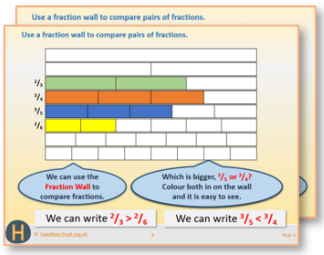
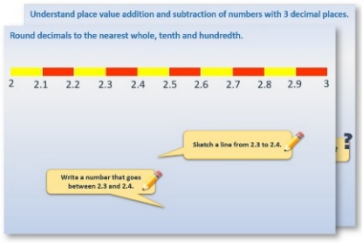
# Year 6: Week 3, Day 1
# Calculating area

**Each day covers one maths topic. It should take you about 1 hour or just a little more.**

1. If possible, watch the **PowerPoint presentation** with a teacher or another grown-up.




OR start by reading through the **Learning Reminders**.
They come from our *PowerPoint* slides.

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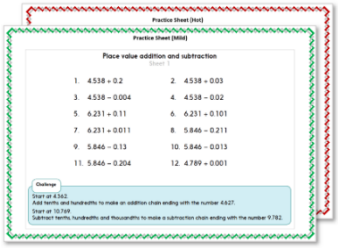
2. Tackle the questions on the **Practice Sheet**.
There might be a choice of either Mild (easier) or Hot (harder)!
Check the answers.

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3. Finding it tricky? That's OK… have a go with a grown-up at **A Bit Stuck?**


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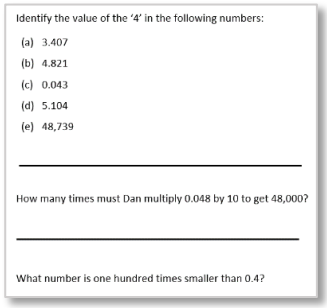
4. Have I mastered the topic? A few questions to **Check your understanding**.
Fold the page to hide the answers!

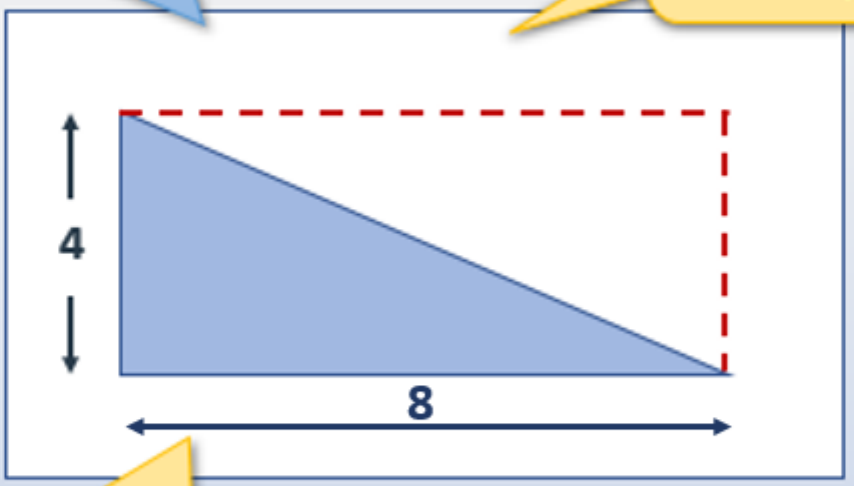


# Learning Reminders

## Find the area of triangles.

How can we find the area of this triangle?

We can use the fact that this triangle has ½ the area of a 4 by 8 rectangle.




What is the area of this rectangle?
So, what is the triangle's area?

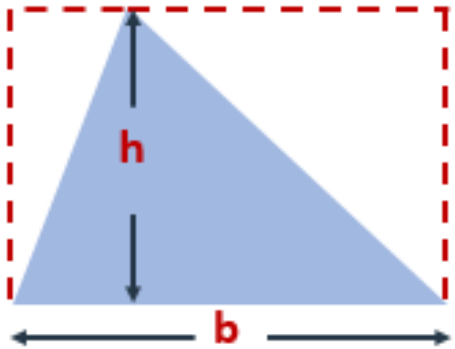
The area of the rectangle is 32 square units (8 x 4).
The area of the triangle is 16 square units (half of 8 x 4).

