Place Value vocabulary:
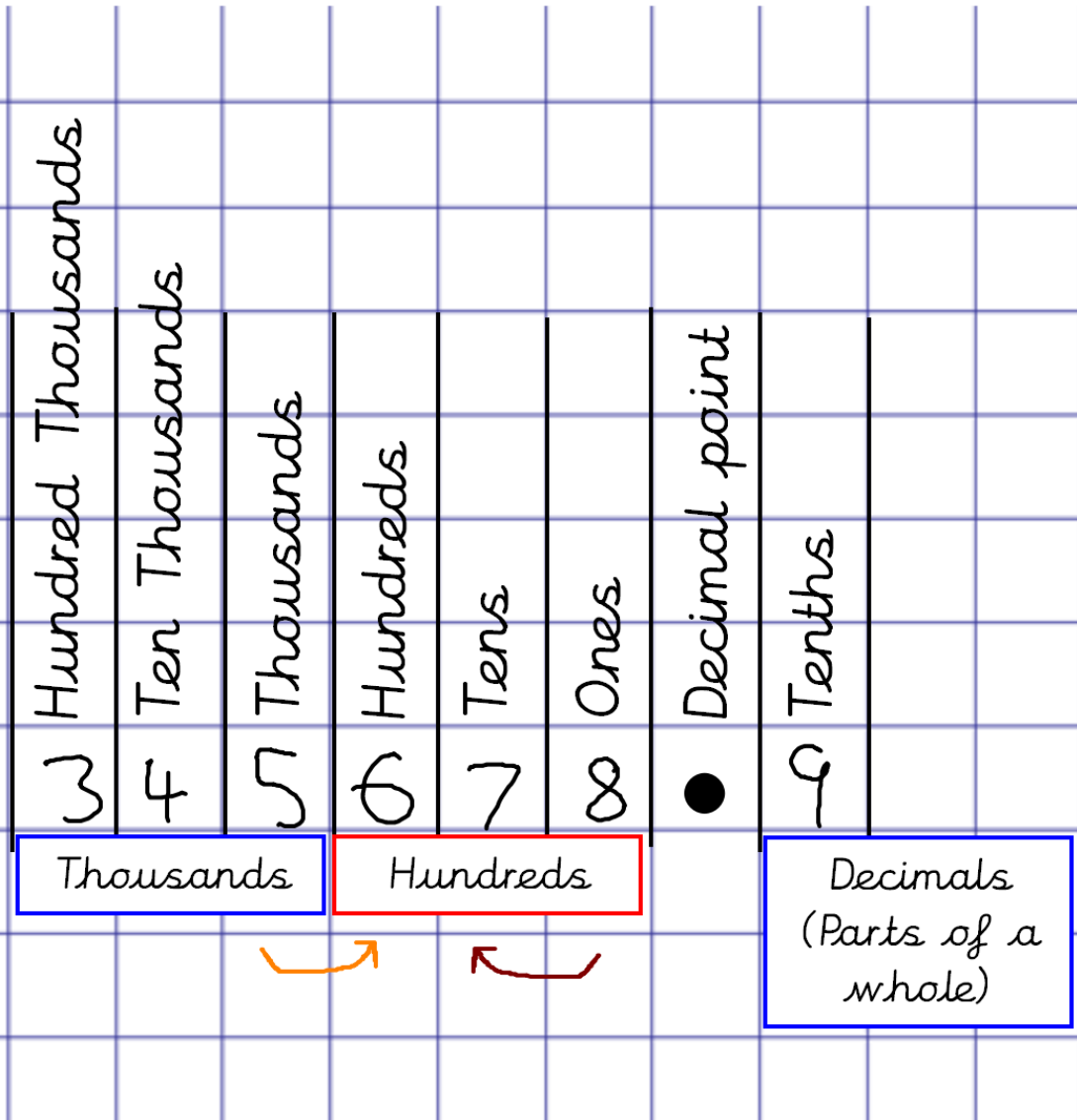
⊖ When we move to the left, we are making the digit 10x larger e.g:
8 x 10 = 80.

⊖ When we move to the right, we are making the digit 10x smaller. e.g:
5000 ÷ 10 = 500.

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Decimal point	Tenths
3	4	5	6	7	8	●	9

Thousands   **Hundreds**   **Decimals (Parts of a whole)**

| 6 | 1 | 3 | 2 |

| 6 | 1 | 3 | 0 |

Rounding (Nearest 10)

| 6 | 1 | 3 | 6 |

| 6 | 1 | 4 | 0 |

| 6 | 1 | 3 | 2 |

| 6 | 1 | 0 | 0 |

Rounding (Nearest 100)

| 6 | 1 | 6 | 2 |

| 6 | 2 | 0 | 0 |

ROUNDING

○ Underline the digit look next door.

