At-Home Investigation

Area is a measure of flat space. Today you will compare the area of the top of your dining table or desk with the area of the mattress on your bed.

Does your mattress or your table have more area?
How many pieces of paper would it take to cover the top of your dining table?
How many pieces of paper would it take to cover the mattress on your bed?
Explain your plan for working it out.

Carry out your plan and explain your findings:
Which one has the greatest area? By how much? How do you know? Draw what you found out on the next page. The boxes are scaled to represent A4 pieces of paper.

Account for difficulties:
How did you account for partial pieces of paper? How did you make sure that your measurements were accurate?

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Problem 21: Tiling a floor

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Tiles come in different shapes and sizes. For this activity you will use the shapes below to tile either the bottom of a cardboard box, or an A4 piece of paper if you don't have a box. You can make the tiles any colour you want, and you can use any pattern you want as long as there are no gaps or overlaps.

Tile options:

4 x 7 cm
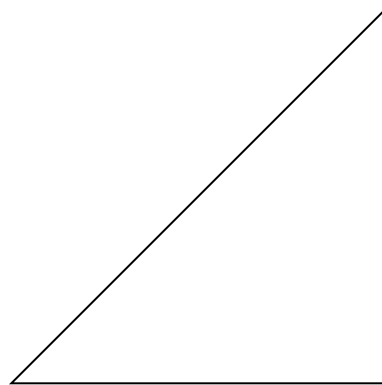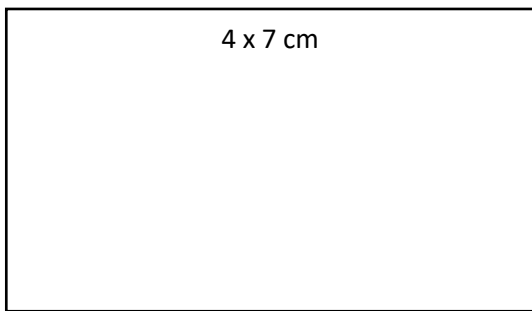
Explain your plan:

Try out your ideas. Use this space to record any problems that you have along the way, and what you do to fix them.

Attach a photo here or draw what you made:
Is there a way that you could use an array to calculate how many of the rectangular or triangular tiles it would take to cover the box?

![illustration] **Understanding and Communicating:**

Describe your tiling pattern: Look at how many tiles you have used in each row.
What patterns can you find? Is there a way that you could work out how many there are without counting them all?

Manipulation problems:
Level 1: You decide to tile the next two floors as well. They are the same shape and size as the floor that you have just tiled. How many tiles do you need now? Explain:

Level 2: Each tile costs 10c. How much money would it cost to tile all three floors? Write a number sentence to explain:

<table>
<tr><td>Teacher initials:</td></tr>
<tr><td>Date:</td></tr>
</table>

Problem solving / T&R:
- Problem solved with minimal or non-mathematical prompting
- Some leading questions were used to prompt thinking
- Solved after explanation
- Did not work out solution
- N/A- not a novel problem

Reasoning / Comm.: (verbal, written, working and equations, or visual representations)
- Clearly and logically reasoned
- Easily understood
- Understood with some interpretation needed
- Some gaps but on topic
- Minimal or off topic

Understanding / Reflect:
- Connected manipulation problems to previous questions and answered easily
- Connected manipulation problems to previous questions with some prompting, and answered correctly
- Answered once the similarities to previous questions had been pointed out
- Had some problems in answers but was on the right track
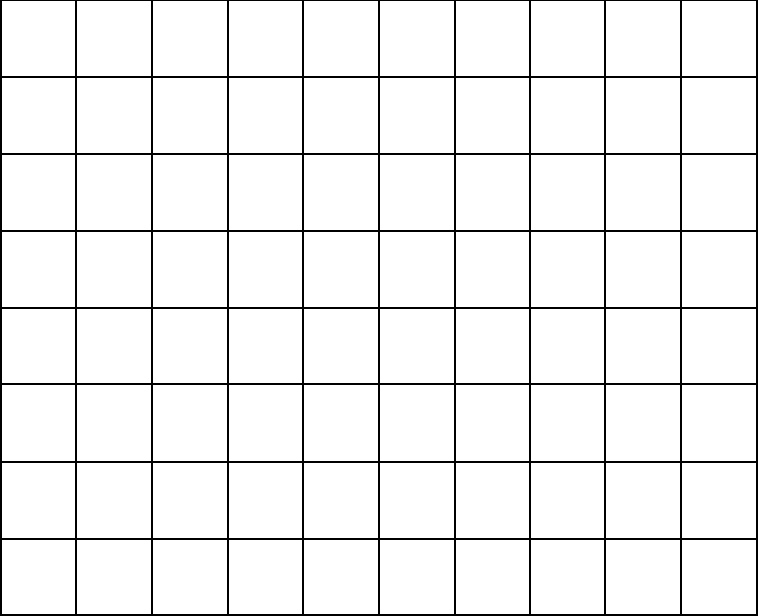- Did not answer appropriately

