Wheeler Primary School
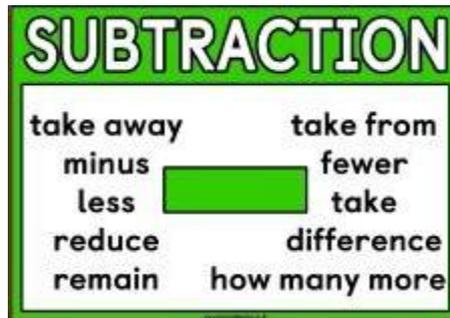
Steps to Success
# for the four operations

Parents' Edition

Key Stage 2

Addition- **Addition** is finding the total, or sum, by combining two or more numbers If you have 2 apples and add 5 you will have 7 apples. Example: 5 + 2 = 7 is an **addition**.

ADDITION

add   increase
plus   more
and   sum
total   together

Subtraction- Taking one number or amount away from another. If you have 5 apples and you **subtract** 2, you are left with 3. The symbol of **subtraction** is – Example: 5 – 2 = 3

SUBTRACTION

take away   take from
minus   fewer
less   take
reduce   difference
remain   how many more

Multiplication- The basic idea of **multiplication** is repeated addition. You can find lots of a given number. For example: 5 lots of 3= 5x3

MULTIPLICATION

multiply   groups of
times   lots of
product   doubled
multiplied   times tables
by
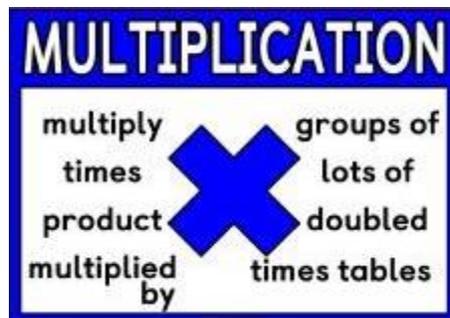
Division- **Division** is splitting into equal parts or groups. It is the result of "fair sharing". Example: there are 12 chocolates, and 3 friends want to share them, how do they divide the chocolates?

DIVISION

divided by   divisible by
share   group
divide   each
divide into   share equally
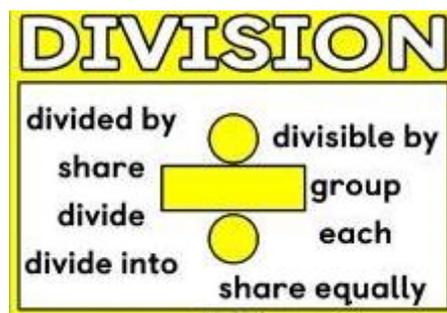
Addition

Column method (without carrying) (Year 3)

```
     5   6
 +   2   3
    ─────────
     7   9
```

1. Write the largest number **on the top**, with the smallest number underneath.

2. Use your knowledge of place value to make sure your hundreds, tens and ones are in the **correct columns**.

3. Add the digits in the **ones column** then put your answer in the ones column, between the answer lines.

4. **Repeat the steps** until you have added the digits in each column.

5. **Check** if you need to include the unit of measurement (e.g. cm, £) in your final answer.

Column method (with the carrying of digits)(All KS2)

```
     3   5   6
 +   1   2   7
    ─────────────
     4   8   3
           1
```

1. Write the **largest number** on the top, with the smallest number underneath.

2. Use your knowledge of **place value** to make sure your digits are in the correct columns.

3. Add the digits in the **ones column**. If your answer is greater than 9, then put your ones digit in the ones column, between the answer lines and **show your carried tens** as a small 1 underneath the bottom answer line in the tens column.

4. **Repeat the steps** until you have added the digits in each column, remembering to add any carried digits.

Subtraction
Column method (without exchange)(Year 3)

```
    5  6
-   2  3
   ────
    3  3
```

1. Write the largest number **on the top**, with the smallest number underneath.

2. Use your knowledge of place value to make sure your hundreds, tens and ones are in the **correct columns**.

3. Subtract the bottom digit in the **ones column** from the top number then put your answer in the ones column, between the answer lines.

4. **Repeat the steps** until you have subtracted the digits in each column.

5. **Check** if you need to include the unit of measurement (e.g. cm, £) in your final answer.

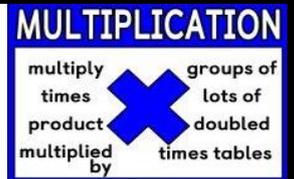Column method (with exchange)(Year 3 onwards)

```
   3 4¹2
  -  1 8
   ────
    2 4
```

1. Write the **largest number** on the top, with the smallest number underneath.

2. Use your knowledge of **place value** to make sure your digits are in the correct columns.

3. Subtract the bottom digit in the **ones column** from the top number. _If the bottom digit is larger than the first digit then we cannot subtract and must exchange from the tens (or next available column if there are no tens)._

4. Show your exchanged digits by **crossing out the tens digit** and writing the number which is one less.

5. **Write the exchanged digit** next to the top number in the ones column to make a teens number.