○ If it's 5 or greater add one more.

○ If it's less than 5 leave it for sure.

○ Everything after is a zero, not more.

6	1	3	2
6	O	O	O

Rounding
(Nearest 1000)

6	6	3	2
7	O	O	O

ROUNDING

- Underline the digit look next door.
- If it's 5 or greater add one more.
- If it's less than 5 leave it for sure.
- Everything after is a zero, not more.

Addition vocabulary:

Addend + Addend = Total
Addend + Addend = Sum
   5   +   2   =   7

   123   +   27   =   150

Pupils in Year 3 work with numbers up to Ten thousand.
Pupils in Year 4 work with numbers up to One Hundred
   thousand.

Addition
No carrying

```
  3 1 5 6
+   3 3 2
---------
  3 4 8 8
```

- Start on the right, and move to the left.

⊖ Add each digit that is in the same column.

```
        +1          +1
        6   1   3   2
    +       9   1   9
    ─────────────────
        7   0   5   1
```

Addition
With carrying

- Start on the right, and move to the left.

- Add each digit that is in the same column.

○ When your total is above 9, carry the Tens digit into the next column and write it at the top (e.g. 2 + 9 = 11)

Subtraction vocabulary:

Minuend - Subtrahend   = Difference

   5   -   2   =   3

  123   -   27   =   96

Pupils in Year 3 work with numbers up to Ten thousand.
Pupils in Year 4 work with numbers up to One Hundred thousand.

```
    4 6 2 7
  -   5 0 4
  ─────────
    4 1 2 3
```

- Start on the right, and move to the left.

⊖ Subtract each digit that is in the same column.
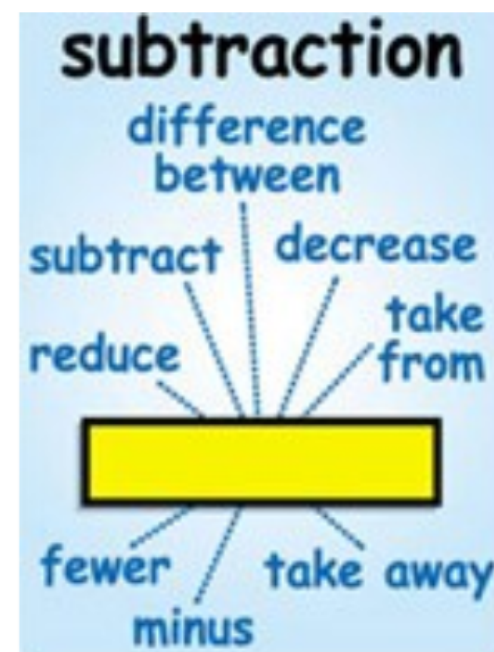
Subtraction With exchanges

$$
\begin{array}{r}
{}^4\cancel{5}\,{}^1\!7\,{}^0\!\cancel{X}\,{}^1\!4 \\
-\;1\;8\;0\;5 \\
\hline
3\;9\;0\;9
\end{array}
$$

- Start on the right, and move to the left.
- Subtract each digit that is in the same column.

⊖ If you cannot subtract (for example, 4-5), move to the next column and exchange by subtracting 1.

⊖ Bring this into your calculation (14-5) and subtract.

```
      4   ⁹   ⁹
      5̸  ¹0̸  ¹0̸  ⁷7
  -       1   2   8
  ─────────────────
      4   8   7   9
```

- Start on the right, and move to the left.
- Subtract each digit that is in the same column.

⊖ If you cannot subtract (for example, 4-5), move to the next column and exchange by subtracting 1. If there is a 0, move to the next column.

⊖ Bring this into your next column, and if needed exchange again until you are at your original column with 0.

Subtraction
With exchanges
across 0
(linked facts)

```
    5  0  0  7
 -     1  2  8
─────────────
    4  8  7  9


    4  9  9  9
       1  2  0
─────────────
    4  8  7  9
```

Subtract 8 from both numbers to make it simpler. Now, we don't have any exchanges.

⊖ Sometimes it may be easier to use linked facts to help with subtraction. Here, we can subtract 8 from both numbers to make the calculation easier.
– Start on the right, and move to the left.
⊖ Subtract each digit that is in the same column.

