

# Week 13, Day 4

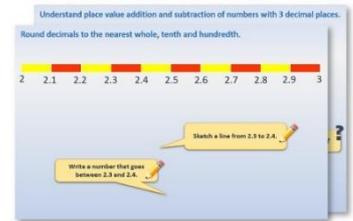
## Find areas of squares and rectangles in $\text{cm}^2$ .

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

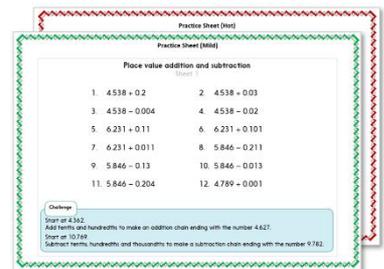
1. If possible, watch the **PowerPoint presentation** with a teacher or another grown-up.



OR start by carefully reading through the **Learning Reminders**.



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



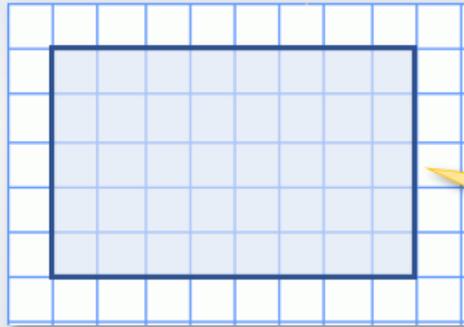
3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**



4. Think you've cracked it? Whizzed through the Practice Sheets? Have a go at the **Investigation...**

## Learning Reminders

Find areas of squares and rectangles in  $\text{cm}^2$ .



What is the area of this rectangle?  
Do we need to count the squares  
in every row?  
Why not? ?



How many *square centimetres*  
would be inside this  
rectangle? ?

To find the area, we can  
*multiply the length by the width.*  
We abbreviate square  
centimetres to  $\text{cm}^2$ .

How do you know? How can you  
calculate the area of the rectangle  
*without* counting squares? ?

## Learning Reminders

Find areas of squares and rectangles in  $\text{cm}^2$ .

If the school hall was having a new floor and the price was based on its area, how could we calculate the area?  
Would we measure it in square centimetres?

The hall's length and width would be measured in metres, so the area would be a number of square metres,  $\text{m}^2$ .

$12\text{m}^2$ ,  $120\text{m}^2$ ,  $12\text{cm}^2$ ,  $28\text{cm}^2$ ,  $100\text{mm}^2$ ,  $28\text{mm}^2$

Which of these could be the area of a bedroom floor?  
The surface area of a little finger nail?  
One face of a credit card?

**Answers**  
Finger nail is  $100\text{mm}^2$   
Credit card is  $28\text{cm}^2$   
Bedroom floor is  $12\text{m}^2$

## Practice Sheet Mild

### Finding areas of rectangles

Work out the areas of all these rectangles.

Write the answer inside each rectangle.

