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:
Draw what you found out on the next page. The boxes are scaled to represent A4 pieces of paper. Each piece of A4 paper is around 623cm^2. This means that close to 16 pieces of A4 paper is the same as 1m^2. Which one has the greatest area? How do you know?

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

NB: 16 pieces of paper $\cong$ 1m^2 Each box below is scaled to be similar to A4.

Problem 21: Comparing Area and Perimeter

TR p93

Use a loop of string that is 40cm long. What shape can you create with the string that will enclose the largest area? Show how you did it using the grid below.

My shape:

Draw or attach a photograph of the shape that you came up with in the space below.

Calculate the area of your shape:

How many square centimetres does your shape take up? How do you know that this is the largest?

Look for patterns:

When deciding on which shape to use, what did you find about different shapes and the area that they enclose? Fill in the spaces below to explain.

I found that:

Long skinny shapes…

Short fat shapes…

Pointy shapes…

Square shapes…

Round shapes…

So I decided to choose _____ because…

Communicating:

How did you come up with your solution?

Understanding:

Explain why you chose the shape that you did:

Manipulation problem:

If you wanted a shape with the smallest enclosed area and biggest perimeter, what would you choose? Why?

Teacher initials:

Date:

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

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									
10									

÷									
		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				

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E4. Estimating and measuring area in cm²

> ⬚ Estimate the area of these shapes in square cm then calculate the area by counting the squares. Count any two parts of squares as equal to one whole square. Write the estimates and counted areas on the shapes.

A

B

C

D

F

E
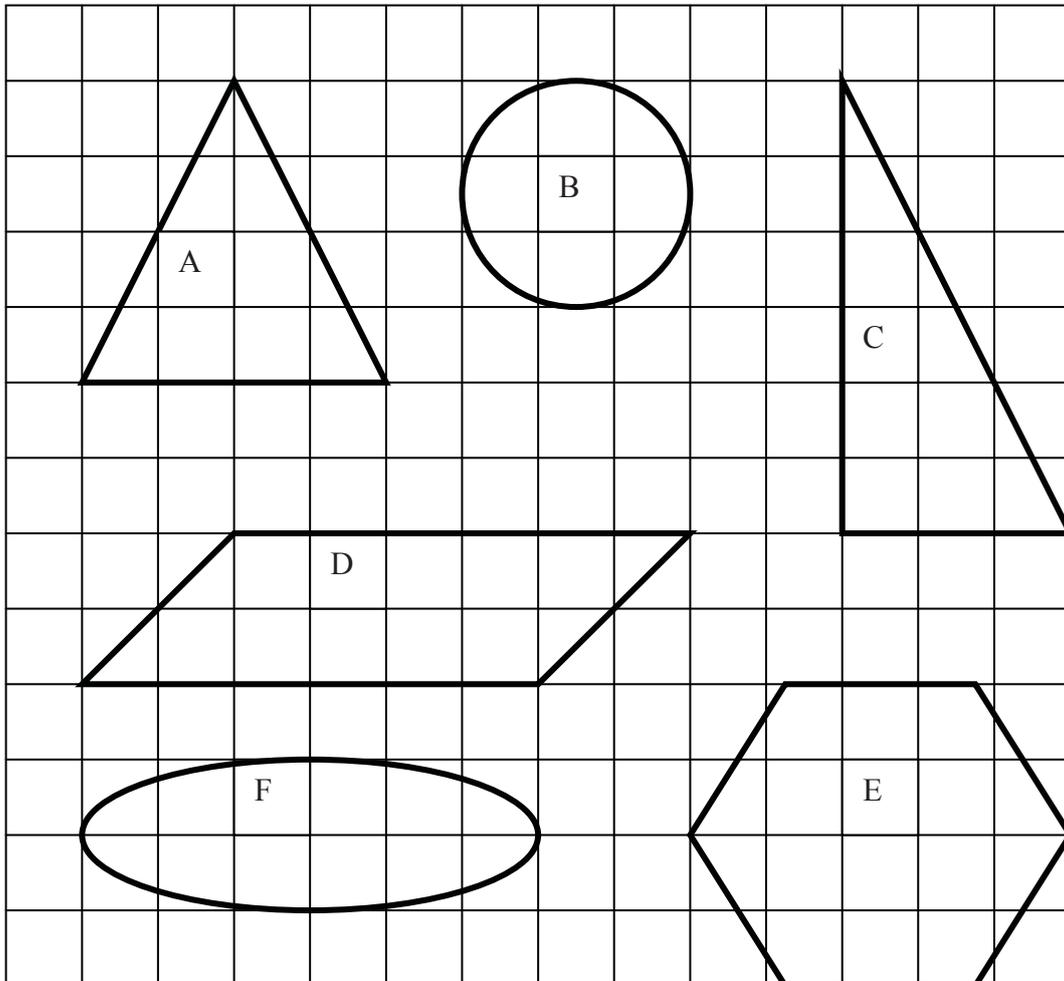
Do you think that this is an accurate way to calculate area? Why or why not?