- Student not observed

| 4 x 7 cm | 4 x 7 cm | 4 x 7 cm | 4 x 7 cm |

| 4 x 7 cm | 4 x 7 cm | 4 x 7 cm | 4 x 7 cm |
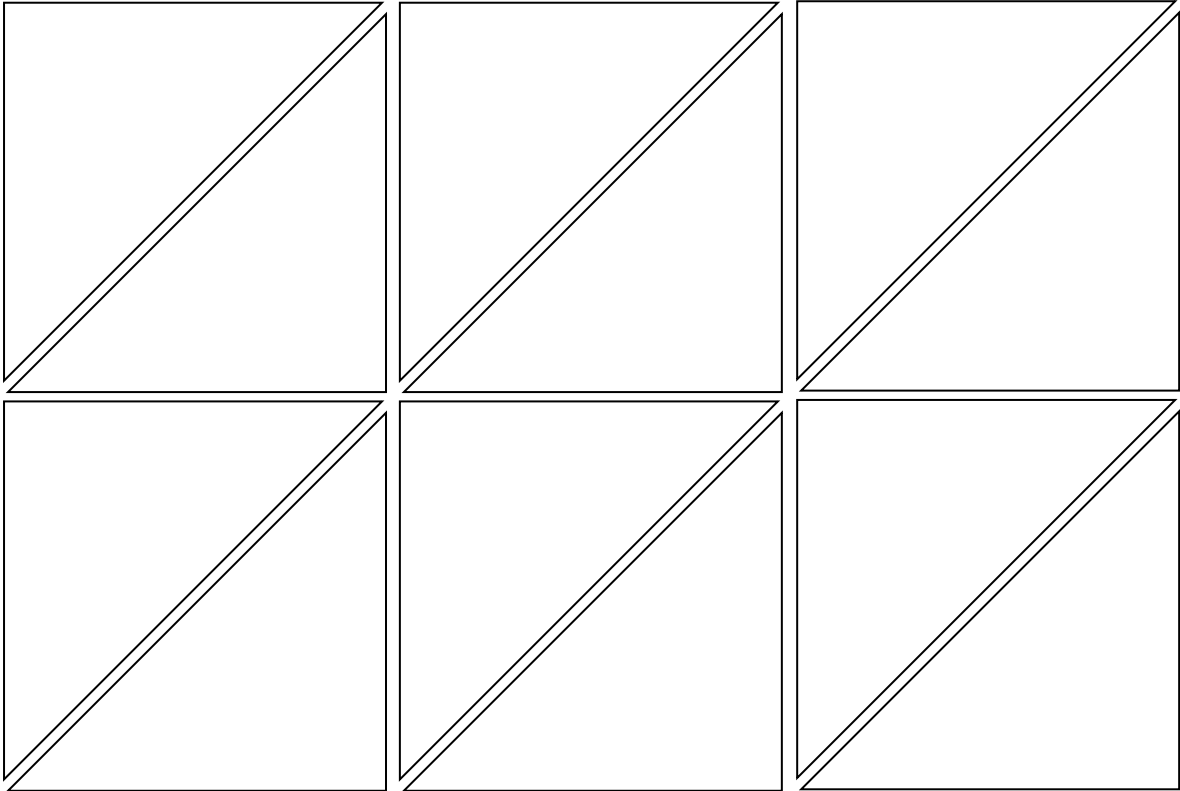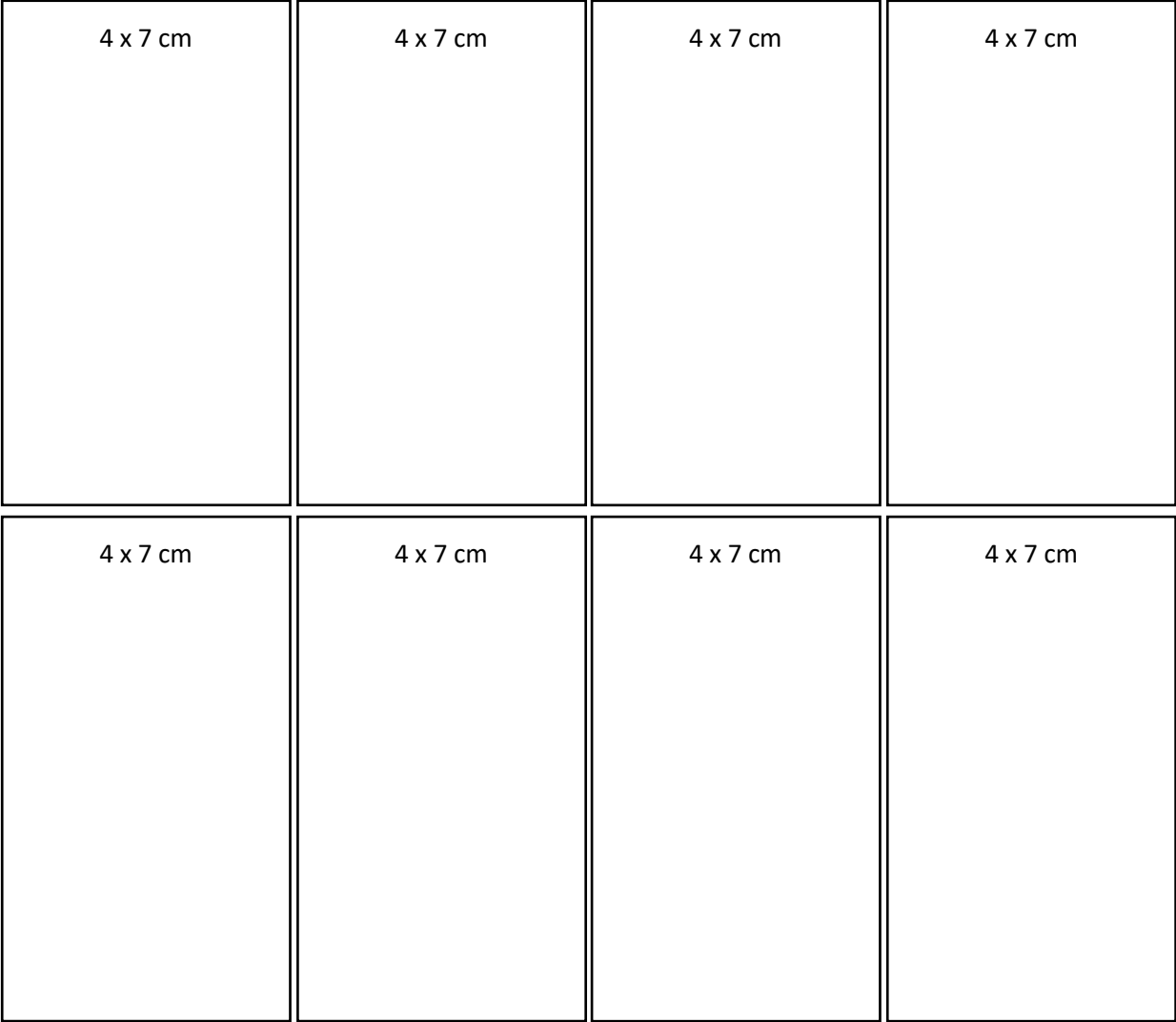
Multiplication and division practice grids:

x	2	3	4	5	6	7	8	9	10
2									
3									
4									
5									
6									
7									
8									
9									
10									

x	4	8	7	2	3	9	10	6	5
2									
3									
4									
5									
6									
7									
8									
9									
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÷									
		16				6			
			21		15				
						8		40	
	20			30					
			42						54
					35		21		
		64		48					
	36								81
						20		100	

