Disclaimer

We hope you find the information on our website and resources useful.

Animations

This resource has been designed with animations to make it as fun and engaging as possible. To view the content in the correct formatting, please view the PowerPoint in 'slide show mode'. This takes you from desktop to presentation mode. If you view the slides out of 'slide show mode', you may find that some of the text and images overlap each other and/or are difficult to read.

To enter slide show mode, go to the **slide show menu tab** and select either **from beginning or from current slide**.

Maths

Multiplication and Division

Need a coherently planned sequence of lessons to complement this resource?

Cube Numbers

Aim

- To find cube numbers.

Success Criteria

- I can create cubes using interlocking cubes.
- I can write calculations to make cube numbers.
- I can use the ^{3} notation correctly.

Remember It

Answer the questions below using your knowledge of square numbers!

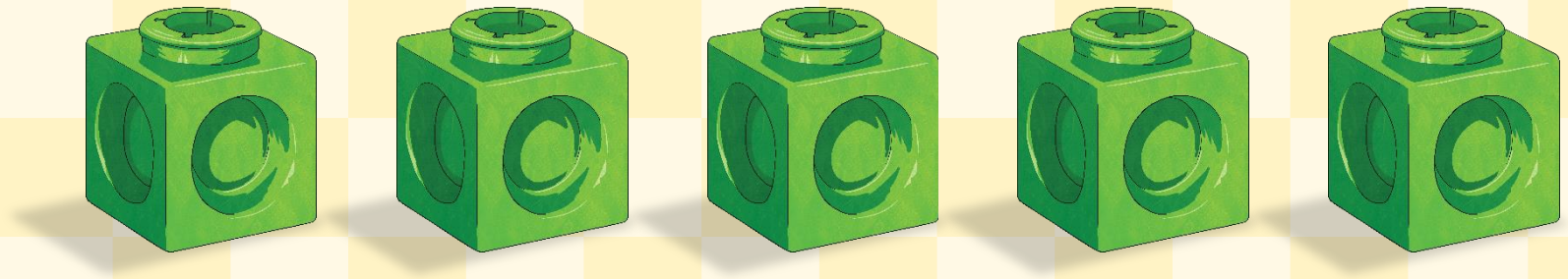
$4^2 =$ 16	What is 3 squared? 9	$10^2 + 2 =$ 102
$15^2 = 15 \times$ 15	$8^2 =$ 64	What is 7 squared? 49
$3^2 + 2^2 =$ 13	$20 \times 20 =$ 20 ^{2}	$5^2 =$ 25

36 is the answer. What could the question be?

How many different mathematical questions, involving the ^{2} notation, can you come up with for this answer?