Multiplication vocabulary:
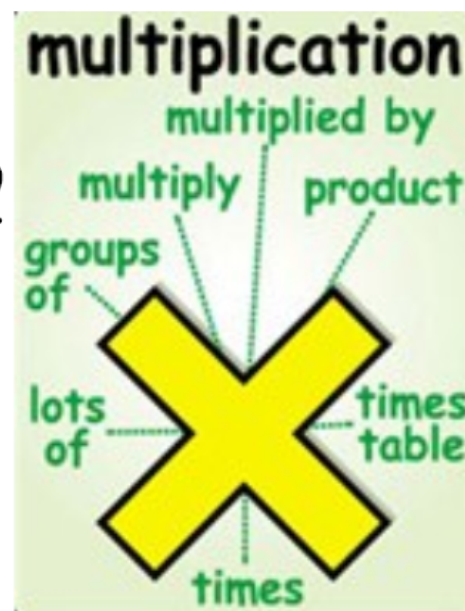
Multiplicand	x	Multiplier	=	Product
Factor	x	Factor	=	Multiple
5	x	2	=	10

56   x   2   =   112

By the end of the year, pupils in Year 3 should know their 0, 1, 2, 5, 10, 4, 8, 3, 6 and 12 times tables facts (multiplication and division).

By the end of the year, pupils in Year 4 should know all of their times tables facts (multiplication and division), up to 12 x 12.

$31 \times 10 =$

$31\ 0$

$31 \times 100 =$

$31\ 0\ 0$

$31 \times 1\ 0\ 0\ 0$

$31\ 0\ 0\ 0$

Multiplication by 10, 100 or 1,000

⊖ Count the number of 0's in 10, 100 or 1,000.

⊖ Move each digit the same number of places to the left.

⊖ Where required, put placeholder 0's in the columns.

$$31 \times 20 =$$

Multiplication using linked facts (multiple of 10)

$$\times 10 \qquad \times 2$$

⊖ Multiplying can be simplified by using knowledge of factors. 2 factors of 20 are '10' and '2'. When we multiply by 10 AND 2, this is the same as multiplying by 20.

$$31 \times 10 = 310$$

⊖ Multiply the number by the first multiplier.

$$310 \times 2 = 620$$

⊖ Multiply the product by the second multiplier.

Multiplication
No carrying

$$1\ 1\ 2\ 3$$
$$\times \quad\quad\ \ 3$$
$$3\ 3\ 6\ 9$$

- Start on the right, and move to the left.
- Multiply each digit by the Ones digit (e.g. 3 × 3 = 9).

Multipication
With carrying

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

- Start on the right, and move to the left.

⊖ Multiply each digit by the Ones digit (e.g. 2 x 4 = 8).

⊖ If your product is above 9, carry the Tens digit to the next column (e.g. 4 x 4 = 16).

⊖ The number that has been carried gets added after your multiplication (e.g. 4 x 3 = 12. 12 + 1 = 13).

Division vocabulary:
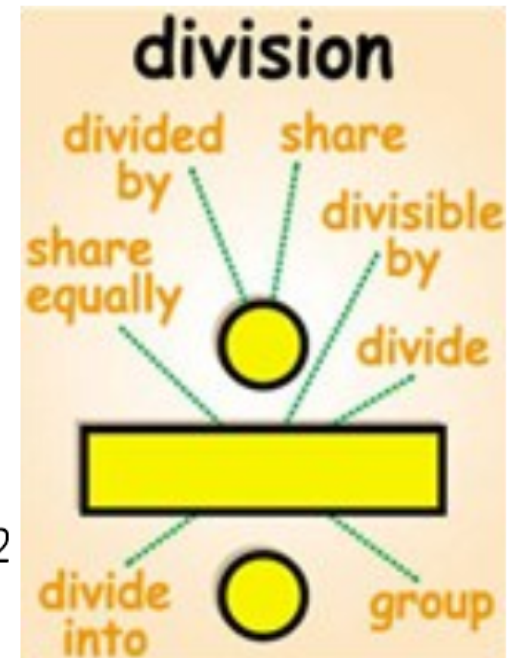
Dividend ÷ Divisor = Quotient

   10   ÷   2   =   5

   56   ÷   2   =   28

By the end of the year, pupils in Year 3 should know their 0, 1, 2, 5, 10, 4, 8, 3, 6 and 12 times tables facts (multiplication and division).
By the end of the year, pupils in Year 4 should know all of their times tables facts (multiplication and division), up to 12 x 12.

$31.0 \div 10 =$

3.10

$31.0 \div 100 =$

0.31

$31.0 \div 1000 =$

0.031

$311 \div 100 =$

3.11

Dividing by 10, 100 or 1,000

⊖ Count the number of 0's in 10, 100 or 1,000.

⊖ Move each digit the same number of places to the right. The decimal point stays in the same place.

⊖ Where required, put a decimal point after your Ones column.

3	
6	
9	
1	2
1	5
1	8
2	1
2	4
2	7
3	0

Short Division
No exchanges

$$3\,\overline{)9\ 0}} \rightarrow 3\ 0$$

- ⊝ Write your times table to assist you.
- Start on the left, and move to the right.
- ⊝ Divide each digit by the divisor (e.g.

$9 \div 3 = 3$)

Please note: Pupils can use EITHER short OR long division to solve questions.

