

Examples from books:

- Write and compare calculation plans from Books 5 and 10

How many dots? _____

Write a calculation plan beneath each pattern to show the number of dots.

Write different calculation plans for this dot pattern.

Look at the different grids. In the middle there are calculation plans. Which of the grids and calculation plans tell the same story? Some grids fit with more than one plan, and more than one grid can tell the same story.

Count as little as possible. Use arrows to show your answers.

3×8
 5×4
 2×10
 $2 \times 10 - 1$
 $10 + 10$
 $3 \times 10 + 1$
 $4 \times 4 + 8$
 4×9
 4×6
 $4 \times 4 + 2 \times 4$
 $3 \times 10 - 2$
 3×9

- Use structure to write calculation plans without having to count all of the blocks and look at structure to describe the pattern,
- Apply the brain's tendency to look for patterns (while wondering what is the same and what is different), rather than starting from scratch every time.

Don't count everything. Count in a clever way. Write down your calculation plan every time.

How many blocks are on each grid?

How many blocks on each grid are not white?

Write your answers and calculation plans on the left side of each grid.

Grid A

Grid B

Grid C

How many blocks are there on grids A and B together?

How many blocks are there on all three grids together?

How many dark grey blocks are there on all three grids together?

How many grey blocks are in each pattern?

How many grey and black blocks are in the next pattern?

What stays the same in the four patterns?

What changes?

I think I know what pattern 100 will look like!

Continue.

A: 3 6 9 12

From Books 11 (left) and 8 (above)

- Interesting tasks from Books 9 and 12 that should elicit many mathematics conversations.

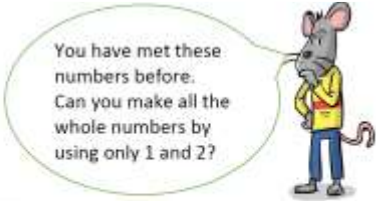
Complete the first two rows of the number block.

Then fill in the following numbers in the correct spaces. Leave the other blocks open.

45 54 63 72 81 90 101 112
123 134 145 156 167 188 199

1	2	3	4						
									200

- $2 = 2$
- $2 \times 2 = 4$
- $2 \times 2 \times 2 = 8$
- $2 \times 2 \times 2 \times 2 = 16$
- $2 \times 2 \times 2 \times 2 \times 2 = 32$
- $2 \times 2 \times 2 \times 2 \times 2 \times 2 = \dots$



These numbers are formed by starting with 2 and continuing to double. Make the numbers below by using only 1 and 2. You can multiply and add.

1 = 1	17 =
2 = 2	18 =
3 = 2 + 1	19 =
4 = 2 x 2	20 =
5 = 2 x 2 + 1	21 = 2 x 2 x 2 + 2 x 2 + 1
6 =	22 =
7 =	23 =
8 =	24 =
9 =	25 =
10 =	26 =
11 =	27 =
12 =	28 =
13 =	29 =
14 =	30 =
15 = 2 x 2 x 2 + 2 x 2 + 2 + 1	31 =
16 =	32 =

- The term “multiple” is introduced in Book 5 and rate of change is investigated in Books 4 and 9.

Write the correct numbers in the grey blocks. Leave all the other blocks blank.

1											10
31											

The numbers you have written in the blocks are multiples of 6. Write down three multiples of 6 that you have not written down above.

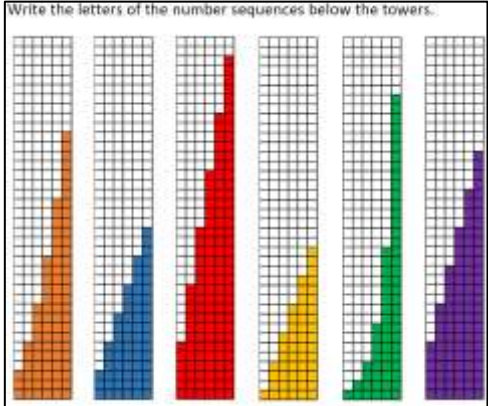
Write the correct numbers in the grey blocks. Leave the other blocks blank. First look at the pattern of the grey blocks.

			4							

These numbers are called multiples of four. Is 32 a multiple of four? ____
Is 34 a multiple of four? ____
Is 100 a multiple of four? ____
Is 50 a multiple of four? ____

Continue with the number sequences A and B.
A: 6 8 10, ...
B: 1 4 7, ...
Draw block towers of the first seven numbers in each sequence. The first two are done already.

On the next page are block towers of the number sequences below. Write the letter of the number sequence (A, B, C, D, E, F) below the correct block tower.
A: 3 6 10 15, ...
B: 3 6 9 12, ...
C: 1 4 7 10, ...



Notice how the towers become more (higher). Two of the towers grow in a way that is different from the way the other four grow. Which two? In what way do these two differ from the others?