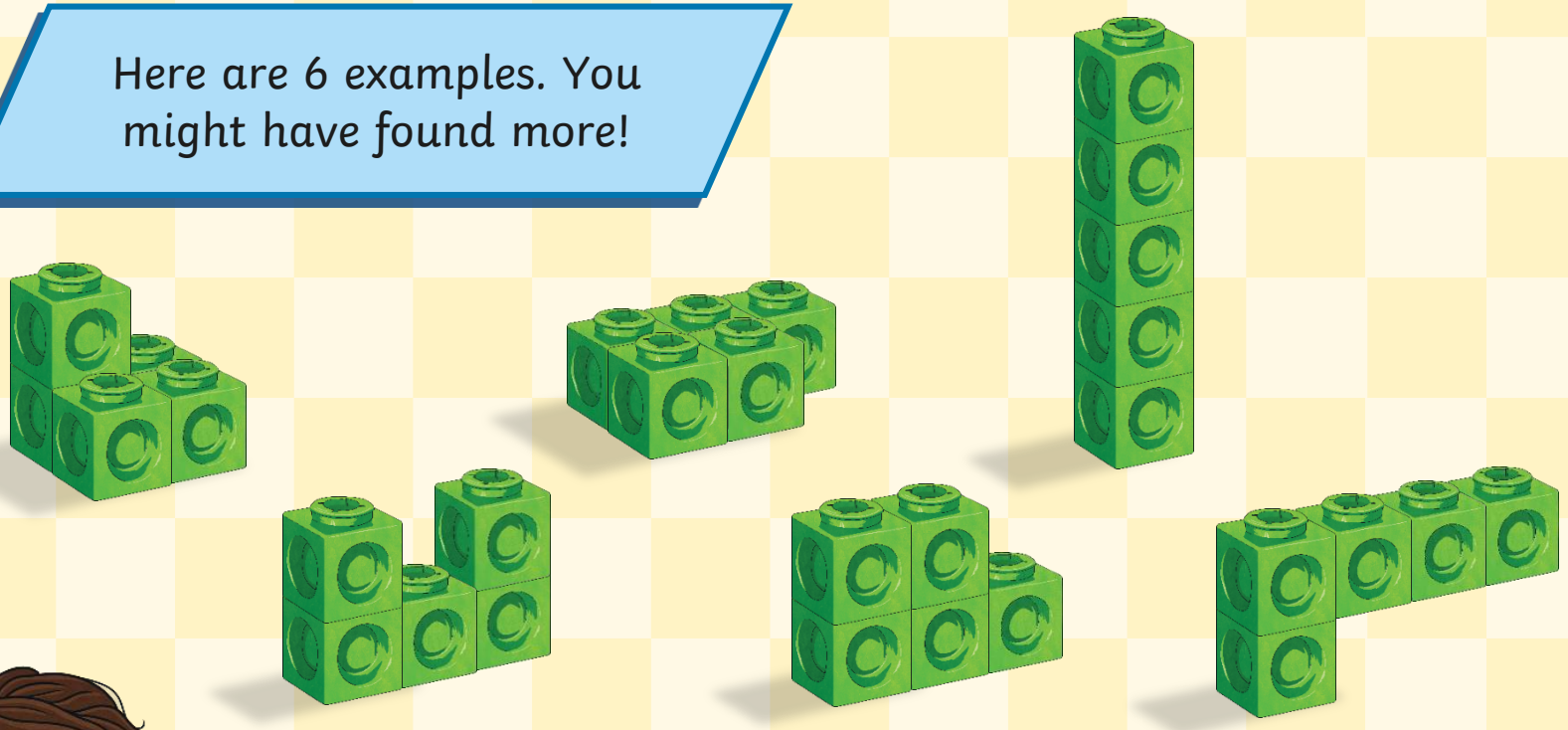
Let's Build!

Here are 5 interlocking cubes.
Is it possible to connect these together to build a complete cube?



It is not possible. Whichever way you build it, you cannot create a complete cube using 5 interlocking cubes.

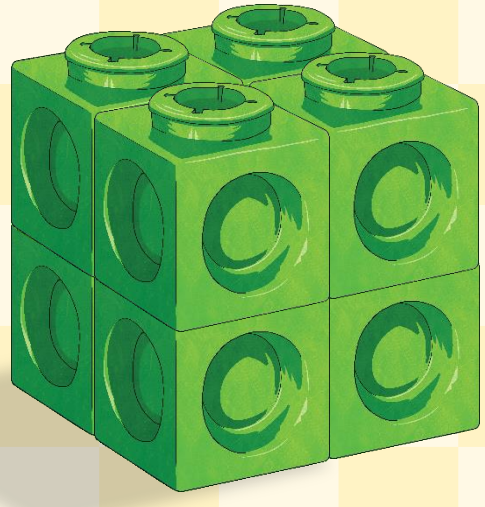
Here are 6 examples. You might have found more!