3
6
9

1	2
1	5
1	8
2	1
2	4
2	7
3	0

$$\frac{2\ \ 8}{3\overline{)8\ ^2 4}}$$

Short Division
With exchanges

- Write your times table to assist you.
- Start on the left, and move to the right.
- Divide each digit by the divisor (e.g.

$8 \div 3 = 3$)

- If you cannot divide it exactly, anything remaining gets exchanged to the next column

(e.g. $48 \div 3 = 2$ with 2 remainder)

Please note: Pupils can use EITHER short
OR long division to solve questions.

	4
	8
1	2
1	6
2	0
2	4
2	8
3	2
3	6
4	0

$$4 \overline{)\, 1\,^13 } = 0\ 3\ r\,1$$

- Write your times table to assist you.
- Start on the left, and move to the right.
- Divide each digit by the divisor (e.g.
$1 \div 4 = 0$)

- If you cannot divide it exactly, anything remaining gets exchanged to the next column (e.g. $1 \div 4 = 0$ with 1 remainder)

- If a remainder is left at the end, write this with a 'r' and then the number.

Please note: Pupils can use EITHER short OR long division to solve questions.

$620 \div 20 =$

$\div 10 \qquad \div 2$

$620 \div 10 = 62$

$62 \div 2 = 31$
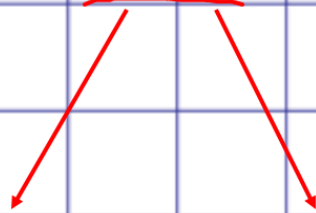
Division using linked facts (multiple of 10)

⊖ Division can sometimes be simplified by using knowledge of factors. 2 factors of 20 are '10' and '2'. When we divide by 10 AND 2, this is the same as dividing by 20.

⊖ Divide the number by the first dividend.

⊖ Divide the product by the second dividend.

3
6
9
12
15
18
21
24
27
30

$$3 \overline{)27}$$
09

$3\overline{)27}$
$-\ 27$
0

$$27 \text{ r}1$$

$3\overline{)82}$
$-\ 6 \downarrow$
22
$-\ 21$
1

Please note: Pupils can use EITHER short
OR long division to solve questions.

⊖ Write your times table to
assist you.

− Move from left to right.
Follow the same method as
short division.

⊖ If the number can be
divided, write the multiple
underneath and subtract it.

⊖ Bring your exchange into
the next column and
continue.

− Any remainders can be
written at the end.
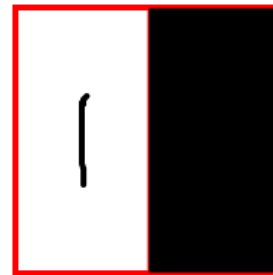
Fraction vocabulary:

$$\frac{1}{2}$$

Numerator
The total number of parts

Denominator
The number of parts that we have.

"I have 1 part. My numerator is 1."

"In total, there are 2 parts. The denominator is 2."

Equivalent
fractions

$$\frac{1}{2} = \frac{?}{4}$$

$$\frac{3}{4} = \frac{15}{?}$$

$$\frac{1}{2} = \frac{}{4}$$

$\times 2$

$\times 5$

$$\frac{3}{4} = \frac{15}{}$$

$\times 2$

$$\frac{1}{2} = \frac{2}{4}$$

$\times 2$

$\times 5$

$$\frac{3}{4} = \frac{15}{20}$$

$\times 5$

⊖ Look at the information that you have been given.

⊖ Find which multiplication fact has been used.

⊖ Multiply the other digit by the same thing.

Simplifying fractions

$$\frac{\textcircled{8}}{\textcircled{1\ 2}} = \frac{?}{?}$$

$$\frac{8}{1\ 2} = \frac{2}{3}$$

with $\div 4$ on numerator and $\div 4$ on denominator

$$\frac{8}{1\ 2} = \frac{4}{6} = \frac{2}{3}$$

with $\div 2$ and $\div 2$ between each step

- ⊖ Look at the information that you have been given.
- ⊖ Find the highest-common factor of the numerator and denominator, e.g.: The highest-common factor of 8 and 12 is 4.
- ⊖ Divide both digits by the highest- common factor.
- ⊖ If you cannot find the highest- common factor, use a common factor and then check if you can simplify further.

$$\frac{1}{6} + \frac{2}{6} = ?$$

Adding Fractions (same denominators)

$$\frac{1}{6} + \frac{2}{6} = \frac{3}{6}$$

- Add the numerators (the top numbers).
- Leave the denomintors (the bottom numbers) the same.

$$\frac{7}{9} - \frac{3}{9} = \frac{?}{?}$$

$$\frac{7}{9} - \frac{3}{9} = \frac{4}{9}$$

Subtracting Fractions (same denominators)

⊖ Subtract the numerators (the top numbers).

⊖ Leave the denomintors (the bottom numbers) the same.