# Learning Reminders

## Find the area of triangles.

This triangle doesn't have a right angle, but the perpendicular height splits it into two right-angled triangles.

And we can draw a rectangle round each of the two smaller triangles to help find the area of each triangle; then add them together.




But we don't need to!
The 'big' triangle has half the area of the rectangle around the whole triangle!

The 'formula' to find the area of a triangle can be written as follows:

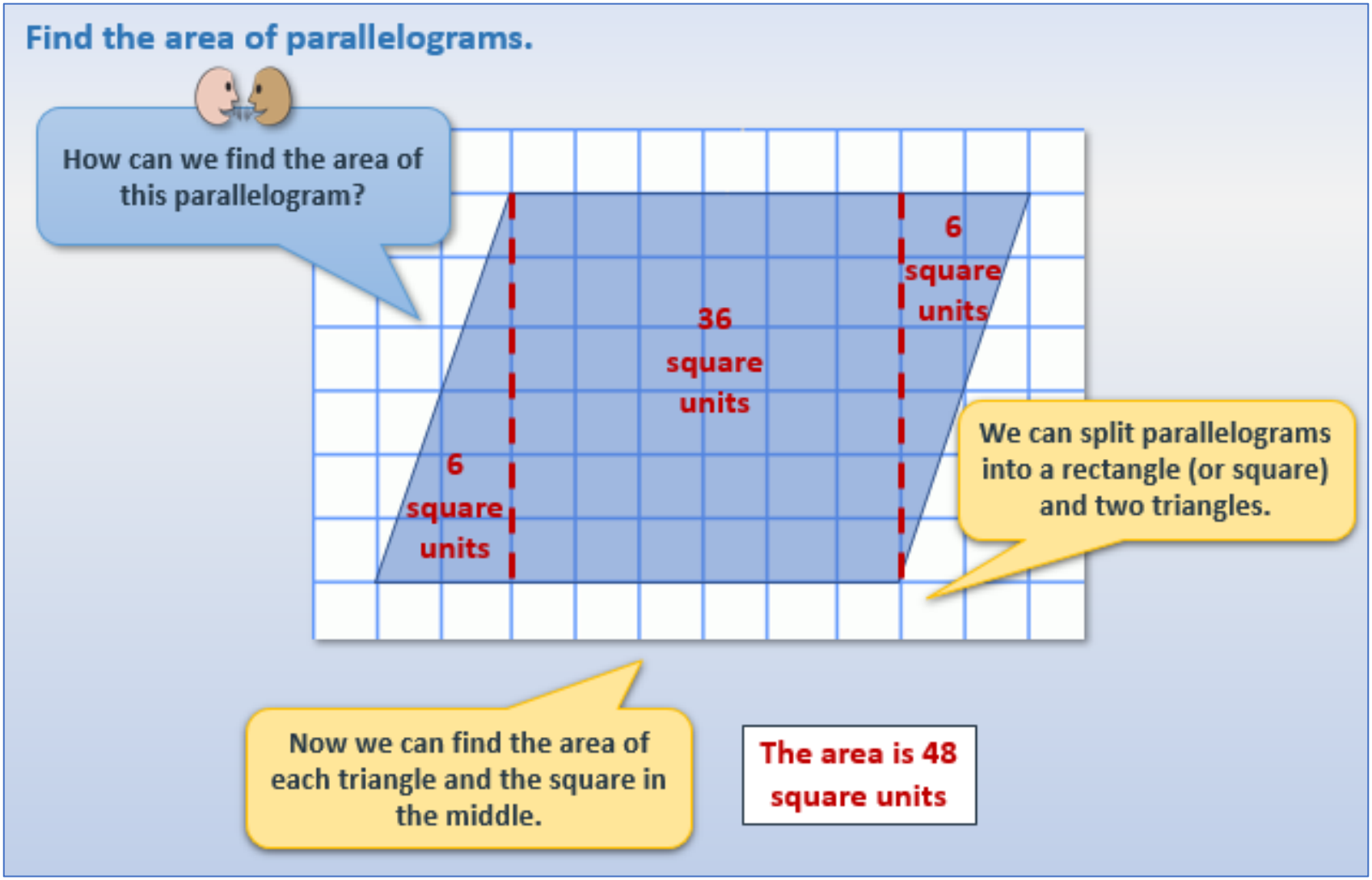
Area = $^1/_2$ of the **base** times **height**

= $^1/_2$ x **b** x **h**

= $^1/_2$**bh**

# Learning Reminders

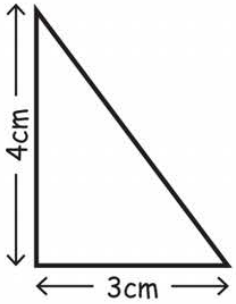
## Find the area of parallelograms.