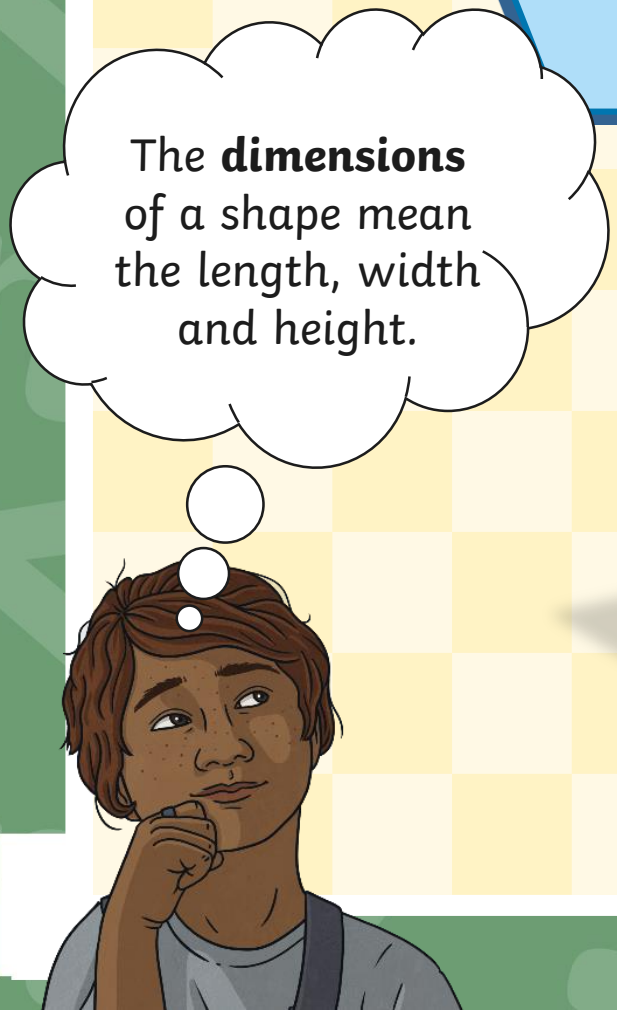


We are close to having a complete cube with one of these models. How many more interlocking cubes do we need in order to build a complete cube?

If we add 3 more cubes to our pile of 5 cubes, we can create a complete cube!

What do you notice about the **dimensions** of the cube?





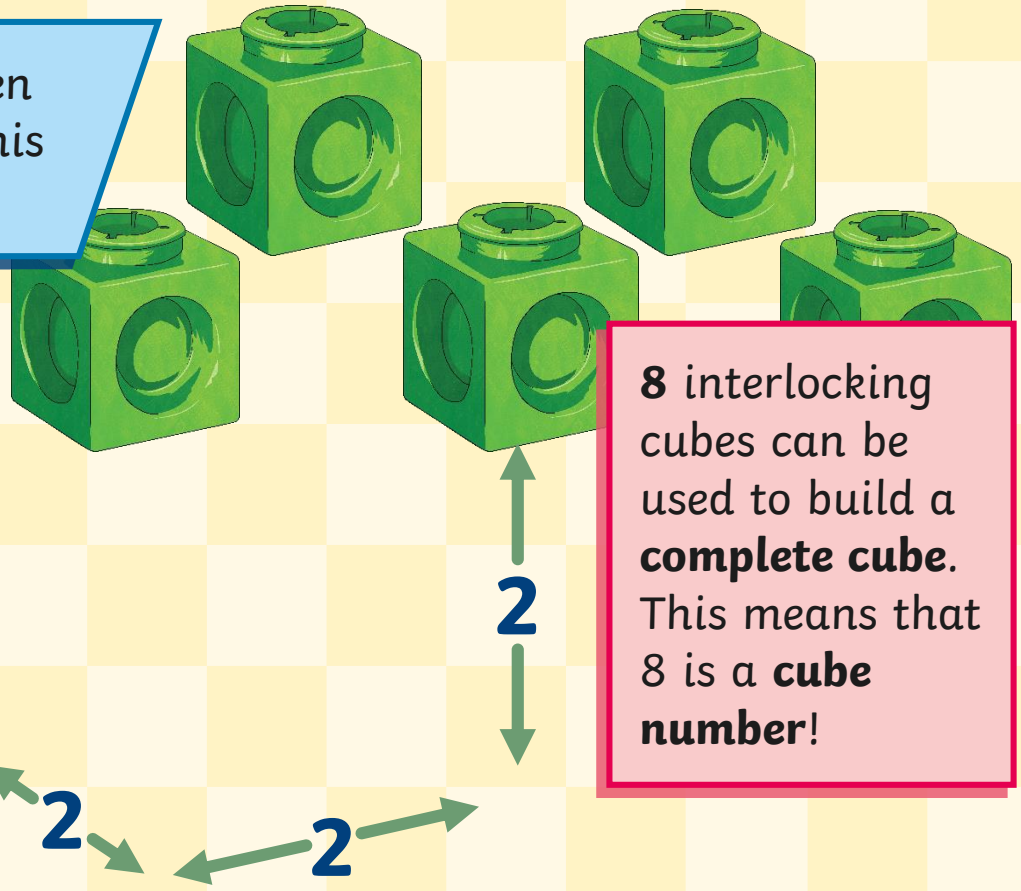
You will notice that the dimensions of the cube are the same if you look at the height, length and width of the image below.

How many cubes have been used altogether to build this complete cube?

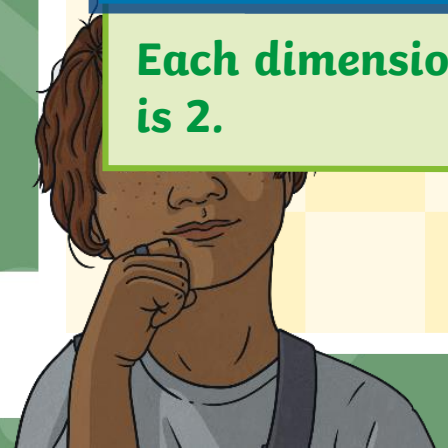
There are 8 cubes used altogether.

