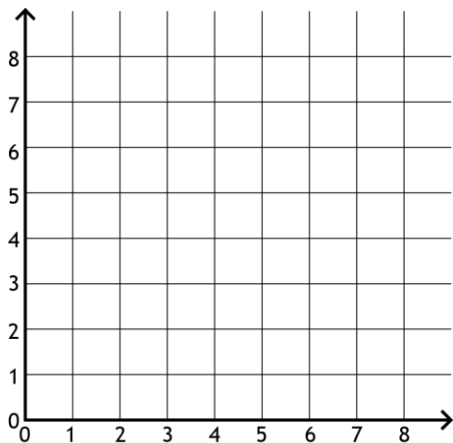
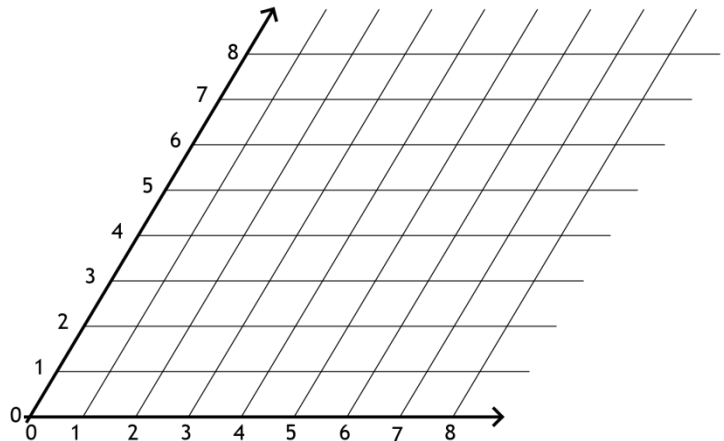


Name: .....

Date:.....



**Grid 1**



**Grid 2**

1. On Grid 1 plot the following points: A = (0, 4) B = (0, 8) C = (2, 6).  
Connect these points with straight lines to make a shape.

This shape is called an .....

It is known as a .....

2. On Grid 2 plot the same points as in question 1.

Connect these points with straight lines to make a shape.

This shape is called a .....

It is known as a .....

3. On Grid 1 plot the following points: P = (4, 2) Q = (7, 2) R = (4, 5).

Connect these points with straight lines to make a shape.

This shape is called a .....

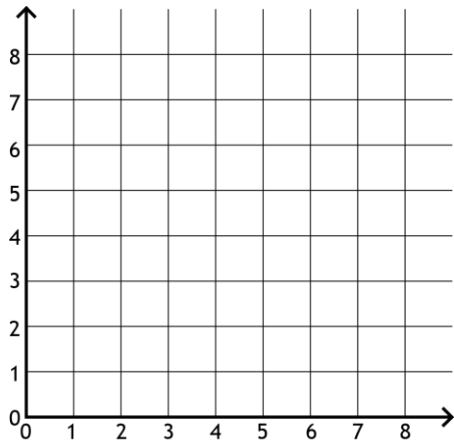
It is known as a .....

4. On Grid 2 plot the same points as in question 3.

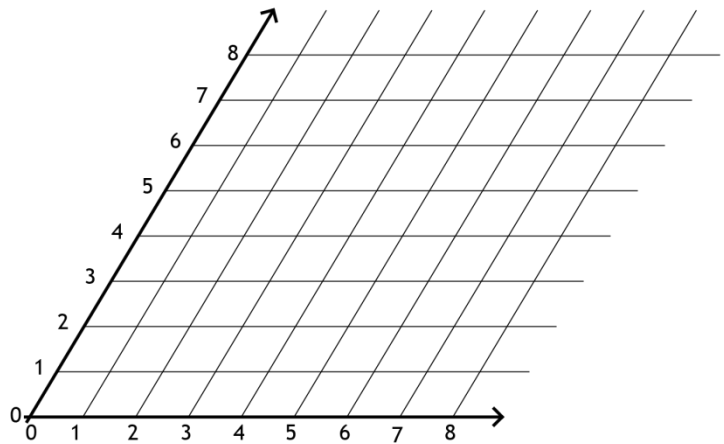
Connect these points with straight lines to make a shape.