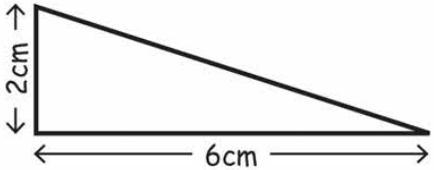


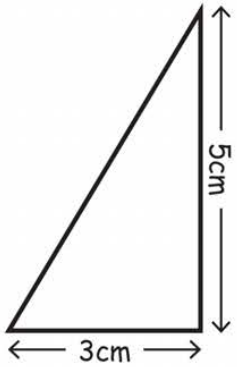
# Practice Sheet Mild

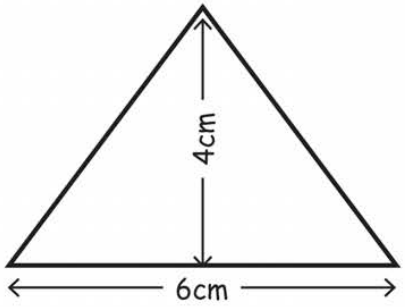
## Area of triangles

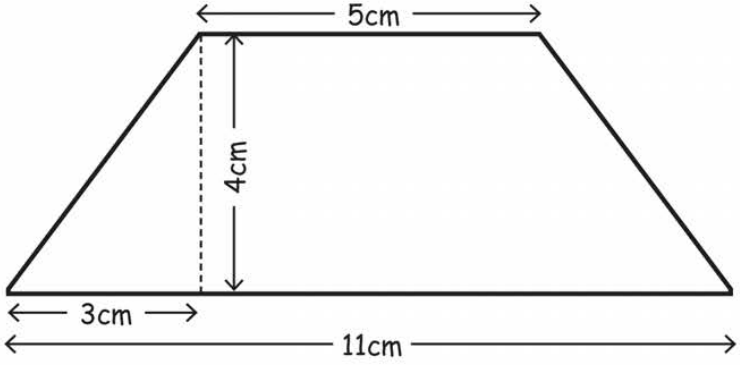
Find the area of each of these shapes. You may find it useful to annotate them.



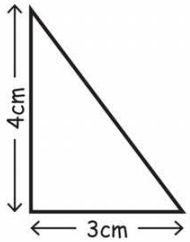

**Challenge**

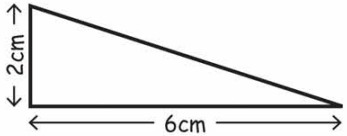
Now create your own compound shapes with an area of 40cm².

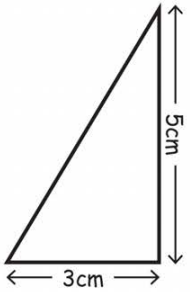
# Practice Sheet Mild

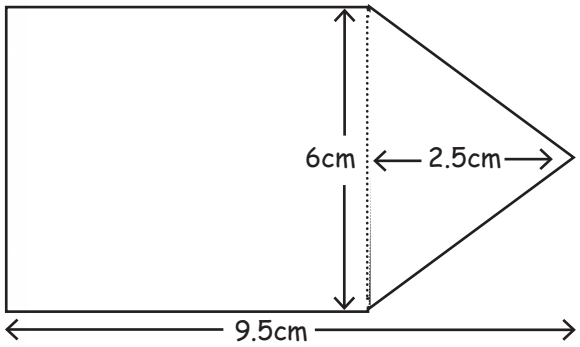
## Area of triangles

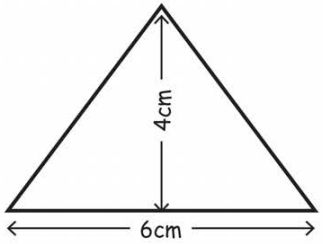
Find the area of each of these shapes. You may find it useful to annotate some of them.

