Work out the areas of shapes A, B and C.

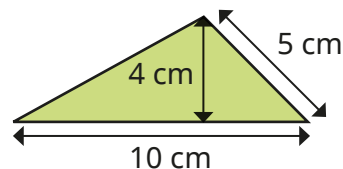


- What is the total area of the scalene triangle formed by A and B?
- Compare this area to the area of rectangle C.

What do you notice?

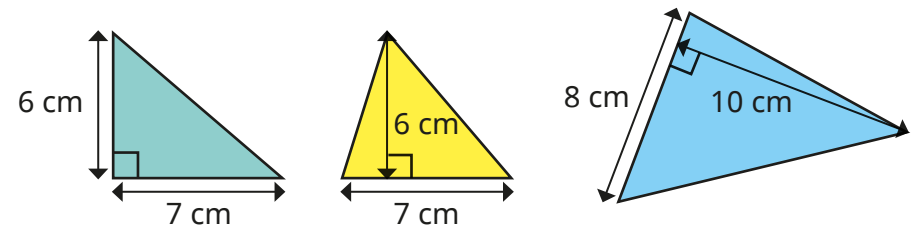
Does this always happen?

- Here is a triangle.



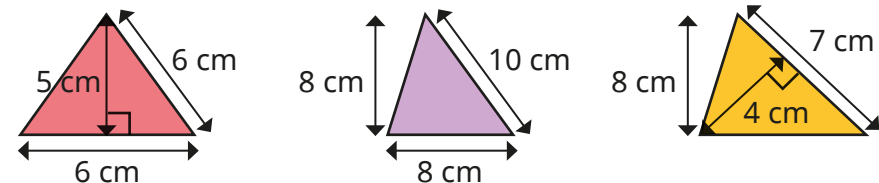
- What is the length of the base of the triangle?
- What is the perpendicular height of the triangle?
- Use the formula $\text{area} = \frac{1}{2} \times \text{base} \times \text{perpendicular height}$ to work out the area of the triangle.

- Work out the areas of the triangles.

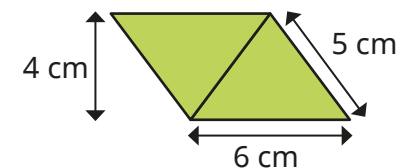
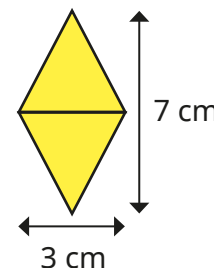


What is the same and what is different about the first two triangles?

- Find the area of each triangle.



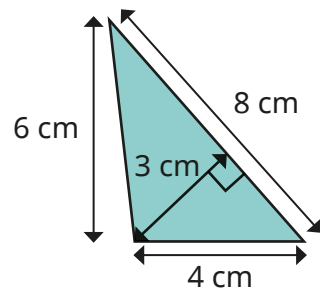
- Calculate the area of each shape.



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Reasoning and problem solving

Tiny is finding the area of this triangle.



I need to multiply all the lengths, then divide by 2

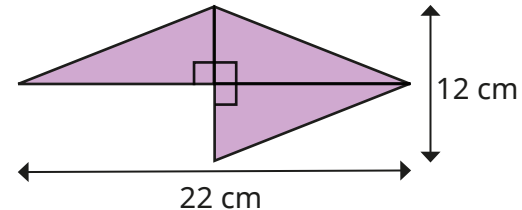
Explain why Tiny is incorrect.

Work out the area of the triangle.

Can you find more than one way to do it?

12 cm²

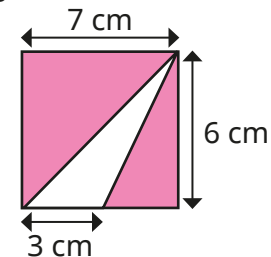
This shape is made up of three identical triangles.



What is the area of the shape?

99 cm²

Here is a flag.



Find the area of the flag that is white.

Is there more than one way to find the answer?

9 cm²