This shape is called a .....

It is known as a .....



**Grid 3**



**Grid 4**

5. On Grid 3 plot the following points: A = (4, 6); B = (7, 6); C = (6, 8); D = (3, 8).

Connect these points with straight lines. What is the name of the shape?

This shape is called a .....

6. On Grid 4 plot the same points as in question 5.

Connect these points with straight lines. What is the name of the shape?

This shape is called a .....

7. On Grid 3 plot the following points: W = (0, 1); X = (0, 3); Y = (3, 1); Z = (2, 3).

Connect these points with straight lines. What is the name of the shape?

This shape is called a .....

8. On Grid 4 plot the same points as in question 7.

Connect these points with straight lines. What is the name of the shape?

This shape is called a .....

Finding the mean, median, mode and range

The mode is the most frequently occurring number in a range of values. To find the mode arrange the numbers in numerical order from smallest to largest.

**Example**

7,7,3,1,2 → 1,2,3,7,7

The mode is 7.

If two or more numbers appear at the same frequency then there are two or more modes.

A.1. What is the mode for the numbers 6, 5, 4, 4, 6, 7?

2. What is the mode for the numbers 7, 7, 7, 8, 1, 1, 2, 2, 3, 4?

3. What is the mode for the numbers 7, 6, 8, 7, 5, 9, 3, 5 and 7?

4. What is the mode for the numbers 7, 6, 5, 8, 7, 5, 9, 7, 3, 5 and 4?

5. What is the mode for the numbers 21, 21, 24, 18, 18, 16, 17, 24, 25, 24, 24?

The mean is also known as the average. To find the mean you add up all of the numbers in a set of data and then divide it by how many numbers there are.

### Example

$$2, 3, 4, 5, 6 \longrightarrow 2 + 3 + 4 + 5 + 6 = 20$$

$$20 \div 5 = 4, \text{ so the mean is } 4$$

B.1. What is the mean of the numbers 8, 9, 13 and 18?

2. What is the mean of the numbers 7, 4, 12 and 9?

3. What is the mean of the numbers 8, 9, 12, 15, 6?

4. What is the mean of the numbers 24, 25, 20, 15, 16?

5. Sam scored the following grades in his end of year exams:

Subject	Grade
Math	51%
English	62%
Science	70%
Geography	39%
History	81%
Economics	57%

What was his mean grade?

A. 51.4%

B. 54.5%

C. 59.5%

D. 60%

The median is the middle number in a range of data. To find the median of a set of numbers, arrange them in numerical order and find the middle value. If there are two middle values, add them together and divide them by two to find the mean value

### Example

7, 8, 2, 3, 4, 1 → 1, 2, 3, 4, 7, 8

$$3 + 4 = 7$$

$$7 \div 2 = 3.5$$

C.1. What is the median of the numbers 4, 2, 11, 6, 2?

2. What is the median of the numbers 3, 11, 6, 5, 4, 7, 12, 3 and 10?

3. What is the median of the numbers 4, 2, 11, 6, 2, 9?

4. What is the median of the numbers 75, 83, 69, 56, 71, 80, 65, 67, 77 and 44?

5. What is the median of the numbers 4, 2, 11, 6, 2, 5?

The range is the difference between the lowest and highest values in a set of data.

**For example**

4,6,9,3,7 → 3,4,6,7,9, so the range is  $9 - 3 = 6$

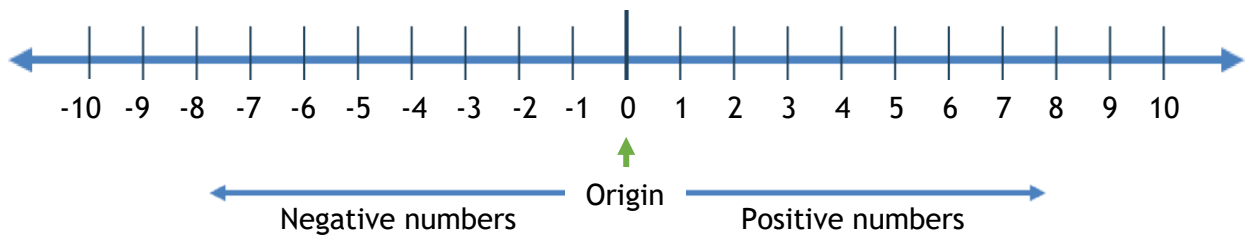
D.1. What is the range in this set of numbers 4, 2, 11, 6, 2, 5?