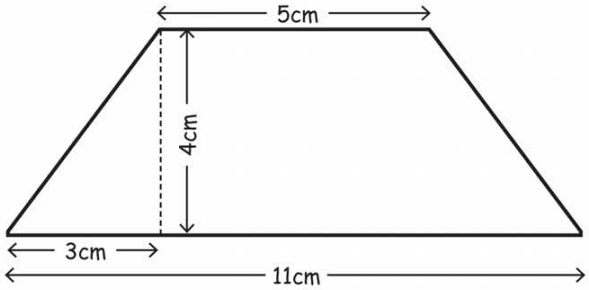


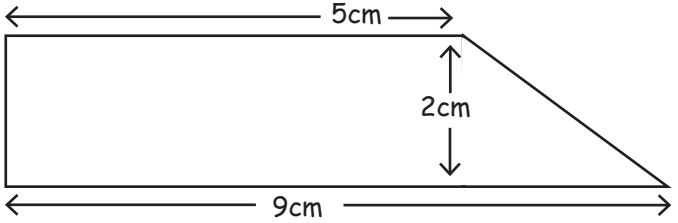




**Challenge**

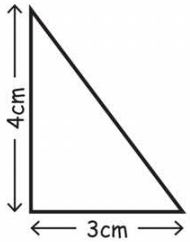
Now create your own compound shapes with an area of 44cm²

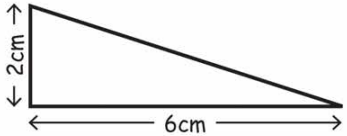


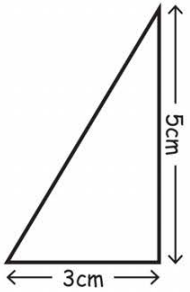
# Practice Sheet Hot

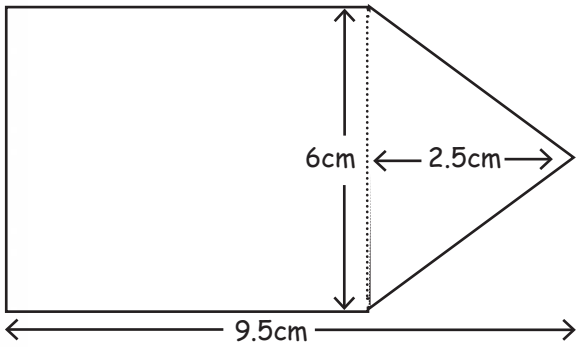
## Area of triangles

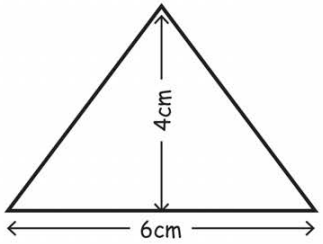
Find the area of each of these shapes. You may find it useful to annotate some of them.