4 cm  
3 cm

2 cm

5 cm

5 cm

4 cm

4 cm  
2 cm

3 cm

5 cm

8 cm

1 cm

6 cm  
2 cm

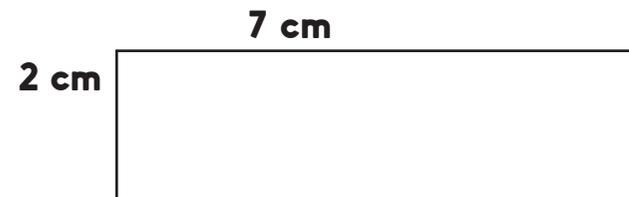
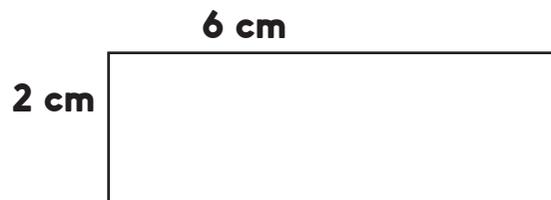
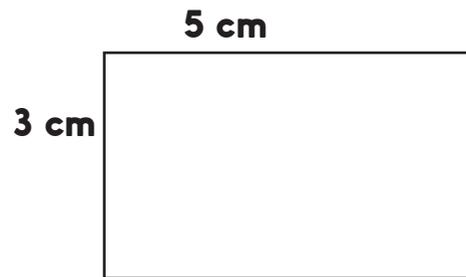
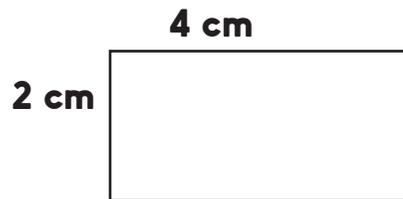
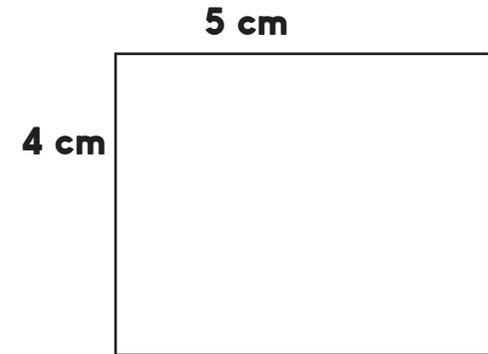
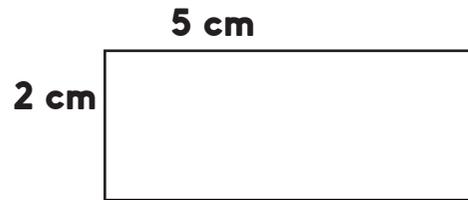
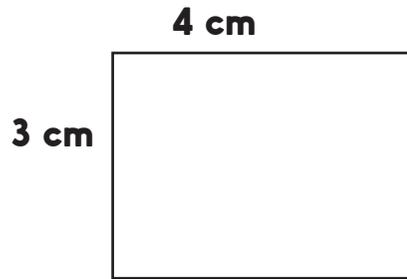
7 cm

2 cm

## Practice Sheet Hot

### Finding areas of rectangles

Work out the areas of all these rectangles. Write the answer inside each rectangle.

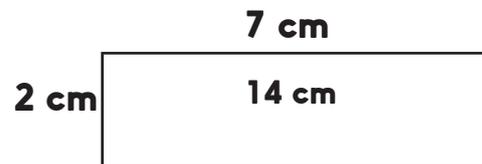
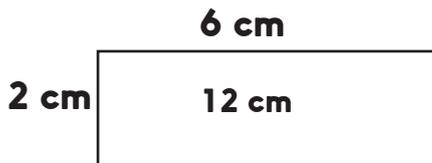
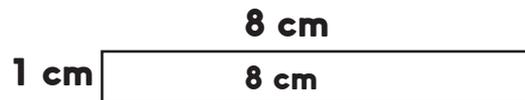
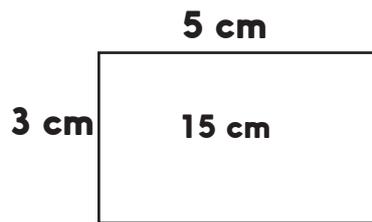
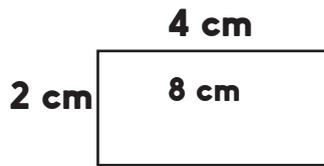
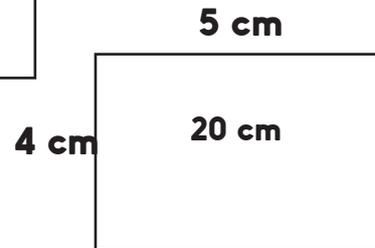
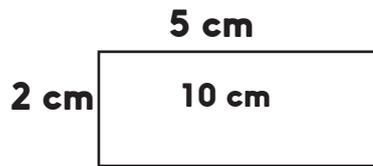
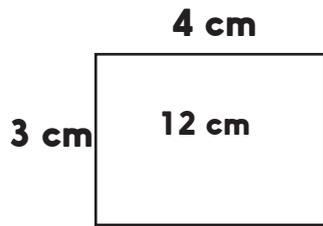


#### Challenge

Draw at least three different rectangles with an area of  $24\text{cm}^2$ . Which has the greatest perimeter?

