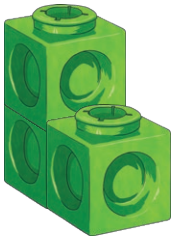
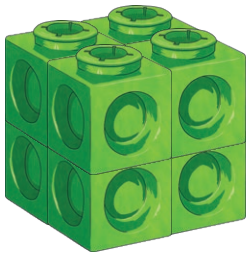
Cube Numbers

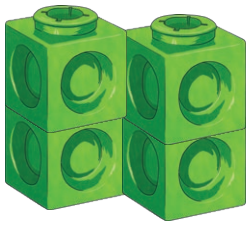
To find cube numbers.

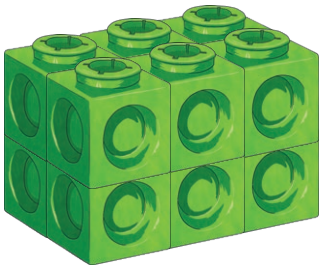
Adult Guided Task

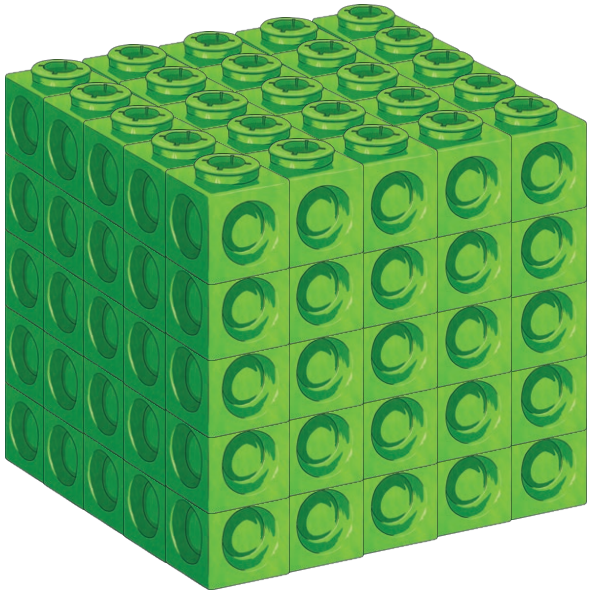
Use the activity cards and question prompts to have a discussion about cube numbers. Consider whether each image is showing a cube number or not and sort them into two piles. You could use sorting hoops to help you sort.