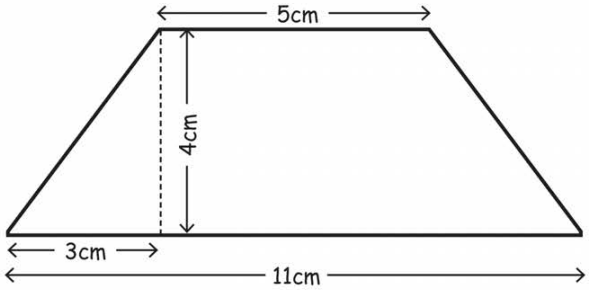


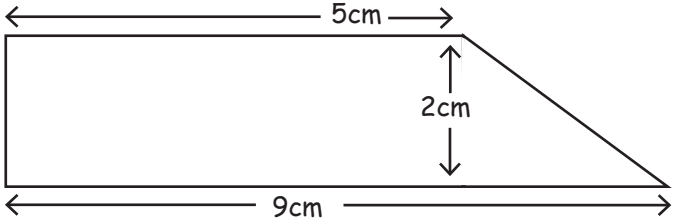



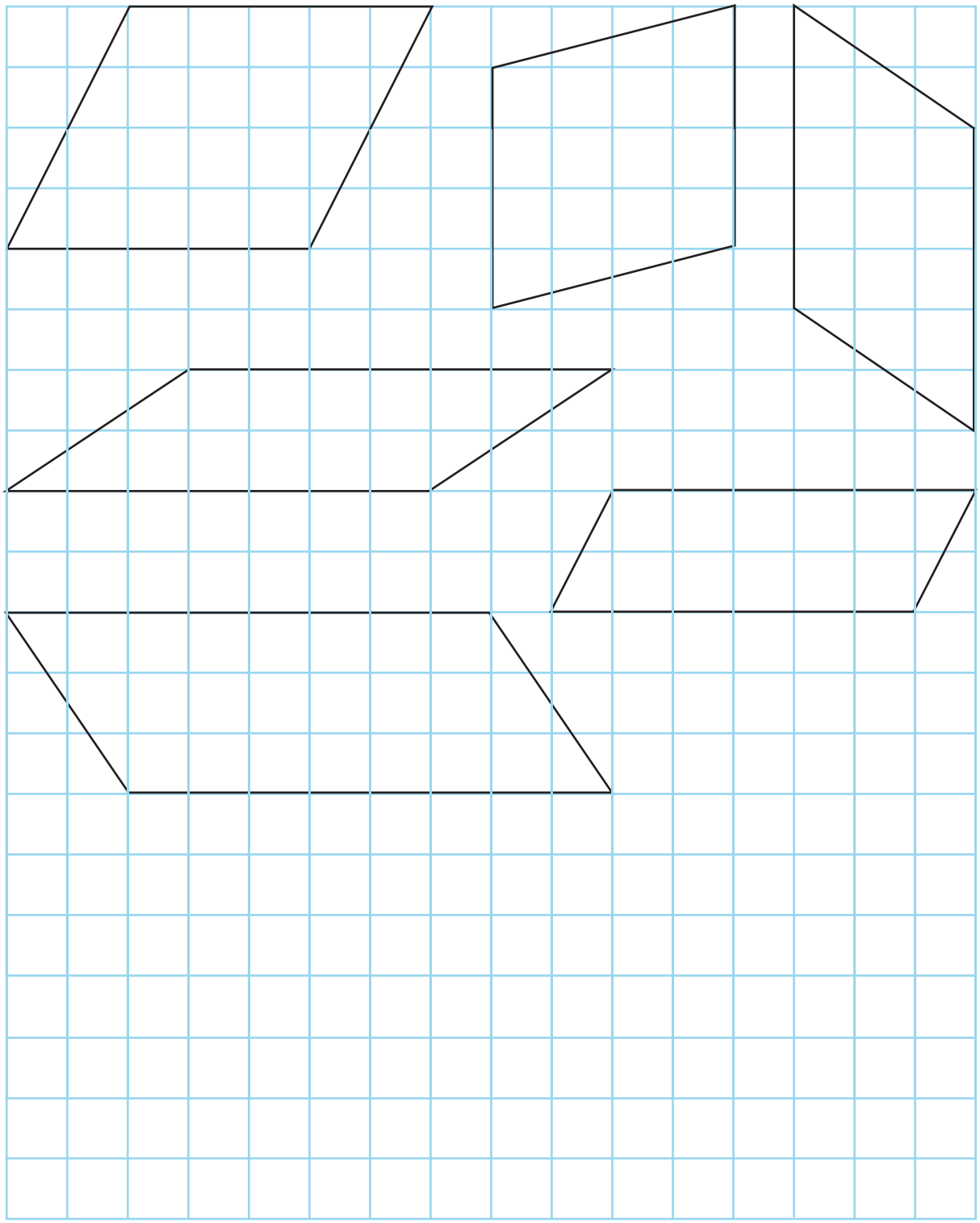

**Challenge**

Now create your own compound shapes with an area of 44cm²



# Practice Sheet Hot
## Area of parallelograms

Write the area of each parallelogram inside the shape.



**Challenge**

In the space available, draw a parallelogram with an area of 18 cm².