CHALLENGE: how many different shapes can you draw with an area of 6cm²? Draw them:

Interleaved practise

Year 6, week 5

Number:

1. Write these numbers in ascending order (smallest to largest)

   74.103,   73.41,   73.140,   74.31

2. Find the answer and show how you worked it out.

   4 (623 – 147) = ☐

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

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4. 105 ÷ 6 = ☐   Show your answer in two different ways.

5. 4 and 9 are both square numbers. Find 2 more numbers that are square and 2 that are not square.
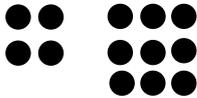

Measurement/Geometry:

6. I have 12 metres of fabric to use to make 4 curtains and cushions for my bedroom. Each curtain requires 2.25 metres of fabric. How much fabric will I have left for my cushions?

7. I want to plant my rectangular garden with shrubs that need a space that is 1m². How many shrubs could I plant? Show where each one would be planted.

   7 metres

   4 metres
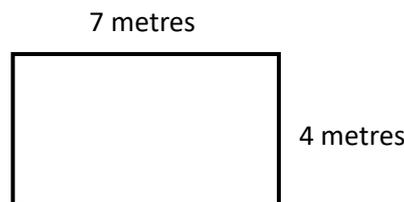
8. How much garden edging will I need to enclose the garden (from question 7)?
   If the edging is sold in 5 metre lengths, how many lengths will I need to buy?

Chance/Data:

9. I can choose to use either one of these two spinners for my next turn in a game.
   a. Which spinner gives me the greatest chance of spinning yellow?
   b. Using this spinner, what percentage chance do I have of spinning a colour other than yellow?

   A   B
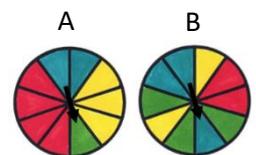
E6. Area of a rectangle

📋 Use the following examples to help you to work out a rule for finding the area of a rectangle.
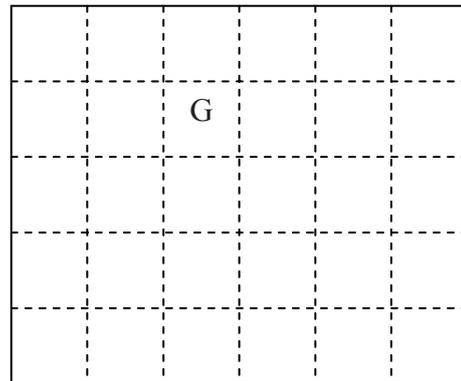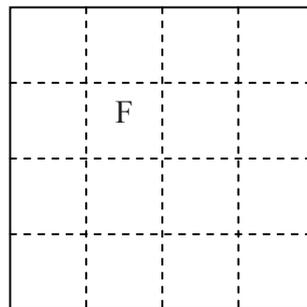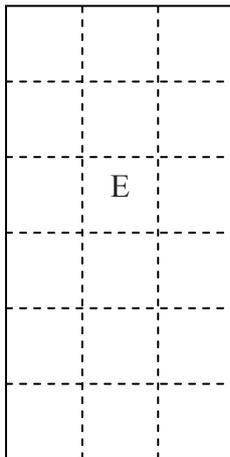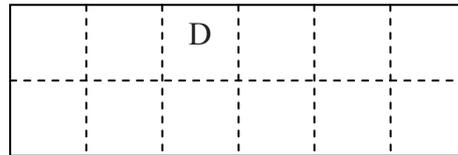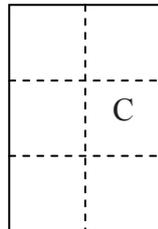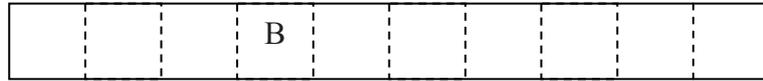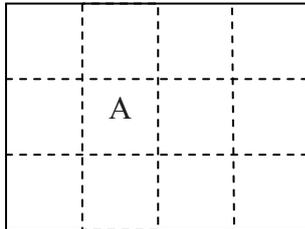
Rectangle	Base measurement	Height	Area	**What is the rule?**
A				
B				
C				
D				
E				
F				
G				

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?