

Square and cubed numbers

Watch these clips, read the information and complete any quizzes.

<https://www.bbc.co.uk/bitesize/topics/zyhs7p3/articles/z2ndsrd>

<https://www.bbc.co.uk/bitesize/topics/zyhs34j/articles/zjm48mn#:~:text=Square%20and%20cube%20numbers%20are,the%20volume%20of%20a%20cube.>

Square numbers : The area of a square is calculated by length \times length.

The area of a 1 unit by 1 unit square is $1 \times 1 = 1$

The area of a 4 unit by 4 unit square is $4 \times 4 = 16$

1. Solve these square numbers.

a) $3 \times 3 = 3^2 = \underline{\quad}$

c) $4 \times 4 = 4^2 = \underline{\quad}$

e) $2^2 = \underline{\quad}$

g) $5^2 = \underline{\quad}$

i) $8^2 = \underline{\quad}$

k) $9^2 = \underline{\quad}$

f

2. Use the information you have gathered above to provide evidence for this question.

e.g. 4 is a square number with 3 factors – 1, 2 and 4

Always, Sometimes, Never

A square number has an even number of factors.

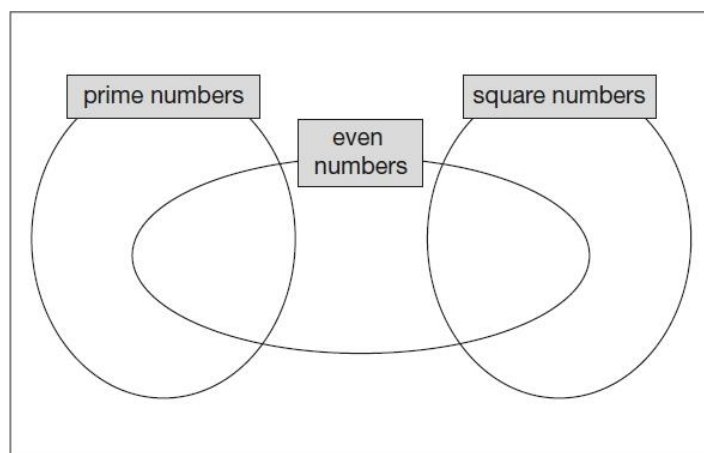
3. Write each number in its correct place on the diagram.

16

17

18

19



Cube numbers : The volume of a cube is calculated by length \times length \times length.

The volume of a 1 unit by 1 unit by 1 unit cube is $1 \times 1 \times 1 = 1$

The volume of a 4 unit by 4 unit by 4 unit cube is $4 \times 4 \times 4 = 64$

4.

Complete the table.

		8
3^3	$3 \times 3 \times 3$	27
4^3		
5^3	$5 \times 5 \times 5$	
	$6 \times 6 \times 6$	

5.

Teddy's age is a cube number.

Next year his age will be a square number.

How old is he now?

Hint: He is a child.

6.

The sum of a cube number and a square number is 150

What are the two numbers?

Hint: Look at the numbers you have already calculated for square and cubed numbers.

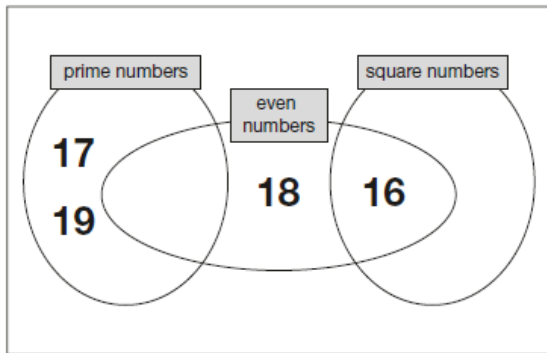
ANSWERS:

1. a) $3 \times 3 = 3^2 = 9$
- c) $4 \times 4 = 4^2 = 16$
- e) $2^2 = 2 \times 2 = 4$
- g) $5 \times 5 = 5^2 = 25$
- i) $8^2 = 64$
- k) $9^2 = 81$

Always, Sometimes, Never

A square number has an even number of factors.

Never. Square numbers have an odd number of factors because one of their factors does not have a pair.



Complete the table.

2^3	$2 \times 2 \times 2$	8
3^3	$3 \times 3 \times 3$	27
4^3	$4 \times 4 \times 4$	64
5^3	$5 \times 5 \times 5$	125
6^3	$6 \times 6 \times 6$	216

Teddy's age is a cube number.

Next year his age will be a square number.

How old is he now?

8 years old

The sum of a cube number and a square number is 150

What are the two numbers?

125 and 25