# Practice Sheets Answers

## Area of triangles (mild)

Triangles with height and base lengths of:
4cm and 3cm, area = 6cm$^2$
2cm and 6cm, area = 6cm$^2$
5cm and 3cm. area = 7.5cm$^2$
4cm and 6cm, area = 12cm$^2$

Parallelogram area (straight sides 5 and 11cm) = 32cm$^2$

## Area of triangles (mild)

Triangles with height and base lengths of:
4cm and 3cm, area = 6cm$^2$
2cm and 6cm, area = 6cm$^2$
5cm and 3cm. area = 7.5cm$^2$
4cm and 6cm, area = 12cm$^2$
Isoceles trapezium area (straight sides 5 and 11cm) = 32cm$^2$
Pentagon = 49.5cm$^2$
Trapezium area (straight sides 5 and 9cm) = 14cm$^2$

## Area of triangles (hot)

Triangles with height and base lengths of:
4cm and 3cm, area = 6cm$^2$
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4cm and 6cm, area = 12cm$^2$
Isoceles trapezium area (straight sides 5 and 11cm) = 32cm$^2$
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Trapezium area (straight sides 5 and 9cm) = 14cm$^2$

## Area of parallelograms (hot)

Areas are:

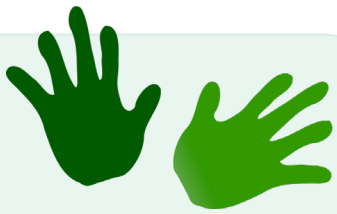
20cm$^2$ 16cm$^2$ 15cm$^2$
14cm$^2$ 12cm$^2$
24cm$^2$

# A Bit Stuck?
# Folding areas

***Work in pairs, but record your work on your own paper/in your own book.***

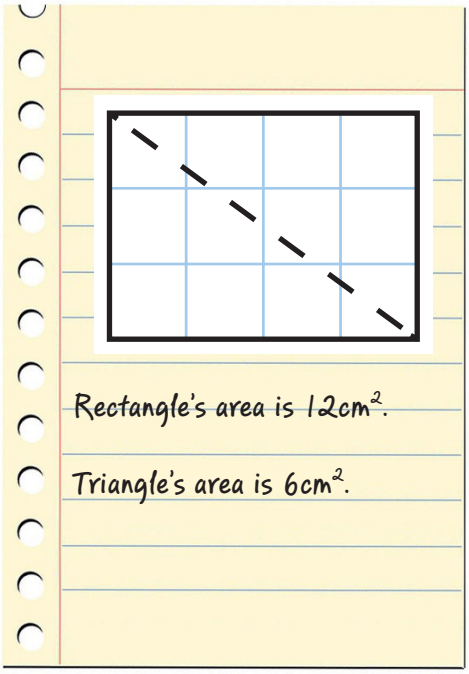
## Things you will need:

- cm² paper
- Scissors
- A glue stick
- A pencil



## What to do:

- Draw a rectangle on cm² paper.
  One or both sides should measure an even number of centimetres.
- Work out the area.
- Fold it diagonally in half to form a pair of triangles. Calculate the area of each triangle.
- Unfold the rectangle and stick it on paper/in your book. Write the area of the rectangle and triangle.
- Repeat with at least 5 different rectangles.