2. What is the range in this set of numbers 23, 6, 12, 18, 19?

3. What is the range in this set of numbers 23, 45, 87, 91, 12, 54, 72, 100?

4. What is the range in this set of numbers 67, 32, 45, 99, 76, 23, 48, 15?

5. What is the range in this set of numbers 75, 83, 69, 56, 71, 80, 65, 67, 77 and 44



Work out the answers to the following questions and write them in your book.

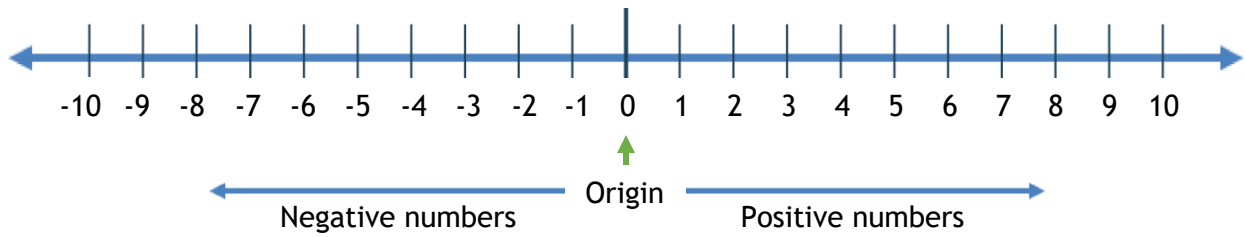
Use the number line at the top of the page to help you.

**Task 1: Circle the number that is bigger.**

1	3 or 8	2	-2 or 3	3	2 or -1	4	7 or -3
5	-6 or 4	6	3 or -7	7	8 or 5	8	-3 or 6
9	-4 or -1	10	-7 or -4	11	-3 or 6	12	-7 or -2
13	8 or -2	14	9 or -4	15	7 or -9	16	-9 or -3
17	3 or 19	18	3 or -19	19	-7 or -10	20	6 or -18

**Task 2: Work out the following and write the answer in your book.**

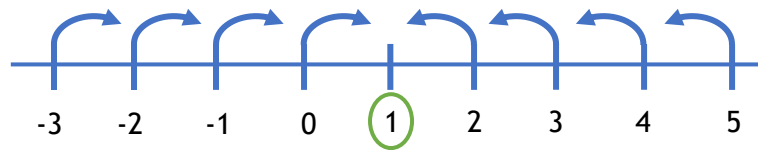
1	$4 - 2$	2	$3 - 5$	3	$5 - 6$	4	$2 - 4$
5	$7 - 9$	6	$5 - 9$	7	$1 - 7$	8	$9 - 12$
9	$0 - 5$	10	$0 - 8$	11	$-1 - 3$	12	$-3 - 2$
13	$-2 - 6$	14	$-6 - 8$	15	$-7 - 5$	16	$-9 - 6$
17	$3 + 2$	18	$5 + 3$	19	$6 + 7$	20	$0 + 7$
21	$-1 + 3$	22	$4 + 7$	23	$-5 + 9$	24	$-7 + 17$
25	$-5 + 5$	26	$-5 + 4$	27	$-3 + 2$	28	$-6 + 3$
29	$-9 + 3$	30	$-3 + 9$	31	$-8 + 7$	32	$-12 + 1$
33	$-10 + 5$	34	$-10 - 4$	35	$-10 + 4$	26	$3 - 7$
37	$-8 - 9$	38	$-6 + 13$	39	$23 - 24$	40	$-20 - 20$



**Task 3:** Find the halfway number between the following pairs of numbers.

**Example:**

What number is halfway between -3 and 5?



