

- **FACTORS** are what divides exactly into a number

e.g. Factors of 12 are:

1	12
2	6
3	4

- **PRIMES** have only TWO factors

e.g. Factors of 7 are 1 and 7

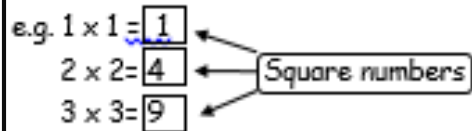
7 is PRIME

- **MULTIPLES** are the times table answers

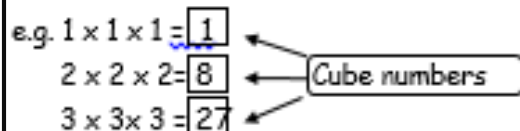
e.g. Multiples of 5 are:

5 10 15 20 25

- **SQUARES** are the result of multiplying a number by itself



- **CUBES** are the result of multiplying a number by itself & itself again



4^2 - we say 4 squared or the square of 4

- It means $4 \times 4 = 16$

2^3 - we say 3 cubed or the cube of 3

- It means $2 \times 2 \times 2 = 8$

3^4 - we say 3 to the power of 4

- It means $3 \times 3 \times 3 \times 3 = 81$

The inverse operation for 'power' is 'root'

$$\sqrt{16} = 4$$

$$\sqrt[3]{8} = 2$$

$$\sqrt[4]{81} = 3$$

There are keys on the calculator to all of these

Lowest Common Multiple

Eg. Find the lowest common multiple of 6 and 8:

The multiples of 6 are 6, 12, 18, **24**, 30...

The multiples of 8 are 8, 16, **24**, 32, 40...

The lowest number in both lists and the lowest common multiple is **24!**

Highest Common Factor

Eg. Find the highest common factor of 12 and 18:

The factors of 12 are 1, 2, 3, 4, **6** and 12

The factors of 18 are 1, 2, 3, **6**, 9 and 18

The highest number in both lists and the lowest common multiple is **6!**

1/2 Multiply by a two digit number (Mathswatch 19)

Try different methods to find which suits you

e.g. 152×34

COLUMN METHOD

$$\begin{array}{r} 152 \\ 34 \times \\ \hline 608 \quad (\times 4) \\ 4560 \quad (\times 30) \\ \hline 5168 \end{array}$$

e.g. 152×34

GRID METHOD

	100	50	2
30	3000	1500	60
4	400	200	8

$$152 \times 34 = 3400 + 1700 + 68 = \underline{5168}$$

e.g. $4928 \div 32$

SHORT DIVISION METHOD

(Except write down some of your tables down first)

$$\begin{array}{r} 32 \\ 64 \\ 96 \\ 128 \\ 160 \\ \hline 32 \overline{)49172} \begin{array}{l} 0154 \\ \underline{49172} \\ 00000 \end{array} \end{array}$$

$$4928 \div 32 = \underline{154}$$

Order of operations (Mathswatch 75)

Bracket

Indices

Divide

Multiply

Add

Subtract

} Do these in the order they appear

} Do these in the order they appear

e.g. $3 + 4 \times 6 - 5 = 22$

↑
first

Decimals (Mathswatch 17,18,66 and 67)

Add & subtract- Line up the decimal points

Multiply - take out decimal point

Multiply

Put decimal point back in

e.g. 3.2×0.4

- 32×4 (remove decimal points)
- 128 (multiply)
- **1.28** (put decimal point back in-2 decimal places)

Divide - make divisor into a whole number

Multiply both numbers

e.g. $2.84 \div 0.2$ (multiply both numbers by 10)

- $28.4 \div 2$
- 14.1

Multiply & divide by 10, 100, 1000

(Mathswatch 30)

- **By moving the digits**

To multiply by 10 move the dp ONE place RIGHT

e.g.
$$\begin{array}{r} 3.52 \times 10 \\ \swarrow \searrow \\ = 35.2 \end{array}$$

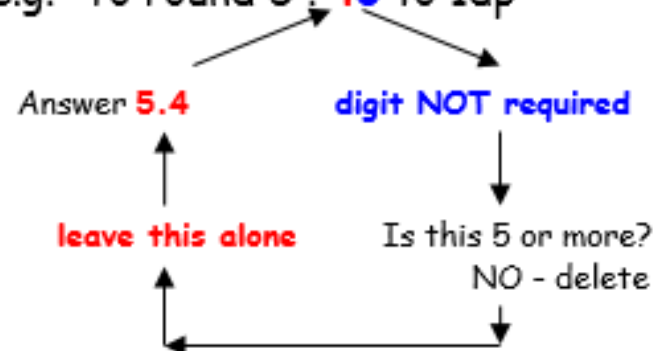
Rounding decimals (Mathswatch 31 and 32)