## Practice Sheet Answers

Finding area of rectangles (mild & hot)



# A Bit Stuck?

## Rapid rectangles

Work in pairs, but draw and label your own rectangles

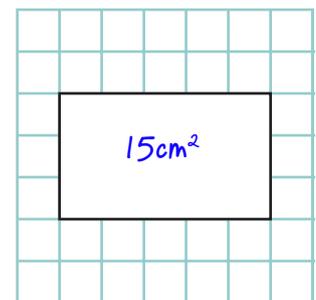
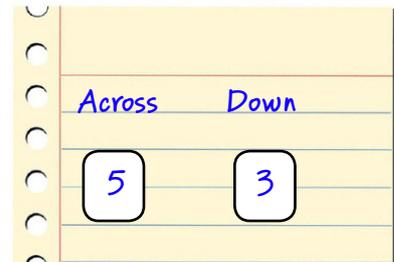
### Things you will need:

- 3-6 cards and 2-9 cards
- $\text{cm}^2$  paper
- A ruler
- A pencil



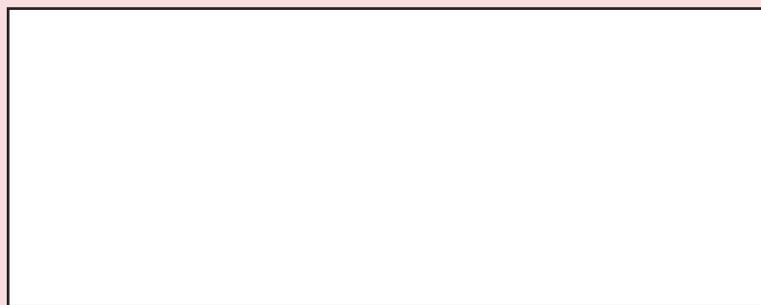
### What to do:

- Write 'Across' on the top left of a piece of paper, and 'Down' on the top right side.
- Shuffle a set of 3, 4, 5 and 6 cards and place face down under the title 'Across'. Shuffle a set of 2 to 9 cards and place face down under the title 'Down'.
- Turn the top card over in each pile.  
Draw a rectangle on the squared paper. The first card tells you how far across the rectangle needs to go. The second card tells you how far down the rectangle needs to go.
- How many squares are in the top row?  
Use clever counting to work out the area of the rectangle.  
Write the area inside the rectangle.



