Maths

Measurement

Area of Triangles

Aim

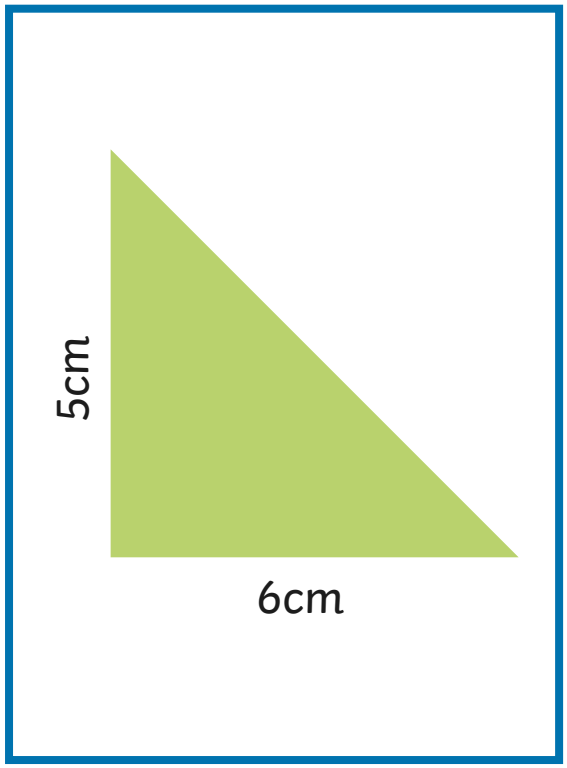
I can calculate the area of a triangle.

Success Criteria

- I can use a formula to calculate the area of right-angled triangles.
- I can use a formula to calculate the area of isosceles and scalene triangles.

How to Calculate the Area of a Right-Angled Triangle

To calculate the area of a right-angled triangle, multiply the base by the height and divide by 2.



The base multiplied by the height is
6cm × 5cm = **30cm²**

30cm² ÷ 2 = **15cm²**

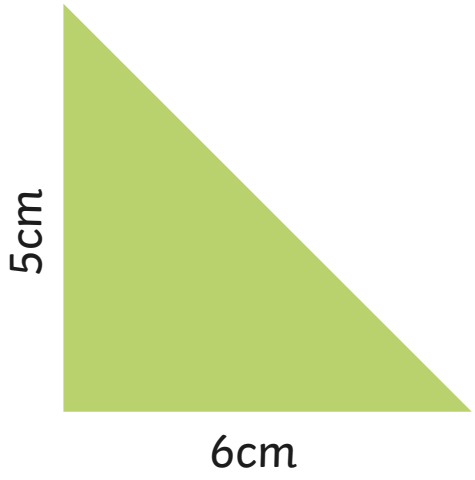
The area of this triangle is **15cm²**.

You might see it written like this $\frac{1}{2}$ **(b × h)**, like this $\frac{\mathbf{b \times h}}{\mathbf{2}}$, or like this **b × h ÷ 2**.

They all mean the same thing and give the same answer.

How to Calculate the Area of a Right-Angled Triangle

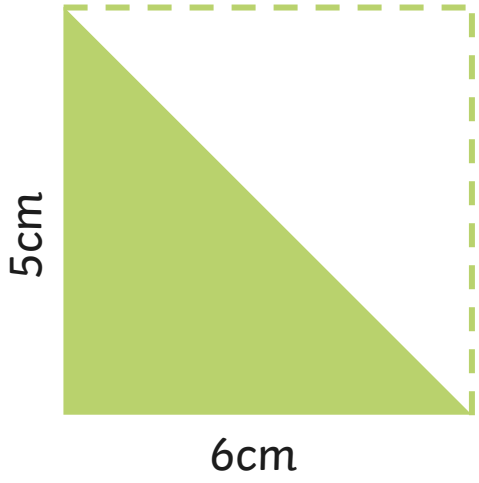
But why is (b × h) ÷ 2 the formula to calculate the area of a right-angled triangle?



Let's extend this triangle to make a rectangle.