- Look at the digit required
- Look at the first digit NOT required

e.g. To round 5.**4**7 to 1dp



e.g. To round 5.**4**3 to 1dp



Round to one significant figure

(Mathswatch 90)

These all have ONE significant figure

300

80

2

0.7

0.05

0.003

Estimate answers to calculations

(Mathswatch 91)

- Round each number to 1sf first

$$\text{e.g. } \frac{423}{568} \times \frac{28}{600} = \frac{400}{600} \times \frac{30}{600} = \frac{12000}{600} = 20$$

$$\text{e.g. } \frac{3.26}{0.58} \times \frac{11.8}{0.6} = \frac{3}{0.6} \times \frac{10}{0.6} = \frac{30}{0.6} = \frac{300}{6} = 50$$

$$\text{e.g. } \frac{8.3}{0.49} \times \frac{35.6}{0.5} = \frac{8}{0.5} \times \frac{40}{0.5} = \frac{320}{0.5} = 640$$

($\div 0.5$ = doubling the number being divided)

Numbers can be ordered by looking at the value of each digit

Example:

To order 83 3 87 8 80 78

Tens Units

T U

8 3

0 3

8 7

0 8

8 0

7 8

The order would be;

3 8 78 80 83 87
smallest largest

• **Ordering Decimals**

1.23 m 1.6 m 1.65 m 1.3 m
↓ ↓ ↓ ↓
1.23 m 1.60 m 1.65 m 1.30 m

Make the number of digits the same, it is easier to order them

Smallest $\xrightarrow{\hspace{10em}}$ Largest
1.23 m 1.30 m 1.60 m 1.65 m

Equivalence of fractions and decimals

(Mathswatch 25, 84 and 70)

• **Fractions**

They must have the same denominator

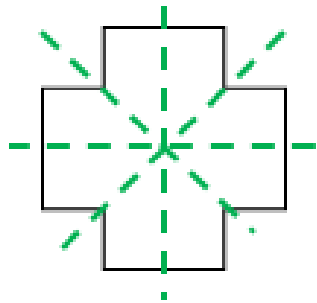
e.g. $\frac{5}{6}$ $\frac{7}{12}$ $\frac{2}{3}$ $\frac{3}{4}$
↓ ↓ ↓ ↓
 $\frac{10}{12}$ $\frac{7}{12}$ $\frac{9}{12}$ $\frac{8}{12}$

Now the fractions can be ordered

Symmetries (Mathswatch 11 and 48)

- Order of Line Symmetry**

this is the number of times a shape can be folded so that one side falls exactly onto the other side



This shape has line symmetry ORDER 4

- Order of Rotational Symmetry**

this is the number of times a shape falls into its outline in one complete turn

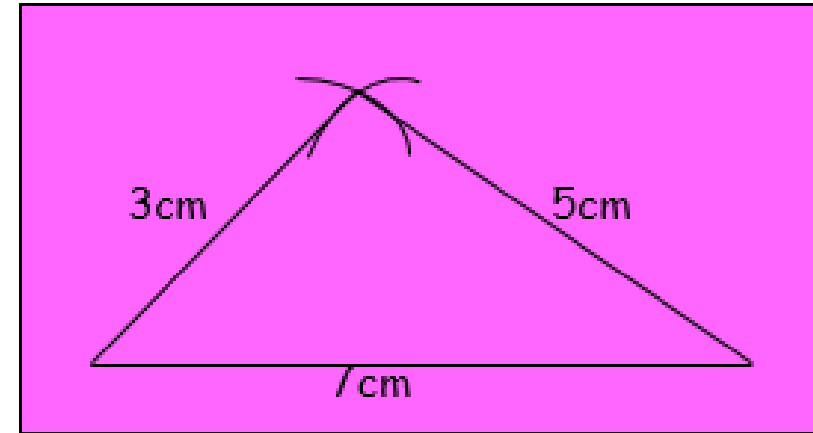


A parallelogram has rotational symmetry order 2

Construct triangle given 3 sides

(Mathswatch 147)

(Use a pair of compasses and leave the arcs on)



- Construct triangle given angles**

(Mathswatch 47) (Use a protractor)