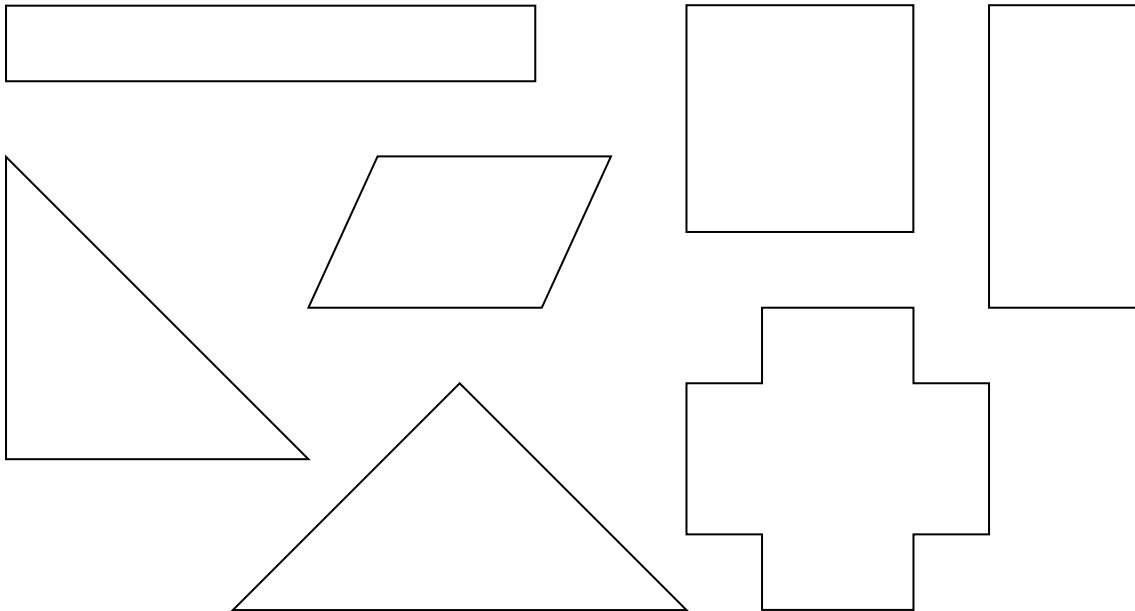| ÷									
		27							30
			6				4		
	40							25	
				24		36			
	56			28					
					63			45	
						60			100
		36					8		
			48		56				

Shapes to cut out:
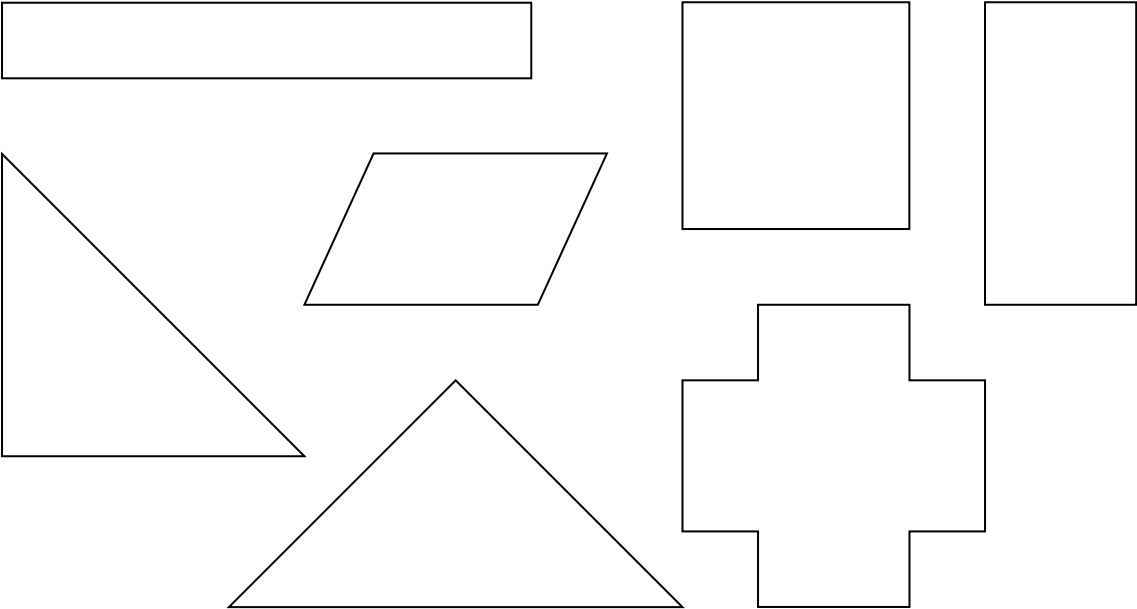
E7. Measure area in square m and square cm

TR p101

| The area of something means how much flat space it takes up. Answer the questions below.