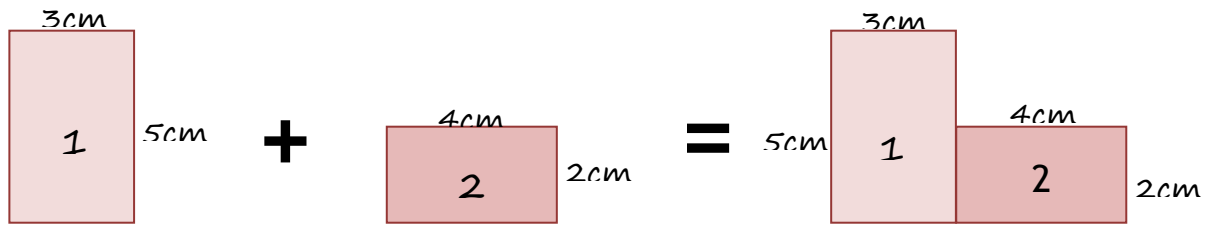
1	7 and 1	2	10 and 2	3	5 and -1	4	3 and -9
5	-6 and -2	6	5 and -9	7	-1 and -13	8	-6 and -10
9	-6 and -20	10	7 and -19	11	-3 and -31	12	14 and -6
13	0 and -8	14	-7 and -21	15	12 and 42	16	7 and -25
17	43 and -3	18	2 and -34	19	-2 and -18	20	-11 and -3



Word problems

1. The temperature is  $-2^{\circ}\text{C}$ . If it rises by  $8^{\circ}\text{C}$  what is the new temperature?
2. At midnight the temperature is  $-6^{\circ}\text{C}$ . At midday it was  $9^{\circ}\text{C}$ . By how much has the temperature risen between these two times?
3. Fiona is in debt to her bank. She owes them £60. She gets £85 for her birthday and pays this into her bank. How much does she have now?
4. A deep sea diver is at a depth of  $-75$  metres below the surface. He rises 40 metres. At what depth is he now?
5. The temperature today is  $6^{\circ}\text{C}$ . It is due to drop by  $12^{\circ}\text{C}$ . What will the temperature be then?
6. What temperature is  $18^{\circ}\text{C}$  warmer than  $-13^{\circ}\text{C}$ ?
7. What temperature is  $12^{\circ}\text{C}$  colder than  $-3^{\circ}\text{C}$ .
8. What temperature is  $23^{\circ}\text{C}$  warmer than  $-7^{\circ}\text{C}$ ?
9. What temperature is  $16^{\circ}\text{C}$  colder than  $9^{\circ}\text{C}$ ?
10. A submarine can launch a missile straight up to hit a plane. It is at a depth of  $-60\text{m}$  and the plane passes by straight above at  $340\text{m}$ . How far would the missile have to travel to hit the plane?
11. The plane can drop depth charges to counter submarine missiles. If a plane drops a charge set for  $-45\text{m}$  from a height of  $280\text{m}$ , how far has the depth charge travelled before it is detonated?
12. A freezer runs at a temperature of  $-18^{\circ}\text{C}$ . It breaks down and its temperature rises by  $5^{\circ}\text{C}$ . What is the temperature of the freezer now?
13. I have £37 in my bank account and write a cheque for £87. After the cheque has been cashed what will the bank balance show now?
14. In the morning the temperature was  $-2^{\circ}\text{C}$ . By midday, it had risen by  $11^{\circ}\text{C}$ , but by night it had dropped by  $7^{\circ}\text{C}$ . What is the temperature now?
15. Jonny has £40 in his bank account. He decides to spend £70 at a shop but receives a cashback bonus of £25 from previous buys. Is he in debt

The following two rectangles can be joined together to make an L-Shape.



To find the area of an 'L-shape', we add the areas of the two rectangles.