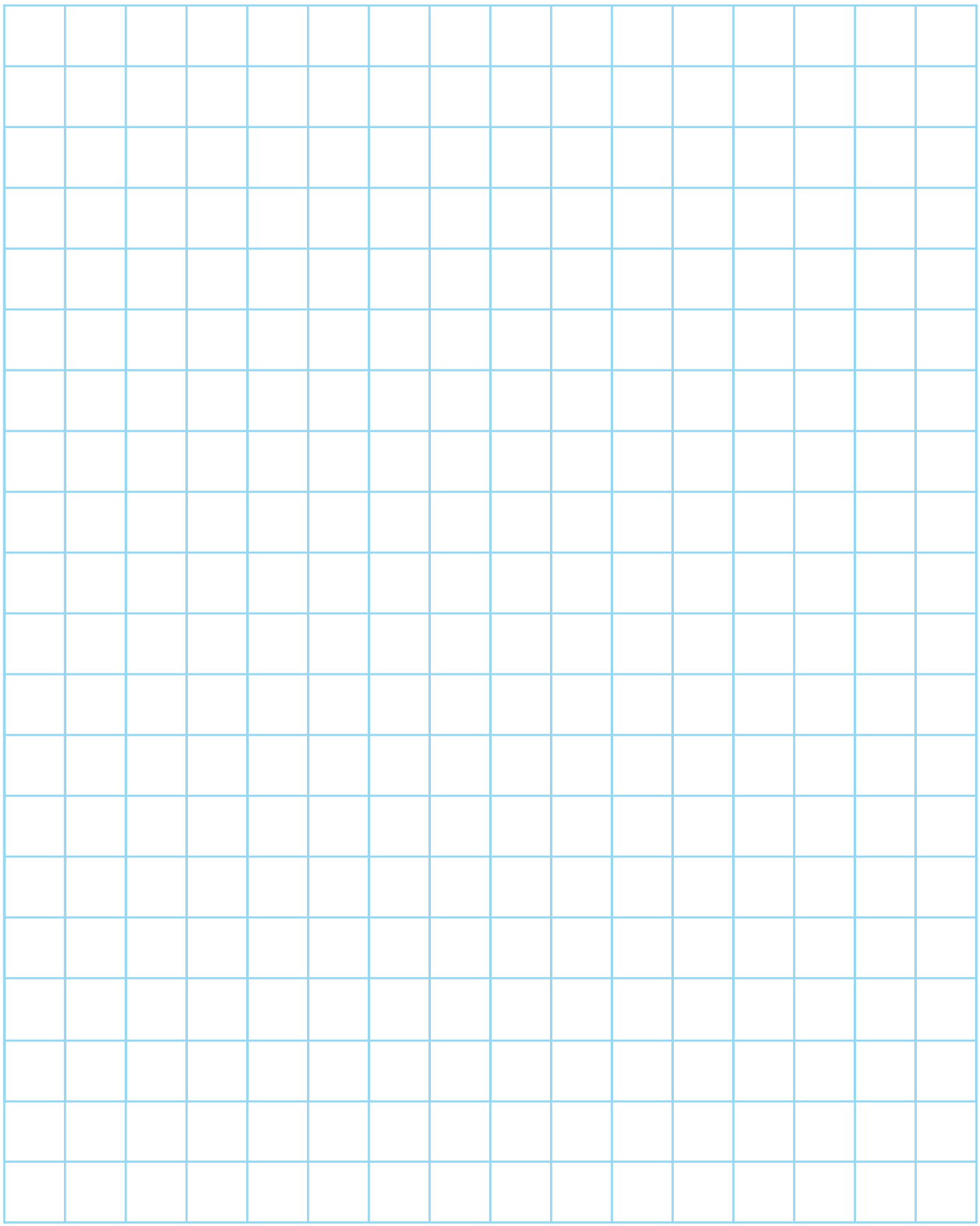

## *S-t-r-e-t-c-h:*

Draw a right-angled triangle. Draw the other half of the rectangle.
Write the area of both the rectangle and the triangle.

## Learning outcomes:

- I can find the area of rectangles and halve to find the area of right-angled triangles.
- I am beginning to draw rectangles around right-angled triangles in order to find the area of the triangle.

# A Bit Stuck?
## Folding areas



# Check your understanding

## *Questions*

Find the area of this triangle.

Perpendicular height = 6 cm

Base = 5cm

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What is the area of this shape?

Total length = 12cm

Base of triangle is half length of rectangle.

Triangle has two equal sides.

*Fold here to hide answers*

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# Check your understanding

## *Answers*

Find the area of this triangle.

Perpendicular height = 6 cm

base = 5cm

15cm$^2$. Watch out for the error of multiplying the height and base but neglecting to find half of that (resulting in area = 30cm$^2$).

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What is the area of this shape? 40cm$^2$

Total length = 12cm

Base of triangle is half length of rectangle.

Triangle has two equal sides.

The length of rectangle and triangle must be 8cm and 4cm respectively.

The height must also be 4cm as the triangle has two equal sides (the third slanted side will be the longer of the 3 sides).

Area of the rectangle is 8 x 4 = 32cm$^2$. Area of the triangle is ½ x 4 x 4 = 8cm$^2$.