How to Calculate the Area of a Right-Angled Triangle

But why is (b × h) ÷ 2 the formula to calculate the area of a right-angled triangle?



Let's extend this triangle to make a rectangle.

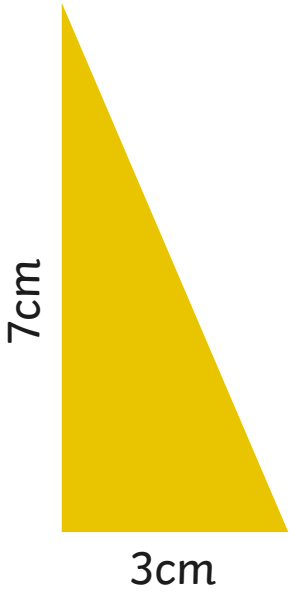
The area of the rectangle is 6cm × 5cm = **30cm²**.

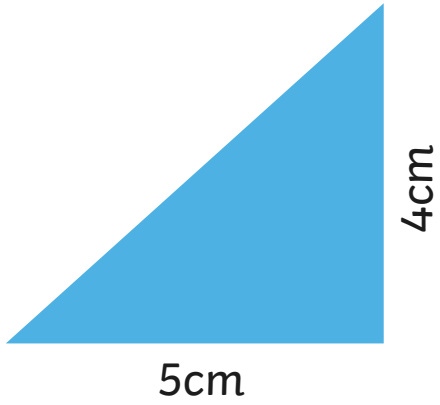
The area of the triangle is half of this:
(6cm × 5cm) ÷ 2 = **15cm²**

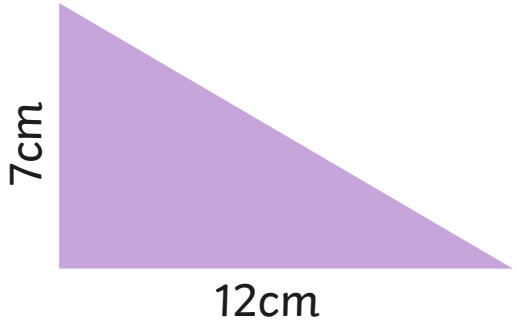
Find the Area of Right-Angled Triangles

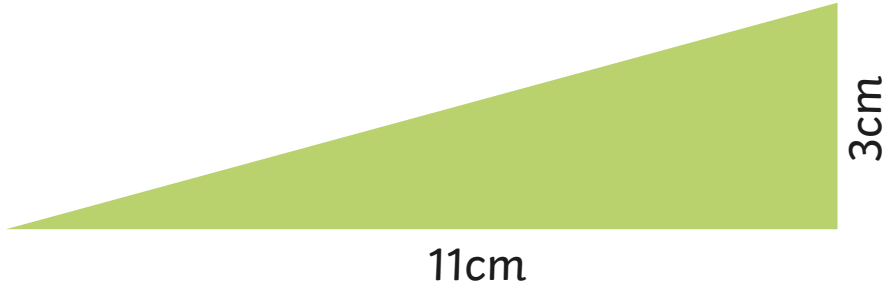
Whole Class

Find the area of these right-angled triangles:





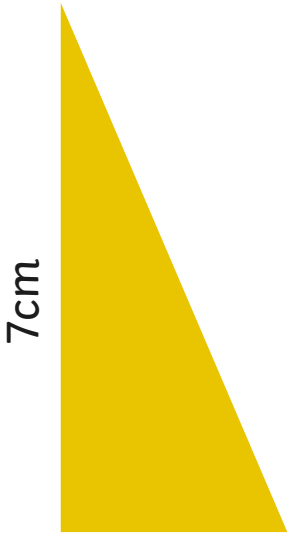




Find the Area of Right-Angled Triangles

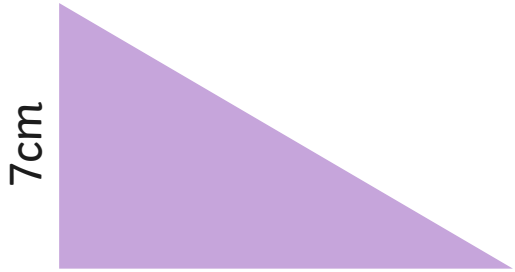
Whole Class

Find the area of these right-angled triangles:



Area = 10.5cm²

Area = 10cm²

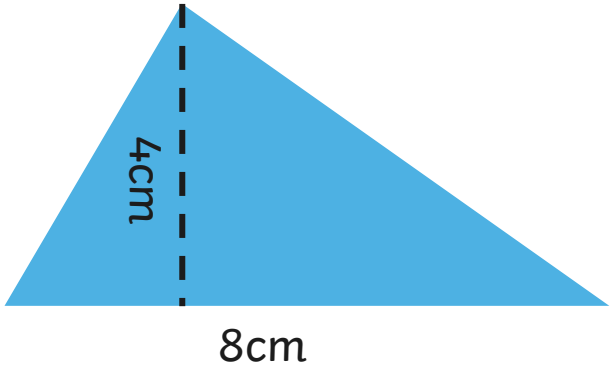


Area = 42cm²

Area = 16.5cm²

How to Calculate the Area of Other Triangles

The area of this scalene triangle is $16cm^2$.
Does the same formula work?
Try it. **(b × h) ÷ 2**



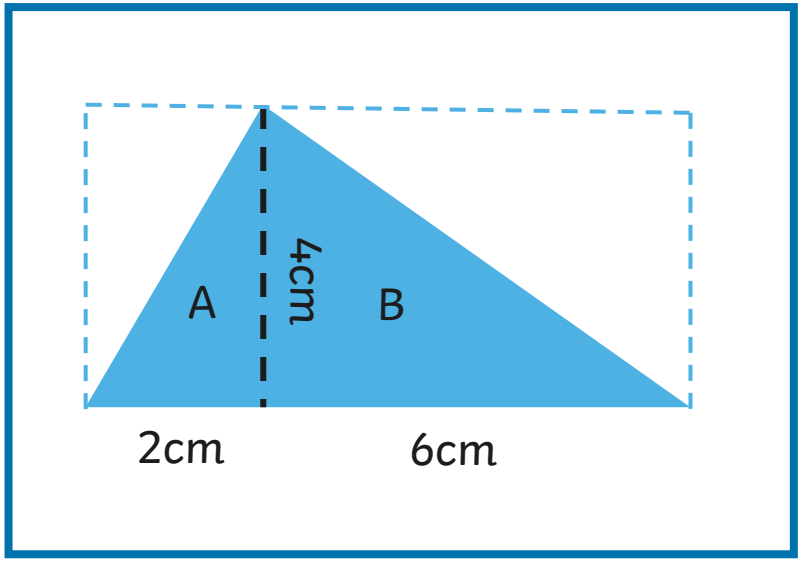
Base 8cm × height 4cm = **32 cm**

32cm ÷ 2 = **$16cm^2$**

Yes, the same formula works.
Let's find out why.

How to Calculate the Area of Other Triangles

Let's consider this scalene triangle as 2 right-angled triangles.



The area of triangle A is (2cm × 4cm) ÷ 2 = **4cm²**

The area of triangle B is (6cm × 4cm) ÷ 2 = **12cm²**

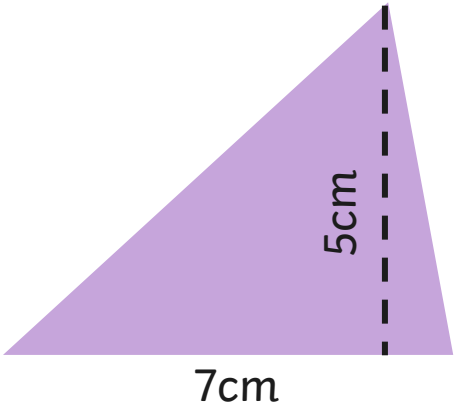
A + B = **16cm²**

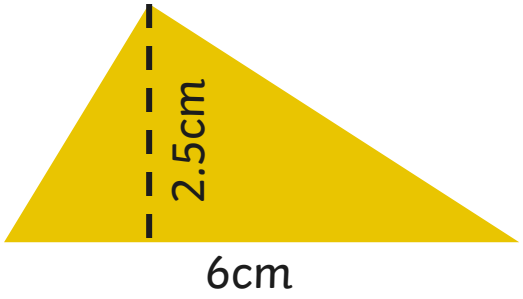
The area of the whole triangle is (8cm × 4cm) ÷ 2 = 16cm².