Area of **rectangle 1** =  $3 \times 5 = 15\text{cm}^2$

Area of **rectangle 2** =  $4 \times 2 = 8\text{cm}^2$

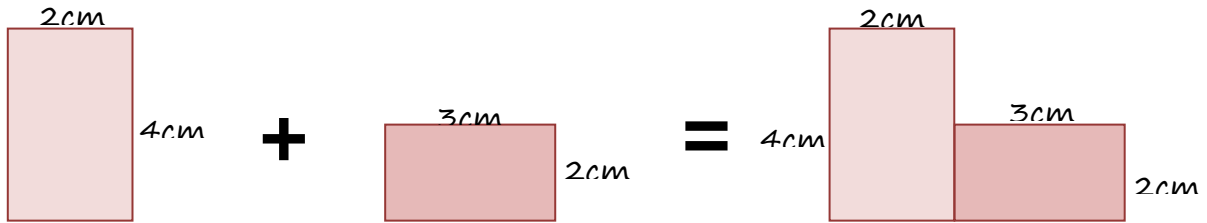
Area of L-shape =  $15 + 8 =$

**$23\text{cm}^2$**

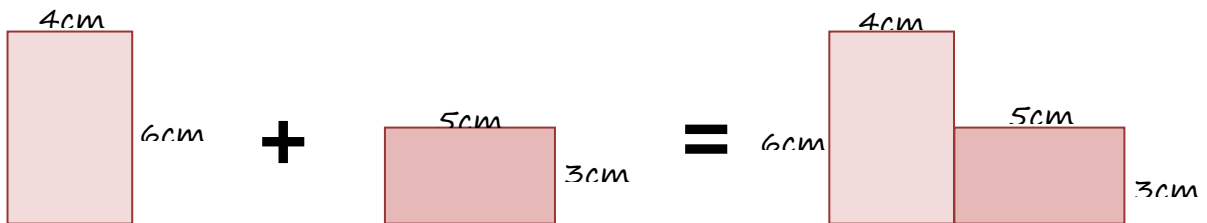
## Findina the of L-shaped diagrams

Task one: Find the area of the following L-shapes.

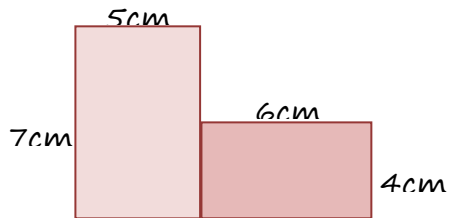
1.



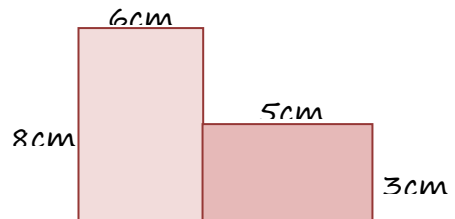
2.



3.

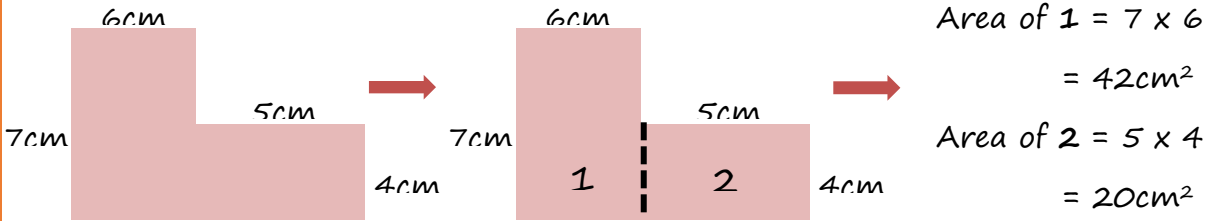


4.



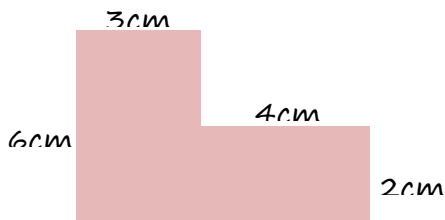
We can find the area without the two rectangles showing by drawing a line to 'chop' the shape into two rectangles.

e.g.