1. How could you use the grid provided to measure the area of small things? Explain how:

2. Estimate first, then measure the area of the following shapes using your grid.

Optional extension task:
Do any of the rooms in your house have tiles, or have a rectangular/square pattern? If so, write the name of the room and the number of tiles/squares/rectangles. How did you work it out?

Interleaved practise

Year 4, week 5

Number:

1. Write the next 5 numbers for this pattern and describe the pattern.

   9, 18, 27, 36, 45, _____, _____, _____, _____, _____

2. Place the numbers from 20 to 35 on this chart

Odd numbers	Even numbers

3. Write these numbers in ascending order (smallest to biggest)
   23 405,   23 045,   24 530,   20 345,   24 504
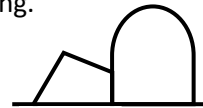
4. 6 x 8 = ____   Show how you worked it out.

5. Show where these fractions would go on the number line: $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{3}$

   0   1
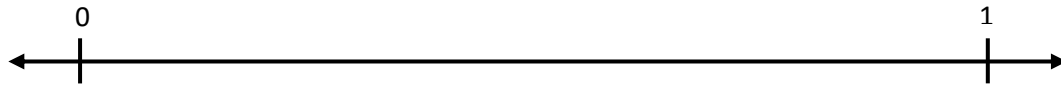
Measurement/Geometry:

6. Draw 2 shapes that have at least one corner that is a right angle

7. This shape has been cut along a line of symmetry. Draw the part of the shape that is missing.

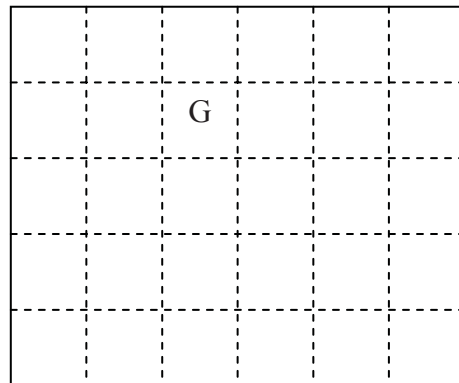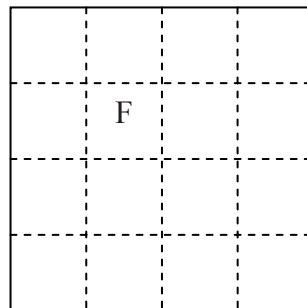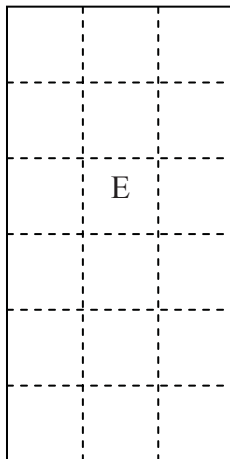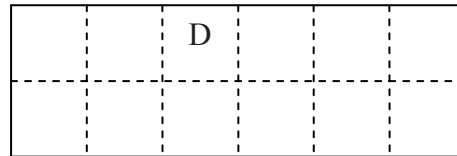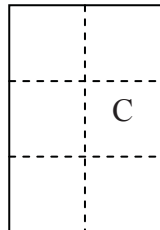8. Draw the hands on the clock to show **23 minutes to 2**
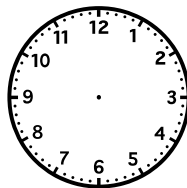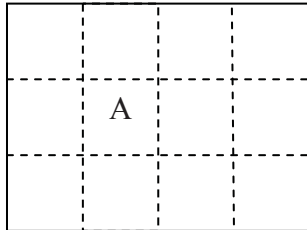
Chance/Data:

9. Think about what might happen tomorrow. List 3 events that are likely to occur and 3 events that are unlikely.

E6. Area of a rectangle

📝 Use the following examples to help you to work out a rule for finding the area of a rectangle.

Rectangle	Base measurement	Height	Area	**What is the rule?**
A				
B				
C				
D				
E				
F				
G				

What is the rule for finding the area of a rectangle?

BACKWARDS QUESTION:

If the area of a rectangle was 12, what could its perimeter be?