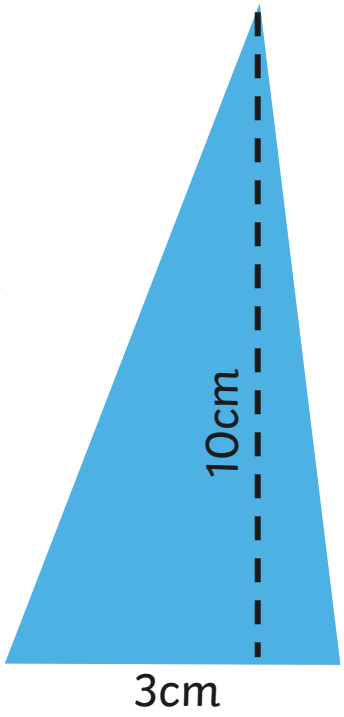
Find the Area of Other Triangles

Whole Class

Find the area of these triangles:



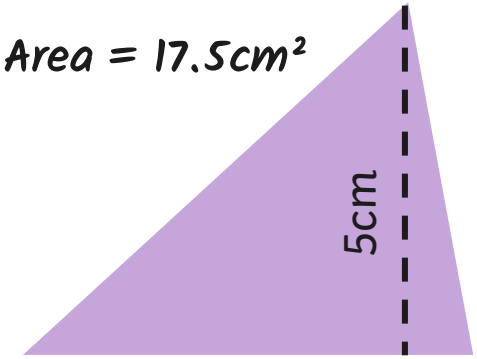




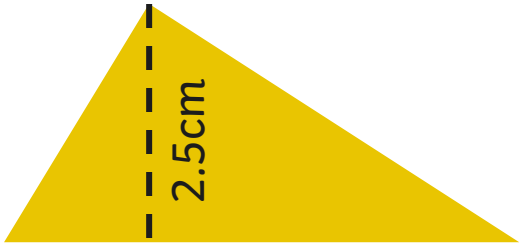
Find the Area of Other Triangles

Whole Class

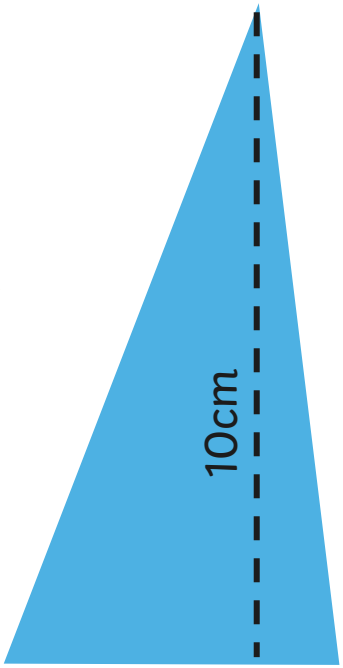
Find the area of these triangles:



Area = 17.5cm²



Area = 7.5cm²



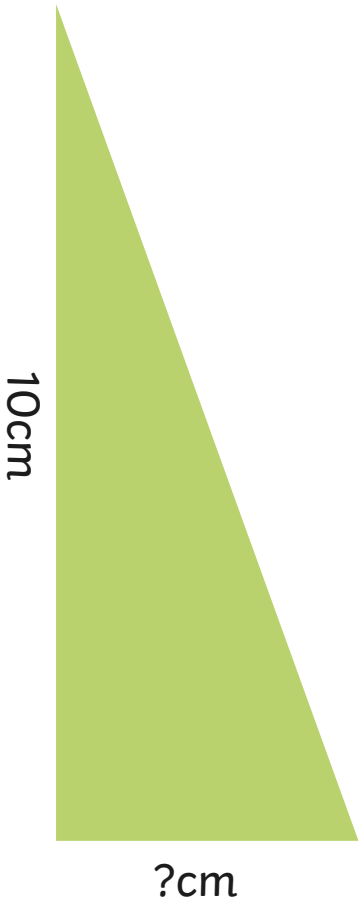
Area = 15cm²

Area = 15cm²

Find the Unmarked Side

This triangle has an area of 20cm^2.