6. **Repeat the steps** until you have subtracted the digits in each column, exchanging if you need to.

Multiplication
Grid method (Year 3 and 4)

MULTIPLICATION

multiply   groups of
times   lots of
product   doubled
multiplied by   times tables

	20	**3**	
x	160	24	**8**

1. **Partition** the largest number into hundreds, tens and ones.

2. **Draw the grid,** using one square per digit.

3. **Multiply the ones** by the multiplier (single digit).

4. **Repeat** for your tens and <u>hundreds (Year 4 only).</u>

5. Add the answers in your grid together using column addition.

Short multiplication (Year 3 onwards)

$$\begin{array}{r} 23 \\ \times\ 8 \\ \hline 184 \\ \hline 2 \end{array}$$

1. Write the largest number **on the top**, with the smallest number underneath, using your knowledge of place value to make sure each digit is in **the correct column**.

2. **Multiply the ones** by the multiplier (single digit) and write your answer between the answer lines. <u>If your answer is greater than 9, then put your ones digit in the ones column, between the answer lines and</u> **show your carried tens** <u>as a small digit underneath the bottom answer line in the tens column.</u>

3. **Repeat the steps** until you have multiplied each digit in the top number by the multiplier (tens, hundreds, thousands).

4. **Check** if you need to include the unit of measurement (e.g. cm, £) in your final answer.

Long multiplication (Year 5 and 6)

```
      1 2 3
   X    1 8
   ─────────
      9 8 4
     1¹2²3 0
   ─────────
    2 2 1 4
      1 1
```

1. Write the largest number **on the top**, with the smallest number underneath, using your knowledge of place value to make sure each digit is in **the correct column**.

2. **Multiply the ones** digit of the bottom number by the ones digit of the top number. If your answer is greater than 9, then put your ones digit in the ones column, between the answer lines and **show your carried tens** as a small digit underneath the bottom answer line in the tens column.

3. **Repeat the steps** until you have multiplied each digit in the top number by the ones digit of the bottom number, remembering to show carried digits under your answer line.

4. **When multiplying by 10, record a zero as a placeholder and when multiplying by 100, record two zeroes.**

5. **Repeat to multiply each digit by the tens digit in the bottom number.**

6. **Add the two answers** (ones and tens) together using column addition.

7. **Check** if you need to include the unit of measurement (e.g. cm, £) in your final answer.

Division

Chunking (Year 3)

$$
\begin{array}{r}
2\,4 \\
4\,\overline{)\,9\,6} \\
-\quad 4\,0\ (10) \\
\hline
5\,6 \\
-\quad 4\,0\ (10) \\
\hline
1\,6 \\
-\quad 1\,6\ (4) \\
\hline
0
\end{array}
$$

10 + 10 + 4 = 24

1. Draw your bus stop
2. Write the number to be divided (dividend) under the bus stop and the divisor to the left of the bus stop.
3. Take away a multiple of the divisor and write it underneath the dividend. Show how many times the divisor it is in brackets next to it.
4. Repeat until you cannot subtract any more multiples of the divisor.
5. Add the numbers in brackets together to find your answer.
6. Write your answer above the bus stop, lining up your columns.

Short division (Year 3 and 4)

$$
\begin{array}{r}
2\,2\ r\,1 \\
\overline{)\,4\ \ 8\,9}
\end{array}
$$

1. **Draw** your bus stop
2. Write the number to be **divided** (dividend) under the bus stop and the **divisor** to the left of the bus stop.
3. **Divide the first digit** by the divisor, using your multiplication facts to help.
4. Record the answer on the top line. If the number is smaller than the divisor, or you have any remainder, show this as a small digit just to the left of the next digit in the dividend.
5. **Repeat** for each digit in the dividend, remembering to look at **any carried digits**.
6. If you have anything left after dividing the ones column, show this as a **remainder** (r). (Year 3 and 4)

   OR Record any **remainders** appropriate to the context. (Year 5 and 6)
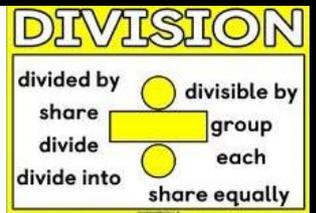
Long division (Year 6)

```
            243 r7
    17 |  4,138
        -  34
           73
        -  68
           58
        -  51
            7
```

1. Find how many of the **divisor** goes into the first digit of the **dividend.**

2. **Record the answer** on the top line.

3. **Multiply** the answer by the divisor.

4. Record the result and **subtract.**

5. **Bring down** the next available digit.

6. **Repeat** steps 1 – 5 until you reach zero or a number smaller than the divisor.

7. Record any **remainders** appropriate to the context.