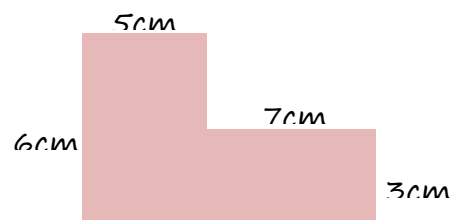


**Task two:** Find the area of the following L-shapes. Remember to draw a line to 'chop' the shape into two rectangles.

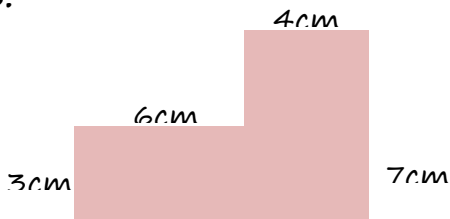
1.



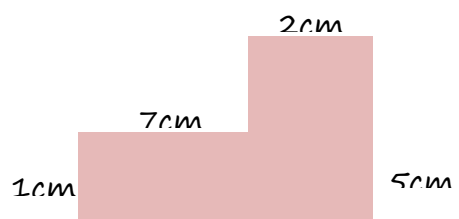
2.



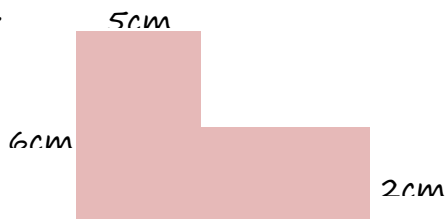
3.



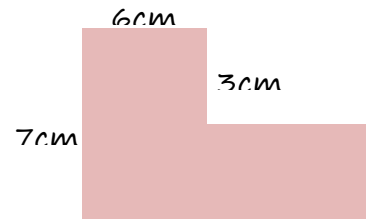
4.



5.



6.



**Teaching notes**

Give each child at least four of the parallelogram from the sheets below and one of the investigations sheets to work through individually or in pairs.

Each time they solve a problem they must draw the shape, mark the scissor line/s and explain why it works.

**Investigating quadrilaterals using scissors**

Using a different parallelogram each time:

- a with one straight cut, make a rhombus.
- b with one straight cut, make a trapezium.
- c with two straight cuts, make a rectangle.
- d with two straight cuts, make a square.