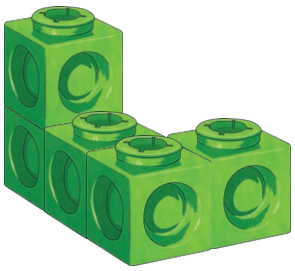


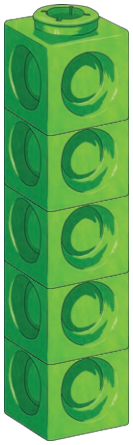


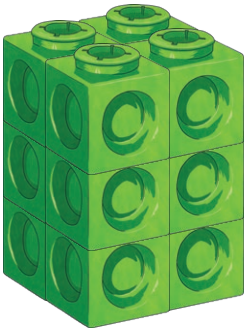


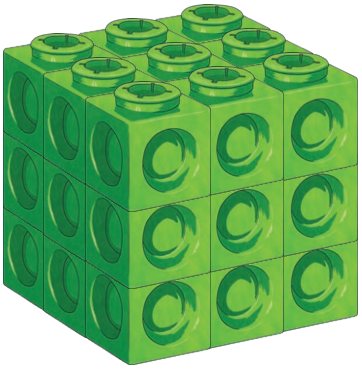


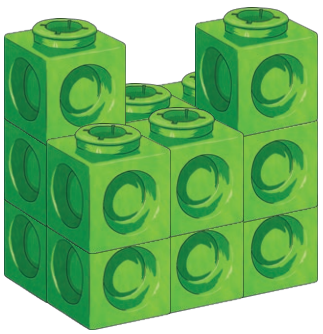


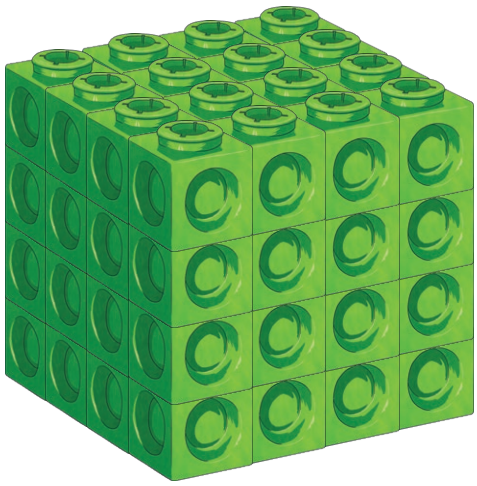


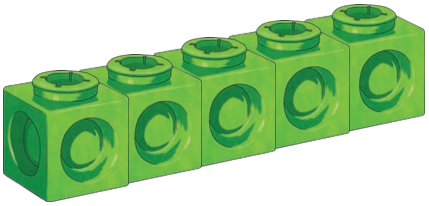












Discussion Prompts

1) Does the shape look complete or incomplete? How can you tell?
2) How many cubes can you count in total?
3) Can you count any dimensions of the shape?
4) Do you think this is a cube number or not? How do you know?
5) (For cube numbers only)
   What calculation would we use to find the cube number for this model?

$\square \times \square \times \square = \square$

Cube Numbers

To find cube numbers.

1) Complete the table.

Cube Notation	Calculation	Cube Number
1^3	1 × 1 × 1	
2^3		
	3 × 3 × 3	27
4^3		64
5^3	5 × 5 × 5	
		216

2) Compare these statements using <, > or =.
Show your working out in the boxes on the right.

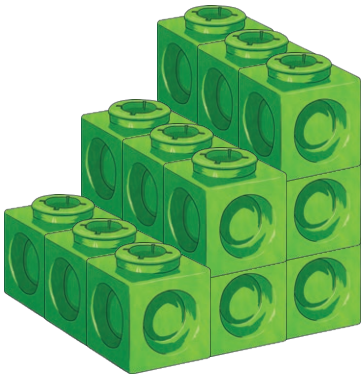
2 cubed ☐ 10 - 2

7 × 7 × 7 ☐ 5 × 5 × 5

10^3 ☐ 100

3 squared ☐ 3 cubed

3) Careful mathematicians like to prove their thinking using resources!
Build the model below using interlocking cubes.
Use the model to complete the maths statements below.



You need to add ☐ more cubes to make this a cube number.

The cube number that this model will then represent is ☐.

Each dimension of this cube is ☐, so the calculation to make this cube number is:

☐ × ☐ × ☐ = ☐

If you add one more cube to each dimension, the calculation and the cube number will become:

☐ × ☐ × ☐ = ☐

Cube Numbers

To find cube numbers.

1) Complete the table.

I used this method to solve the first one:

$6 \times 6 \times 6 =$

$6 \times 6 = 36$

$36 \times 6 = 216$

Cube Notation	Calculation	Cube Number
6^3	$6 \times 6 \times 6$	216
7^3		
8^3		
9^3		
10^3		
11^3		

2) Sort the numbers using the Venn diagram below.

