

# YR5 MULTIPLICATION AND DIVISION KNOWLEDGE ORGANISER

## Key Concepts

- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1000
- recognise and use square numbers and cube numbers, and the notation for squared ( 2 ) and cubed ( 3 )

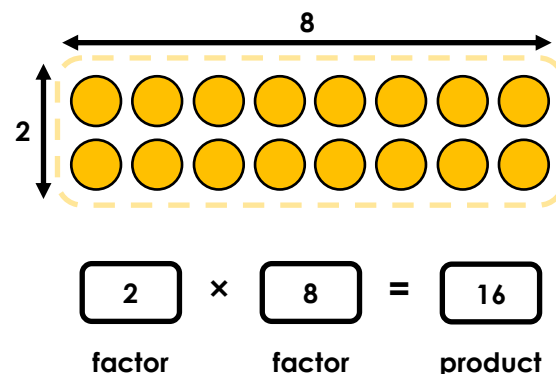
## Key Vocabulary

- factor
- multiple
- common
- prime number
- square number
- squared
- cube number
- cubed

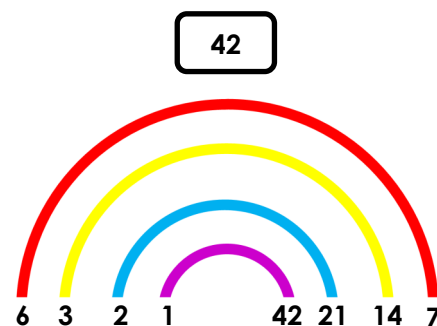


## Factors

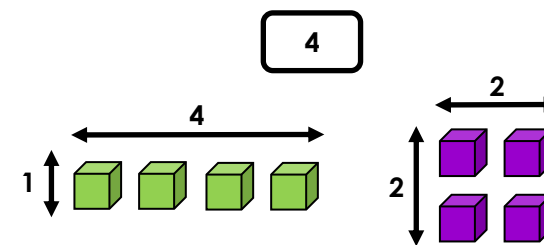
Factors are the numbers that multiply together to make a product.



To find all factors of a given number, it is best to work systematically. Start at one and ask yourself what factor it is paired with to make the product you are requiring. Then, you can try the next logical number for example 2. There are some numbers that will and some numbers that will not be a factor of your product.



When a number is a square number, two of its factors are the same. In the example below, 2 would pair with another 2 to make the product 4. Therefore, the number has an odd number of factors.



The factors of 4 are 1, 2 and 4.

## Common Factors

When we have found all of the factors of at least two different products, we can see if they share some of the same factors. These are called common factors. Here are the factors of two different products. The ticks indicate the ones that 8 and 28 have in common.

Factors of 8	Factors of 28
1 ✓	1 ✓
2 ✓	2 ✓
4 ✓	4 ✓
8	7
	14
	28

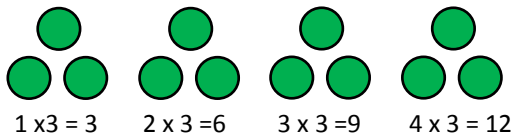
The common factors of 8 and 28 are 1, 2 and 4.



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## Multiples

**Multiples** are the result of multiplying two numbers together. They can be seen as extended times tables.



Multiples of 3 would be 3, 6, 9, 12, 15, 18...

## Prime Numbers

A **prime number** is a number that only has 2 factors – 1 and itself.

5 is a prime number as it can only be divided by 1 and itself. 5 is not in any other times tables.

5



6 is not a prime number as it can be divided by 1 and itself but also by 2 and 3.

6

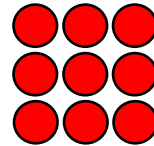


## Square numbers

A square number is a number that has been multiplied by itself. The symbol to show this is  $^2$ .

When square numbers are represented in an array, it forms a square shape.

$$3^2 = 3 \times 3 = 9$$



$$2^2 = 2 \times 2 = 4$$

$$3^2 = 3 \times 3 = 9$$

$$4^2 = 4 \times 4 = 16$$

$$5^2 = 5 \times 5 = 25$$

It's important to remember that  $^2$  doesn't mean 'multiply by 2'.

## Cube numbers

A cube number is a number that has been multiplied by itself then multiplied by itself again. The symbol to show this is  $^3$ .

$$2^3 = 2 \times 2 \times 2 = 8$$

$$3^3 = 3 \times 3 \times 3 = 27$$

$$4^3 = 4 \times 4 \times 4 = 64$$

$$5^3 = 5 \times 5 \times 5 = 125$$

It's important to remember that  $^3$  doesn't mean 'multiply by 3'.

## Multiply and dividing by 10, 100 and 1,000

When a number is multiplied by 10, 100 or 1,000, the digits move to the left in the place value column. The digits move **1 place left** when we multiply by 10, **2 places** to multiply by 100 and **3 places** to multiply by 1,000.

The empty place value spaces are filled with a **0 as a place holder**.

TH	H	T	O
	4	2	3
	100 100 100 00	10 10	1 1 1
100 100 100 00	10 10	1 1 1	0

x10

$$423 \times 10 = 4,230$$

When a number is divided by 10, 100 or 1,000, the digits move to the right in the place value column: **1 place** when dividing by 10, **2 places** to divide by 100 and **3 places** to divide by 1,000.

Look what happens when we divide 7,900 by 10, 100 and 1,000:

TH	H	T	O	.	t
7	9	0	0		
	7	9	0		
		7	9		
			7	.	9

÷10  
÷100  
÷1,000