What are the dimensions of the cube?

Each dimension is 2.



8 interlocking cubes can be used to build a **complete cube**. This means that 8 is a **cube number**!



Exploring Cube Numbers

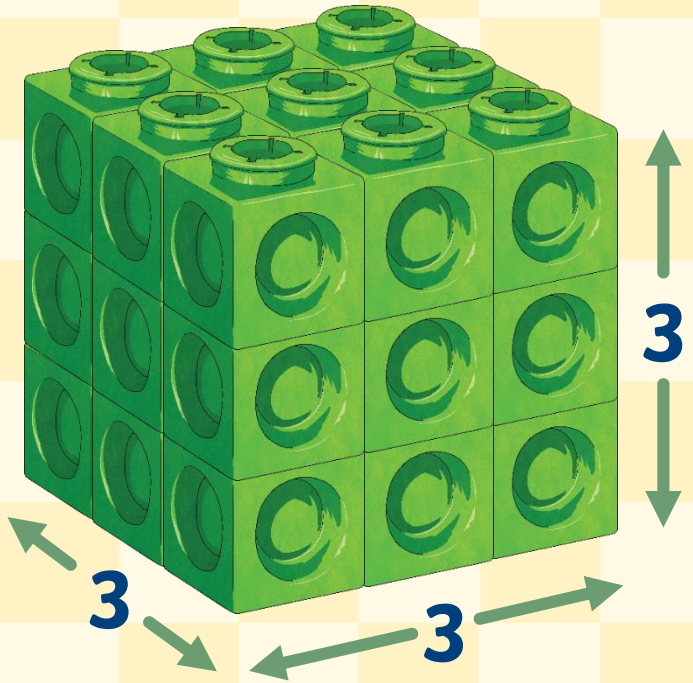
Mathematicians often use tables to organise their findings.
We could use a table to show our working for the cube we have built.

Number of cubes in each dimension	Number of cubes used altogether (the cube number)
2	8

Writing Calculations for Cube Numbers

Let's look at some cubes that you may have built!

Number of cubes in each dimension	Number of cubes used altogether (the cube number)
3	27



How do we write a calculation when we cube a number?

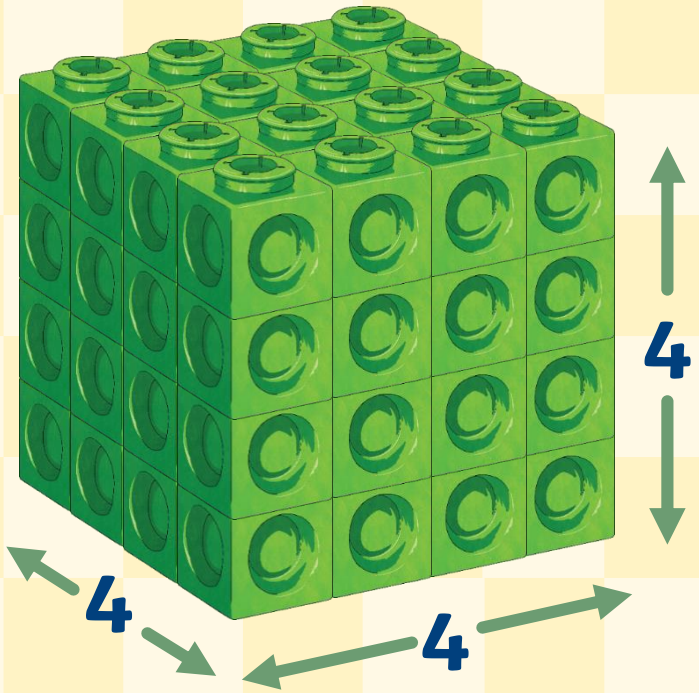
$$\underset{\text{length}}{3} \times \underset{\text{width}}{3} \times \underset{\text{height}}{3} = 27$$

$$9 \times 3 = 27$$

27 is a cube number!

Writing Calculations for Cube Numbers

Number of cubes in each dimension	Number of cubes used altogether (the cube number)
4	64



How do we write a calculation when we cube a number?