Look at the side marked with a question mark. What is the dimension of this side?



What do you need to do to calculate the answer?

You can put the known numbers into the formula and then do the inverse.

(b × h) ÷ 2 = h

(b × 10) ÷ 2 = 20cm^2

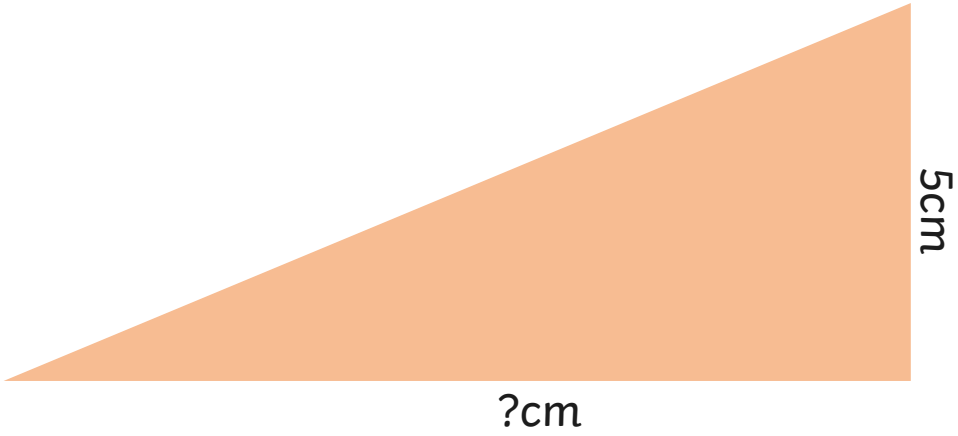
So the base multiplied by the height must be 20 × 2 = 40.

What number multiplied by 10 gives 40?

The missing base must be **4cm**.

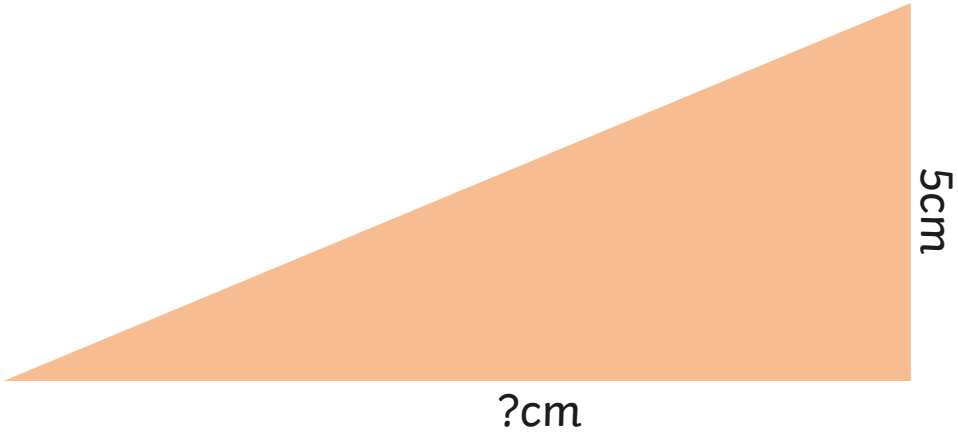
Find the Unmarked Side

If the area of this triangle is 30cm^2, calculate the length of the side marked with a question mark.



Find the Unmarked Side

If the area of this triangle is 30cm^2, calculate the length of the side marked with a question mark.



Answer:

$30cm^2 \times 2 = 60$

$60 \div 5cm = 12cm$

Activities

Red – 1 Star

Yellow – 2 Star

Green – 3 Star

Purple – extra challenge

Mastery – all groups