**Investigating quadrilaterals using scissors**

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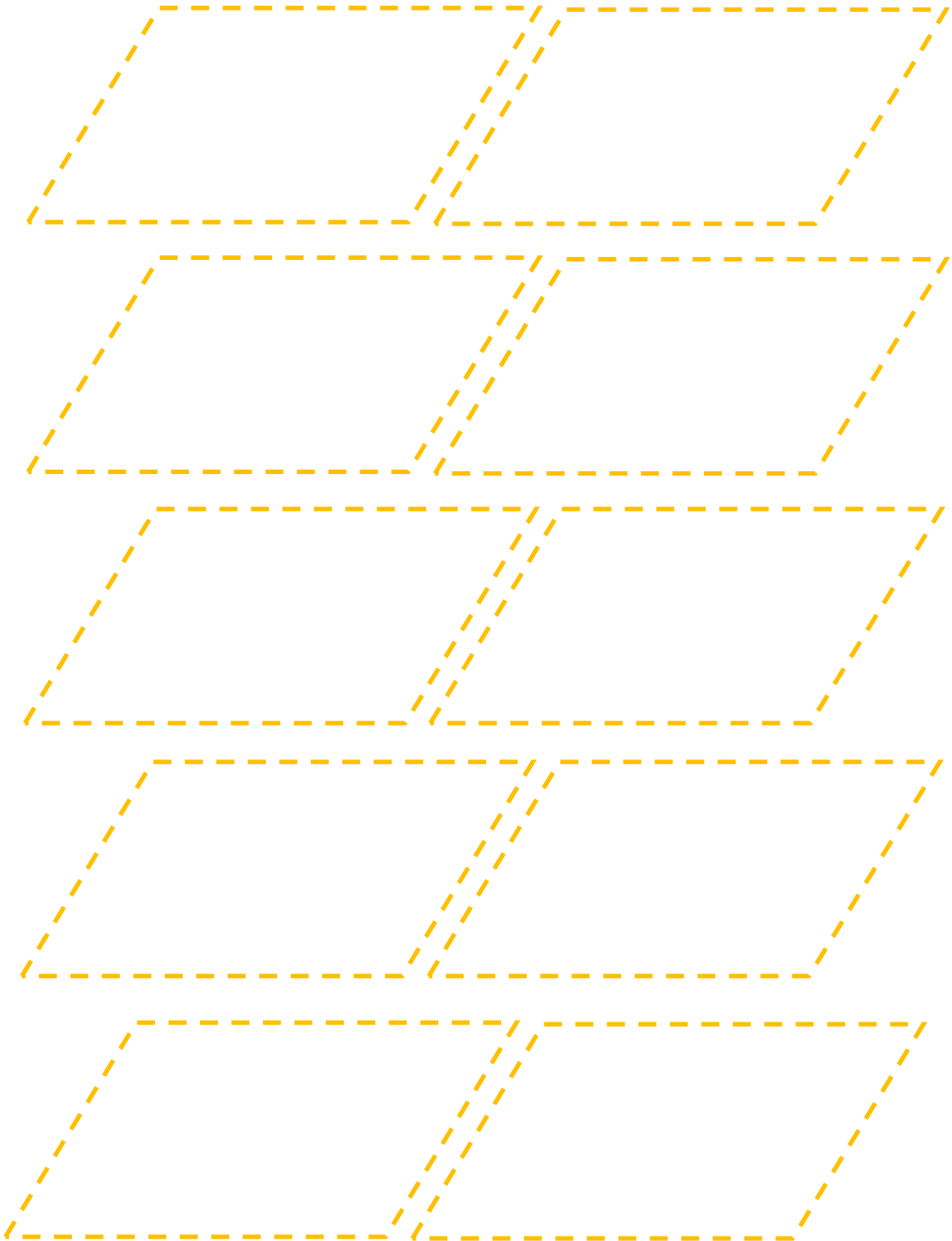
**Investigating quadrilaterals using scissors**

