# MATHS- MULTIPLICATION AND DIVISION

# YEAR 6

## RECAP

- Find factor pairs and common factors.
- Prime numbers to 19.
- Multiply and divide by 10,100 and 1000.
- Find swquared and cubed numbers.

## CRUCIAL KNOWLEDGE

- 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 by 10,100 and 1,000 and explain the effect.
- Know the rules of divisibility for 2, 5, 10, 4, 3 and 9.
- Recognise and use square numbers and cube numbers, and the notation for squared ( 2 ) and cubed (3 ).

## EXTENDED KNOWLEDGE

Apply the rules of divisibility for a range of numbers.

### Prime factors

Prime factors are the factors of a number that are prime numbers.
For example:
The factors of 20 are 1, 2, 4, 5, 10 and 20.
The **prime factors** are 2 and 5.

## KEY VOCABULARY

### Multiples

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

### Prime Numbers

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

### Factors

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

### Square numbers

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

$2^2 = 2 \times 2 = 4$ $3^2 = 3 \times 3 = 9$
$4^2 = 4 \times 4 = 16$ $5^2 = 5 \times 5 = 25$

### 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 $^3$.

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

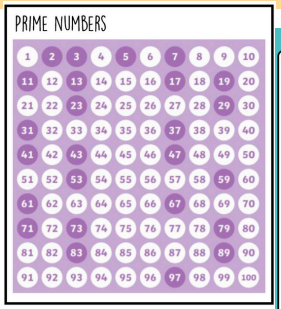
### Multiply and dividing by 10, 100 and 1,000

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.

### Rules of divisibility

Knowing some rules about divisibility can help solve division problems.
A number is divisible by:
2 if the lasts digit is 0, 2, 4, 6 or 8
3 if the sum of the digits is divisible by 3
4 if halving it gives an even number
5 if the last digit is 0 or 5
6 if it is divisible by both 2 and 3
8 if halving it twice gives an even number
9 if the sum of the digits is divisible by 9
10 if the ones digit is 0
A 2-digit number is divisible by 11 if both digits are the same.

| | | |
|---|---|---|
| B | Brackets | $10 \times (4 + 2) = 10 \times 6 = 60$ |
| O | Order | $5 + 2^2 = 5 + 4 = 9$ |
| D | Division | $10 + 6 \div 2 = 10 + 3 = 13$ |
| M | Multiplication | $10 - 4 \times 2 = 10 - 8 = 2$ |
| A | Addition | $10 \times 4 + 7 = 40 + 7 = 47$ |
| S | Subtraction | $10 \div 2 - 3 = 5 - 3 = 2$ |




### Common multiples

Common multiples are numbers that are shared in two or more times-tables.
For example:

**Multiples of 6:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6 | 12 | **18** | 24 | 30 | **36** | 42 | 48 |

**Multiples of 9:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | **18** | 27 | **36** | 45 | 54 | 63 | 72 |

18 and 36 are common multiples of 6 and 9.