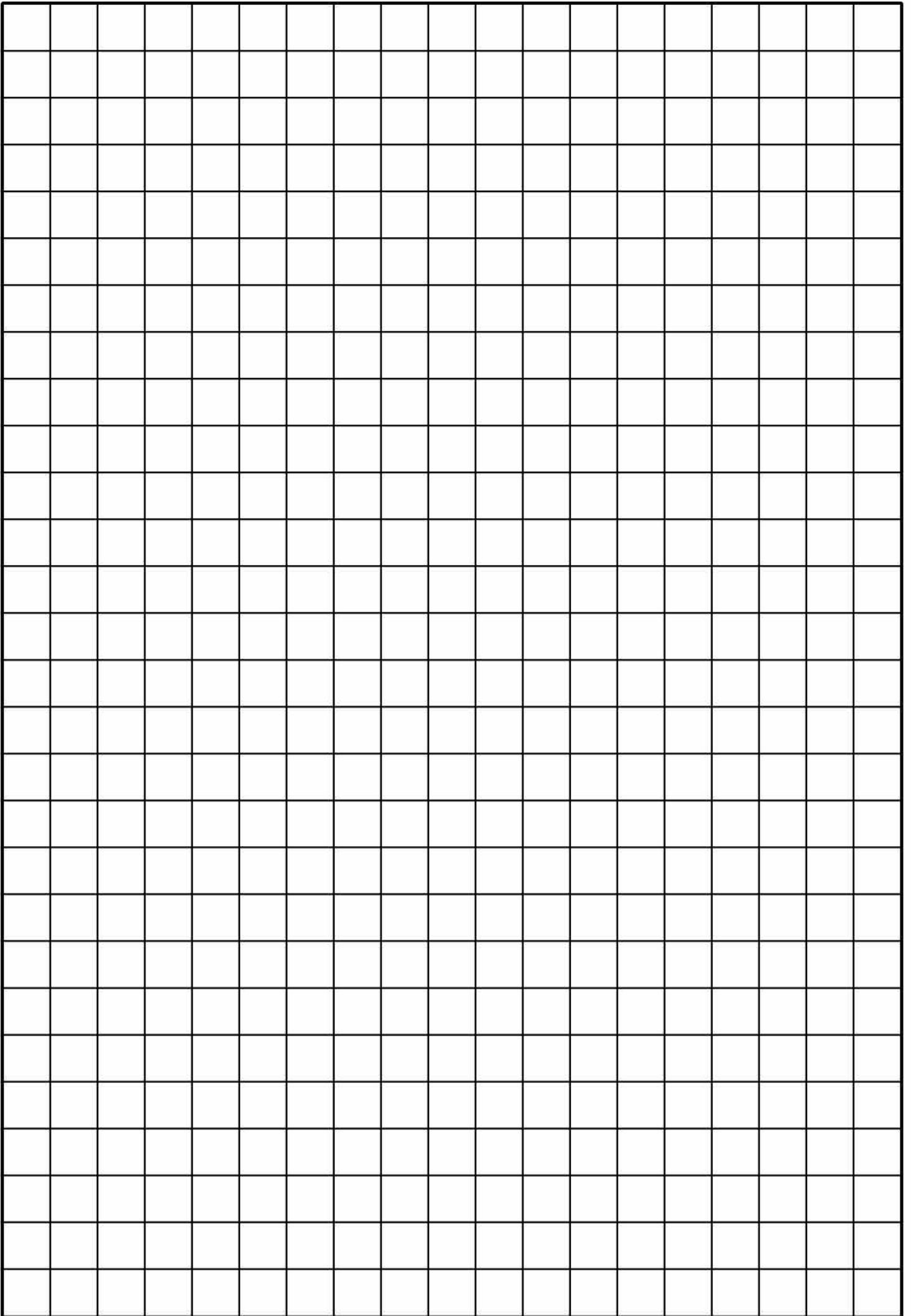
### *S-t-r-e-t-c-h:*

Work out the areas of these two rectangles:  
Now check your answers by drawing them on squared paper.



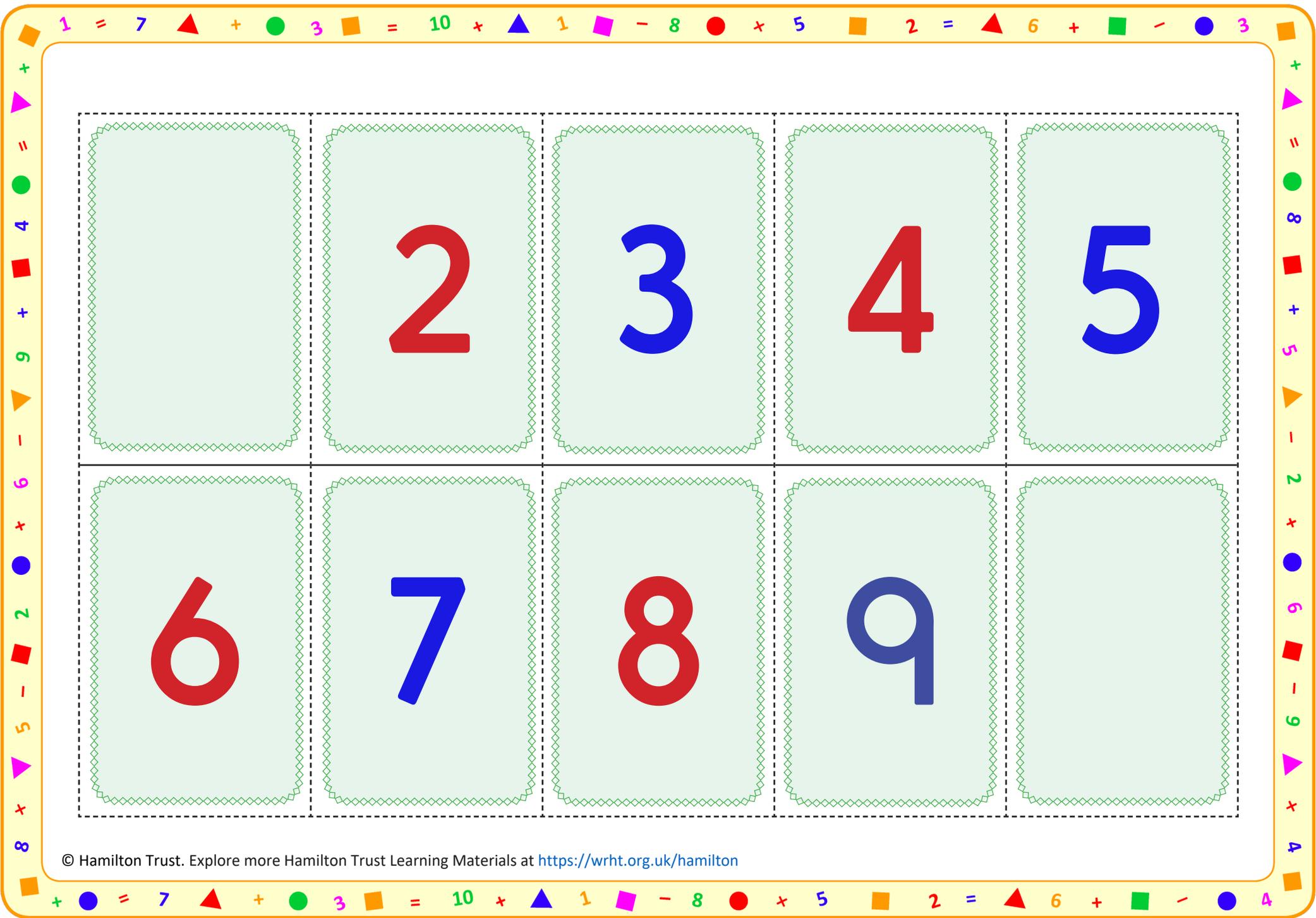
### Learning outcomes:

- I can use 'clever counting' to find the area of a rectangle.
- I am beginning to calculate the areas of rectangles not drawn on squared paper.



A decorative border surrounds the page, featuring a sequence of mathematical symbols and numbers: 1, =, 7, a red triangle, +, a green circle, 3, a brown square, =, 10, +, a blue triangle, 1, a purple square, -, 8, a red circle, x, 5, a brown square, 2, =, a red triangle, 6, +, a green square, -, a blue circle, 3. The symbols and numbers are repeated along the top, bottom, and sides of the page.

2	3	4	5	6



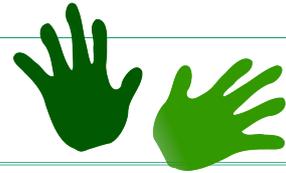
	2	3	4	5
6	7	8	9	

## Investigation

### Investigating area and perimeter

#### Things you will need:

- Centimetre squared paper

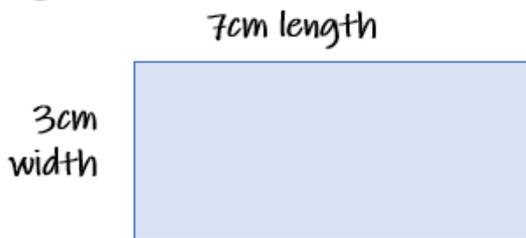


#### Remember

The perimeter is the distance around all sides of a 2-D shape.

To find the perimeter of a rectangle, add the length and width, then double.

e.g.



Perimeter is  $(7\text{cm} + 3\text{cm})$  doubled  
so, perimeter =  $20\text{cm}$   
Area is  $3\text{cm} \times 7\text{cm} = 21\text{cm}^2$

- Use the squared paper to draw a rectangle 16cm by 8cm.
- What is its perimeter?
- Now draw as many rectangles as you can with a perimeter of 48cm.
- Each side should be a whole number of centimetres.
- Find the area of each. Which has the largest and which the smallest area?
- List the rectangles systematically, starting with the one with the longest length, what do you notice?
- What is the maximum and minimum possible areas for a rectangle with a perimeter of 48cm?

#### Challenge

A farmer has 60m of fencing in 1m pieces. What is the largest rectangular area he can create for his chickens?

For a perimeter of 48cm, where each side is a whole number of centimetres, the greatest area is  $144\text{cm}^2$  (for a  $12 \times 12$  square); the least is  $23\text{cm}^2$  (for a  $1 \times 23$  rectangle).  
For a perimeter of 60m, the largest rectangular area is a square measuring  $15\text{m} \times 15\text{m}$  ( $225\text{m}^2$ ).  
The largest area possible with 60 x 1m straight pieces of fencing is actually a 60-sided regular polygon!