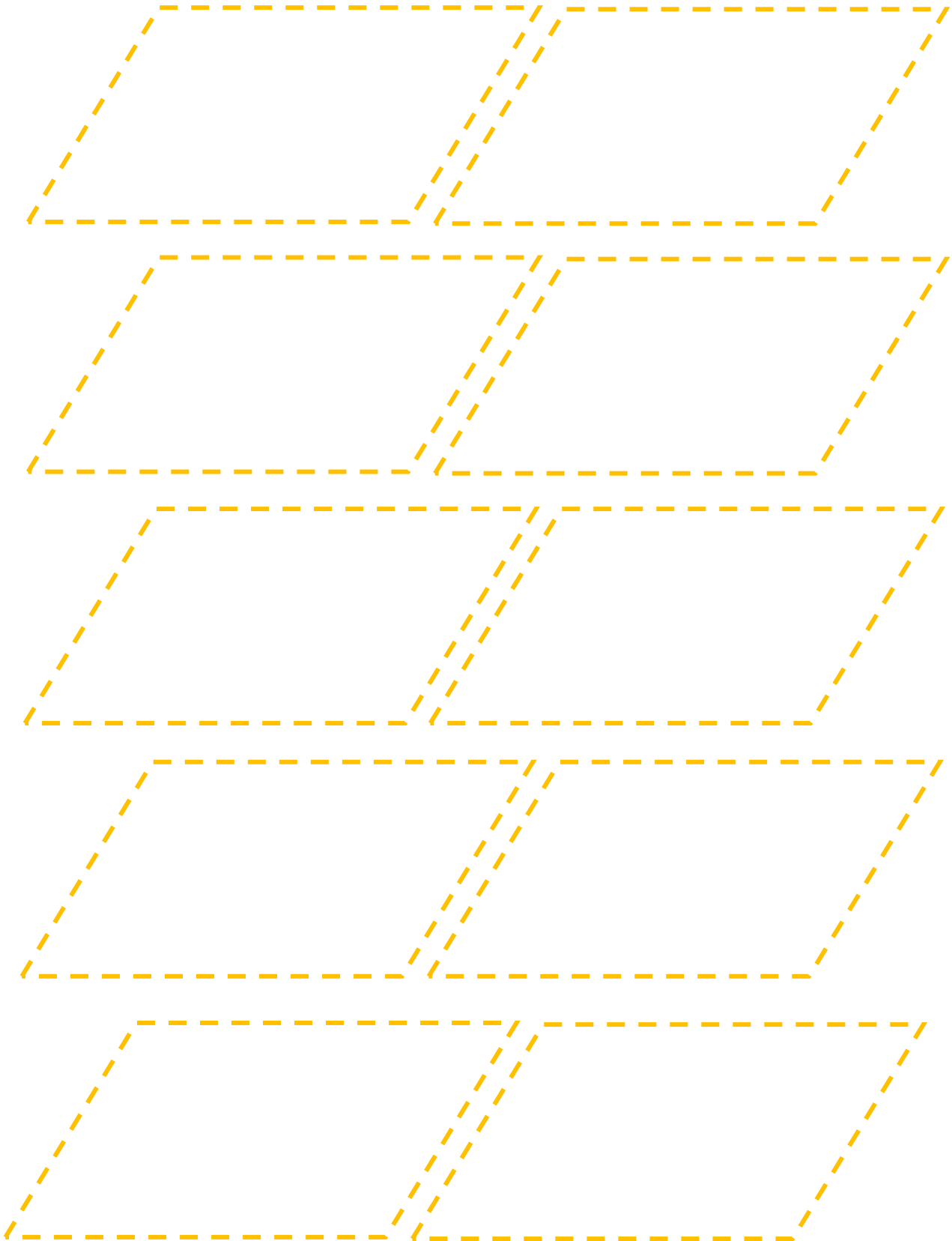
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- b with one straight cut, make a trapezium.
- c with two straight cuts, make a rectangle.
- d with two straight cuts, make a square.



Parallelograms to be printed and used with your class





# Smarties maths

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For this resource each group will need a packet of Smarties to work with, as well as either their maths books or some graph paper. Divide your class into small groups, print out this worksheet and solve the Smartie questions!

## Open your packet of Smarties!

1. How many Smarties are there in a packet? \_\_\_\_\_
2. Next create a tally chart showing how many are brown, green, pink, purple, orange and yellow.
3. Now put this information into a bar graph.
4. What (number) is the mode? \_\_\_\_\_
5. What is the median number? \_\_\_\_\_
6. What is the mean colour of Smarties in each packet? (Remember, add up the total and divide by how many different colours there are.) \_\_\_\_\_
7. There are eight Smarties in a small box. There are 60 children a year group. How many boxes will a teacher need to buy for each child to have five Smarties each?

Show your working out:




# Smarties maths

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## 8. Fractions and percentages

What fraction/percentages of Smarties are brown, green, pink, purple, orange, yellow, red, and blue?

(You may use a calculator if your teacher allows you to!)

	Fraction	Percentage
Brown		
Green		
Pink		
Purple		
Orange		
Yellow		
Red		
Blue		

# Smarties maths

9. Look at this table:

	Likes Smarties	Likes chocolate
Jemima	✓	✓
Thea	X	✓
Tara	✓	X
Annabel	X	X

Complete the diagram using the information from the table.

	Likes Smarties	Doesn't like Smarties
Likes chocolate	Jemima	
Doesn't like chocolate		

# Smarties maths

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10. Each Smartie weighs 1g.

If you have eight pink Smarties for example, then eight Smarties = 8g

Can you calculate the total weight of each colour of Smarties using the information from the tally chart, and then convert the weight from grams to kilograms?

Complete the chart below.

	g (grams)	kg
Brown	8g	0.008kg
Green		
Pink		
Purple		
Orange		
Yellow		
Red		
Blue		