4	×	4	×	4	=	64
length		width		height		

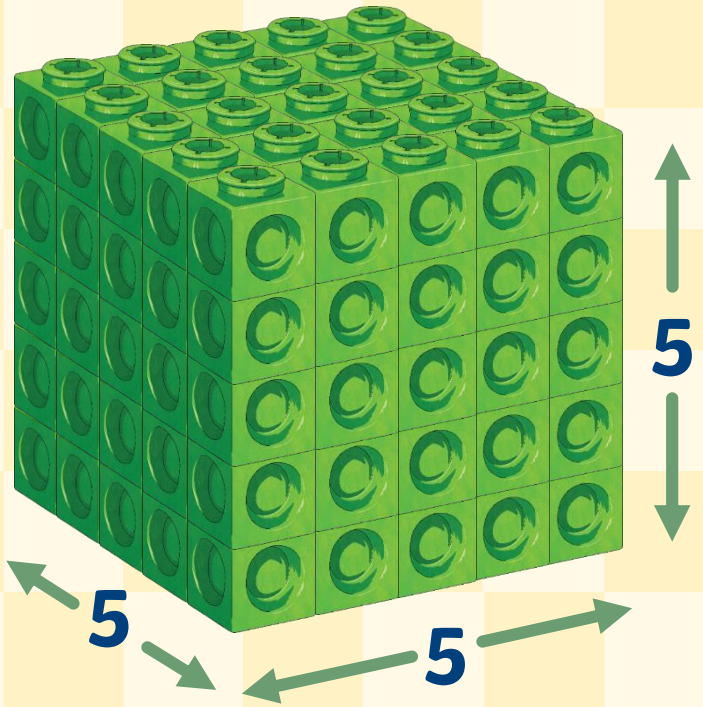
64 is a cube number!

Writing Calculations for Cube Numbers

Number of cubes in each dimension	Number of cubes used altogether (the cube number)
5	125

How do we write a calculation when we cube a number?

$$\underset{\text{length}}{5} \times \underset{\text{width}}{5} \times \underset{\text{height}}{5} = 125$$



125 is a cube number!

Cubing a Number

If a mathematician wanted to square a number, they would use this notation.

10^2

The calculation would look like this:

$10 \times 10 = 100$

Cubing a Number

But, if a mathematician wanted to cube a number, they would use this notation:

10^3

The calculation would look like this:

$10 \times 10 \times 10 = 1000$

What would the calculation look like for the following...?

6^3

$6 \times 6 \times 6 =$

8^3

$8 \times 8 \times 8 =$

9^3

$9 \times 9 \times 9 =$

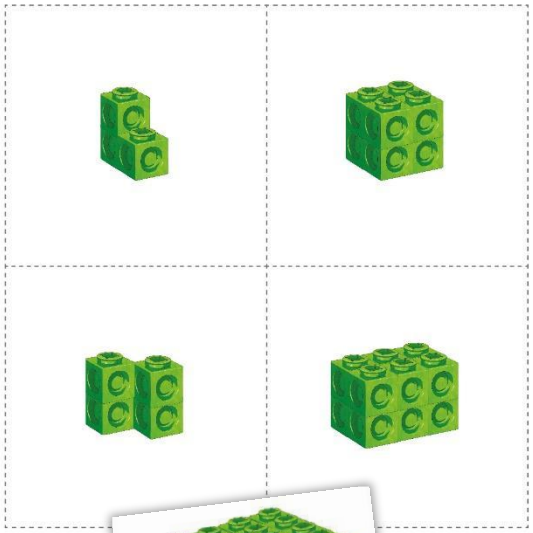
Cube Numbers

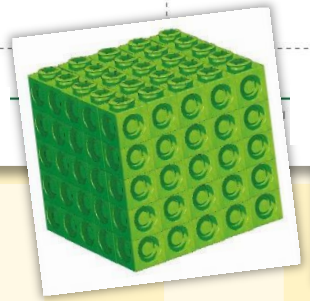
Cube Numbers

To find cube numbers.

Adult Guided Task

Use the activity cards and question prompts to have a discussion about cube numbers.
Consider whether each image is showing a cube number or not and sort them into two piles.
You could use sorting hoops to help you sort.





Cube Numbers

To find cube numbers.

Calculation	Cube Number
1 × 1 × 1	
3 × 3 × 3	27
	64
5 × 5 × 5	
	216

…tements using <, > or =.
…g out in the boxes on the right.