8

27

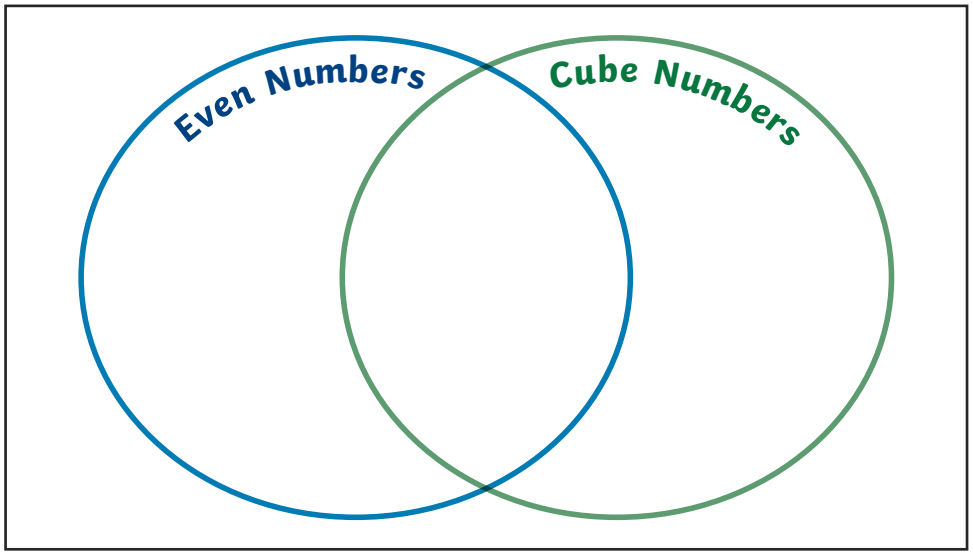
64

122

125

216

280



3) Solve the calculations below. Use the boxes to show your workings.

$4^3 = 54 + \square$

$25 + \square = 3^3$

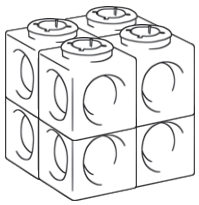
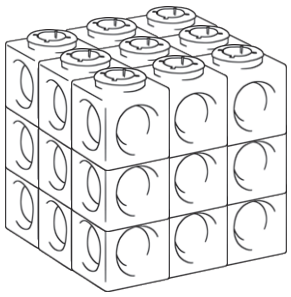
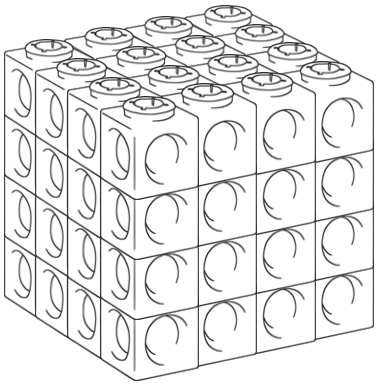
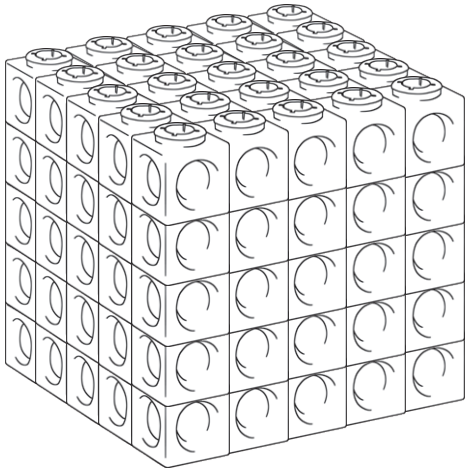
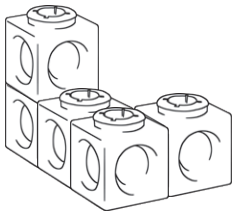
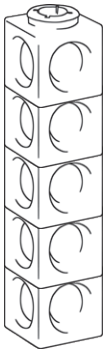
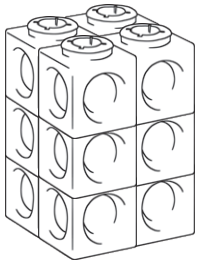
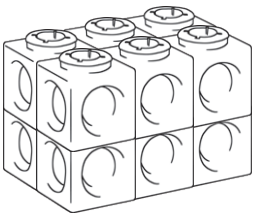
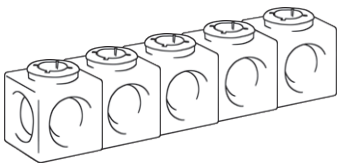
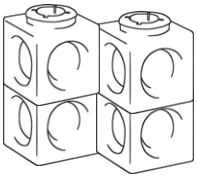
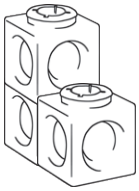
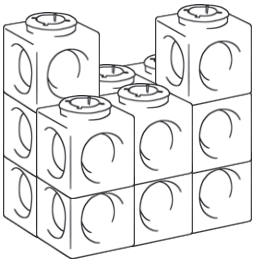
$\square - 25 = 5^3$

$\square^3 - 10^2 = 243$

4)

There is only one 2-digit number that is both a square and a cube number! Can you find it? How could you organise your working?

