



# MULTIPLICATION and DIVISION

Year 5

## KNOWLEDGE ORGANISER



### Overview



#### Multiplication and Division we learn:

- Multiples
- Factors
- Common Factors
- Prime Numbers
- Square Numbers
- Cube Numbers
- Multiply and Divide by 10, 100, and 1,000.
- Multiples of 10, 100 and 1,000.

- Multiply/ divide 4 digits by 1 digit
- Divide with Remainders

Multiplication and Division is useful learning because it is used in many areas of everyday life – e.g. shopping, cooking, or playing games. It also forms the basis for lots of other maths ideas.

MULTIPLICATION  
DIVISION

### Written Multiplication and Division Methods

#### Short Multiplication

$$\begin{array}{r} 6425 \\ \times 7 \\ \hline 44975 \\ 4213 \end{array}$$

-Move regrouped numbers to the next column. After the next multiplication, add the regrouped number.

#### Short Division

$$\begin{array}{r} 845r2 \\ 3 \overline{) 25137} \end{array}$$

Remember to record remainders after the letter 'r'.

#### Long Multiplication

$$\begin{array}{r} 21 \\ 3862 \\ \times 11134 \\ \hline 15448 \\ 115860 \\ 131308 \end{array}$$

-Remember to use the zero as a placeholder before multiplying the 10s.

#### Division

$$\begin{array}{r} 951 \\ 8 \overline{) 7608} \\ \underline{-7200} \\ 408 \\ \underline{-400} \\ 8 \\ \underline{-8} \\ 0 \end{array}$$

$$\begin{array}{r} 684 \\ 6 \overline{) 4107} \\ \underline{-3600} \\ 507 \\ \underline{-480} \\ 27 \\ \underline{-24} \\ 3 \end{array}$$

### Times Tables/ Multiplying & Dividing by 10, 100, 1000/ Squared & Cubed Numbers

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

#### Multiplying and Dividing by 10, 100 and 1000

	10 000	1000	100	10	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

#### Multiplying

X 10  
X 100  
X 1000

digits move LEFT 1 space  
digits move LEFT 2 spaces  
digits move LEFT 3 spaces

#### Dividing

$\div 10$   
 $\div 100$   
 $\div 1000$

digits move RIGHT 1 space  
digits move RIGHT 2 spaces  
digits move RIGHT 3 spaces

$$5 \times 10 = 50 \quad 5 \times 100 = 500 \quad 5 \times 1000 = 5000$$

$$5000 \div 10 = 500 \quad 5000 \div 100 = 50$$

$$5000 \div 1000 = 5$$

#### Squared Numbers

#### Cubed Numbers

$$2^2$$

$$\begin{array}{|c|c|} \hline 1 & 2 \\ \hline 3 & 4 \\ \hline \end{array}$$

$$2 \times 2 = 4$$



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

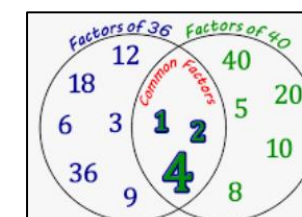
### Factors, Prime Numbers and Related Calculations

**Factors:** A factor is a number that you multiply with another number to get a product. A **product** is the solution to a multiplication problem.

#### Factor Rainbow for 24



The factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24. These numbers can be multiplied with another to make 24.



Common factors are factors of 2 or more numbers. e.g. the common factors of 36 and 40 are 1, 2 and 4.

**Prime Numbers:** Prime numbers can only be divided by itself and 1. There are no other factors.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

#### Related Calculations

$$8 \times 8 = 64$$

$$8 \times 80 = 640$$

$$64 \div 8 = 8$$

$$640 \div 8 = 80$$

### Key Vocabulary

Times Tables

Multiply

Divide

Share

Remainder

Factor

Multiple

Product

Formal Methods

Prime Number