10 - 2	
5 × 5 × 5	
100	
3 cubed	

Cube Numbers

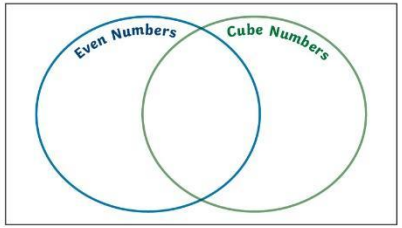
To find cube numbers.

I used this method to solve the first one:
6 × 6 × 6 =
6 × 6 = 36
36 × 6 = 216

Calculation	Cube Number
6 × 6 × 6	216

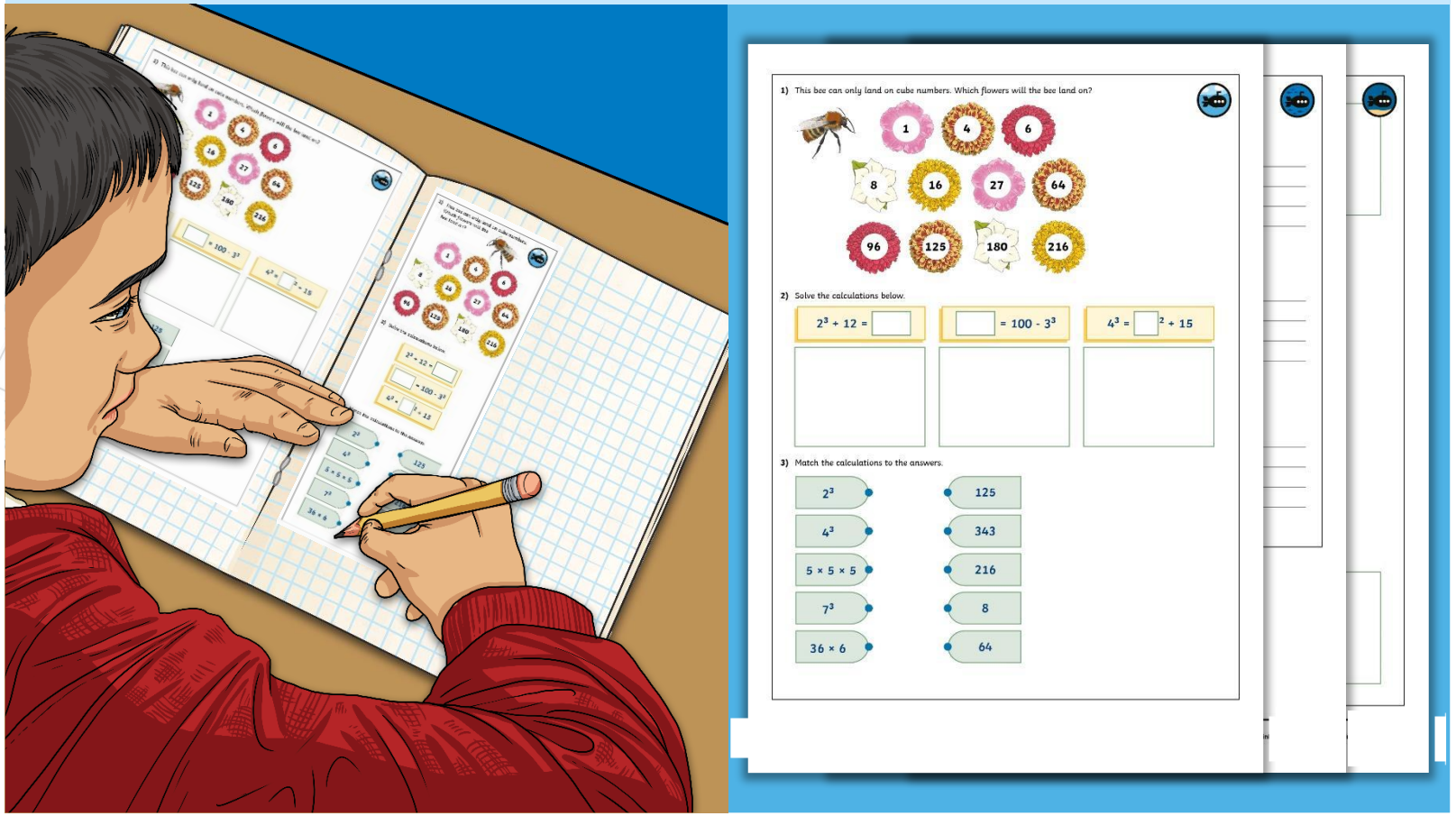
…using the Venn diagram below.

125
216
280
122



Diving into Mastery

Dive in by completing your own activity!



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