

## *How does knowing square numbers help us solve cube numbers?*

### Brief overview

There is a powerpoint (Cube It) with teaching slides to support this work – on slide 7 it mention activities which are found below.

Page 2 is for all pupils

Pages 3 – 5 show different levels of challenge. Questions gradually get harder as they move through the pages. Children do not need to complete all levels and may choose to start on page 4 or 5 if they wish.

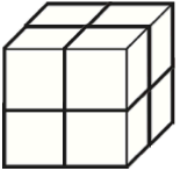
Mastery documents – dive into mastery –select appropriate challenge

## Cube Numbers

The product of multiplying a digit by itself three times.

Can be illustrated as a cube, e.g.

$$2^3 = 2 \text{ cubed} = 2 \times 2 \times 2 = 8$$



B. Complete the table.

$1^3$	$1 \times 1 \times 1$	1
$2^3$	$2 \times 2 \times 2$	
$3^3$		27
	$4 \times 4 \times 4$	64
$5^3$	$5 \times 5 \times 5$	
$6^3$	$6 \times 6 \times 6$	
		343
$8^3$		512
	$9 \times 9 \times 9$	729
$10^3$		

Use a written method to help you, like this:

$$\begin{array}{r}
 12^3 = 12 \times 12 \times 12 \\
 12 \times 12 = 144 \\
 144 \times 12 = 1728
 \end{array}$$

$$\begin{array}{r}
 \begin{array}{r}
 \text{H} \quad \text{T} \quad \text{U} \\
 1 \quad 4 \quad 4 \\
 \times \quad \quad 1 \quad 2 \\
 \hline
 2 \quad 8 \quad 8 \\
 1 \quad 4 \quad 4 \quad 0 \\
 \hline
 1 \quad 7 \quad 2 \quad 8 \\
 \hline
 1
 \end{array}
 \end{array}$$

## Cube Numbers

### Cube Numbers

1a. Match the numbers to their cube numbers.

$2^3$

1

$1^3$

64

$4^3$

8



VF

2a. Use  $<$ ,  $>$  or  $=$  to complete the statements below.

$5^3$   125

9   $3^3$



VF

3a. Circle the cube numbers.

3

9

8

12

15

6

64

18

21



VF

4a. Solve the calculations.

$3^3 + 1^3 =$

$5^3 - 2^3 =$



VF

1a. Circle the odd one out.

$3^3 + 23$

$4^3 - 14$

$2^3 + 32$

Explain your reasoning.



R

2a. Mo says,



The number 125 is a cube number.

Is he correct? Prove it.



R

3a. Solve the word problem below.

I am thinking of a number.

If I cube my number, then add 7, I get another cube number.

What number am I thinking of?



PS

## Cube Numbers

5a. Match the numbers to their cube numbers.

$6^3$	216
$9^3$	125
$5^3$	729



VF

6a. Use  $<$ ,  $>$  or  $=$  to complete the statements below.

$$7^3 \quad \square \quad 434$$

$$521 \quad \square \quad 8^3$$



VF

7a. Circle the cube numbers.

999      261      1,000

343      344      719

152      303      927



VF

8a. Solve the calculations.

$$8^3 + 2^3 = \square$$

$$11^3 - 4^3 = \square$$



VF

## Cube Numbers

4a. Circle the odd one out.

$$7^3 + 157$$

$$10^3 - 350$$

$$9^3 - 229$$

Explain your reasoning.



R

5a. Ivan says,



The number 1,728 is a cube number.

Is he correct? Prove it.



R

6a. Solve the word problem below.

I am thinking of a number.

If I cube my number, then add 271, I get another cube number.

What number am I thinking of?



PS

## Cube Numbers

9a. Match the calculations to the correct answers.

$$9^3 - 5^2 \quad 1,081$$

$$10^3 + 9^2 \quad 1,712$$

$$12^3 - 4^2 \quad 704$$



VF

10a. Use  $<$ ,  $>$  or  $=$  to complete the statements below.

$$11^3 + 7^2 \quad \square \quad 1,830$$

$$608 \quad \square \quad 9^3 - 11^2$$



VF

11a. Complete the calculations below.

$$8^3 + \underline{\quad}^2 = 593$$

$$\underline{\quad}^3 - 12^2 = 199$$



VF

12a. Solve the calculations.

$$12^3 + 3^3 - 6^2 = \square$$

$$9^3 - 8^2 + 5^3 = \square$$



VF

## Cube Numbers

7a. Circle the odd one out.

$$11^3 - 3^2$$

$$6^3 - 12^2$$

$$2^3 + 8^2$$

Explain your reasoning.



R

8a. Danny says,



The answer to  $12^3 - 12^2$  is a cube number.

Is he correct? Prove it.



R

9a. Solve the word problem below.

I am thinking of a number.

If I cube my number, then add the square number, I get the answer 810.

What number am I thinking of?



PS