Cube Numbers **Answers**

Cube Numbers	Not Cube Numbers
   	       

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Cube Numbers **Answers**

1) Complete the table.

Cube Notation	Calculation	Cube Number
1^3	1 × 1 × 1	**1**
2^3	**2 × 2 × 2**	**8**
3^3	3 × 3 × 3	27
4^3	**4 × 4 × 4**	64
5^3	5 × 5 × 5	**125**
6^3	**6 × 6 × 6**	216

2) Compare these statements using <, > or =.
Show your working out in the boxes on the right.

2 cubed **=** 10 - 2

2 × 2 × 2 = 8
10 - 2 = 8
8 = 8

7 × 7 × 7 **>** 5 × 5 × 5

7 × 7 × 7 = 343
5 × 5 × 5 = 125
343 > 125

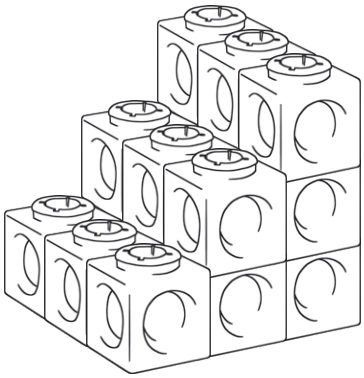
10^3 **>** 100

10 × 10 × 10 = 1000
1000 > 100

3 squared **<** 3 cubed

3 × 3 = 9
3 × 3 × 3 = 27
9 < 27

3) Use the model to complete the maths statements below.



You need to add **9** more cubes to make this a cube number.

The cube number that this model will then represent is **27**.

Each dimension of this cube is **3**, so the calculation to make this cube number is:

3 × **3** × **3** = **27**

If you add one more cube to each dimension, the calculation and the cube number will become:

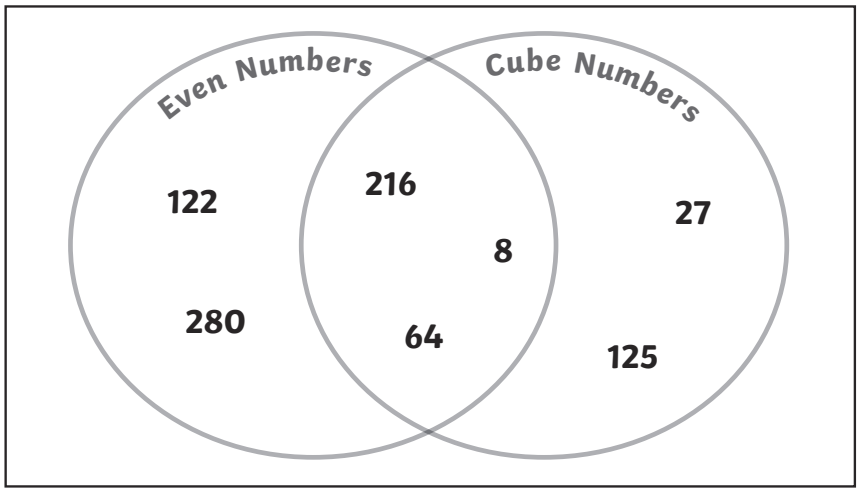
4 × **4** × **4** = **64**

Cube Numbers **Answers**

1) Complete the table.

Cube Notation	Calculation	Cube Number
6^3	6 × 6 × 6	216
7^3	**7 × 7 × 7**	**343**
8^3	**8 × 8 × 8**	**512**
9^3	**9 × 9 × 9**	**729**
10^3	**10 × 10 × 10**	**1000**
11^3	**11 × 11 × 11**	**1331**

2) Sort the numbers using the Venn diagram below.



3) Solve the calculations below.

$4^3 = 54 +$ **10**

$25 +$ **2** $= 3^3$

150 $- 25 = 5^3$

7 $^3 - 10^2 = 243$

4)

There is only one 2-digit number that is both a square and a cube number! Can you find it? How could you organise your working?

The answer is 64.

A systematic way of working out the answer would be to list all the two-digit square numbers and cube numbers. Then, compare both lists to find which number occurs twice.

Two-digit square numbers: 16, 25, 36, 49, (64) and 81

Two-digit cube numbers: 27, (64)