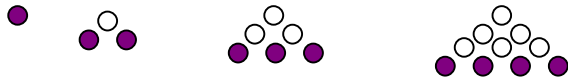


TYPES OF NUMBER

Types of number you should know:

- **Even and Odd** - if 2 goes into a number exactly it is an even number - 2 **goesintoo**.
- **Square** - Numbers which are the result of multiplying whole numbers by themselves.
1, 4, 9, 16, 25, 36.....
- **Cube** - The result of whole numbers cubed. **1, 8, 27, 64, 125.....**
- **Triangular** - Try to fit snooker balls into triangles



Add 1 more than the previous number added each time. **1, 3, 6, 10.....**

- **Multiples** - The multiples of a number are found by doing the **TIMES TABLES** of that number. The **multiples** of **5** are: **5, 10, 15, 20, 25.....**
- **Factors** - The factors of a number are the **goesintoo** numbers.
The factors of **36**
If a number **goesintoo 36** then it is a factor: **1, 2, 3, 4, 6, 9, 12, 18** and **36** itself.
- **Prime factors** - We need to know what a **prime number** is first.
- Prime numbers - A prime number is a number which has only two factors: Itself and 1.
Remember that **1** is **not** a prime number.

Prime numbers, like **prime** minister, **prime** cut and **prime** time are **first** numbers.

2, 3, 5, 7, 11, 13, 17, 19..... are **prime** numbers. They cannot be broken down into factors.

To find the prime factors of **36** **60** and **70**

Set up the number:
Keep dividing by 2
Then 3 if you can
Then 5

$$\begin{array}{r} 2 \overline{)36} \\ \underline{2} \\ 2 \\ \underline{2} \\ 3 \\ \underline{3} \\ 0 \end{array}$$

$$\begin{array}{r} 2 \overline{)60} \\ \underline{2} \\ 2 \\ \underline{2} \\ 3 \\ \underline{3} \\ 0 \end{array}$$

$$\begin{array}{r} 2 \overline{)70} \\ \underline{2} \\ 5 \\ \underline{5} \\ 7 \end{array}$$

Then the next prime number.....

Until you can't divide any more. The numbers can be written as a product of prime numbers

$$36 = 2 \times 2 \times 3 \times 3$$

$$60 = 2 \times 2 \times 3 \times 5$$

$$70 = 2 \times 5 \times 7 \quad \text{or in index form:}$$

$$36 = 2^2 \times 3^2$$

$$60 = 2^2 \times 3 \times 5$$

$$70 = 2 \times 5 \times 7$$

Highest common factor - This is the largest factor that a set of numbers has in common.

To find the highest common factor of 36 and 60 write the numbers as products of their prime factors:

$$\begin{array}{l} 36 = (2 \times 2 \times 3) \times 3 \\ 60 = (2 \times 2 \times 3) \times 5 \end{array}$$

line the prime factors up and ring those which are common.

The H C F is $2 \times 2 \times 3 = 12$

Lining the factors up is also used to find the **Lowest Common Multiple**

This is the smallest number which **36** and **60** goes into.

$$\begin{array}{l} 36 = 2 \times 2 \times 3 \times 3 \\ 60 = 2 \times 2 \times 3 \times 5 \end{array}$$

use all factors which occupy a column.

$$2 \times 2 \times 3 \times 3 \times 5 = 180$$

Reciprocals - to find the reciprocal or **inverse** of a number, simply invert it.

Number or fraction:	$4 \left(\frac{4}{1} \right)$	$\frac{2}{3}$	$\frac{1}{5}$
Reciprocal:	$\frac{1}{4}$	$\frac{3}{2}$	$\frac{5}{1} (5)$

Operations with small numbers

Small numbers are numbers between 0 and 1. eg. 0.345, 0.6789 etc.

When we **multiply** a number by a number between 0 and 1, the result is **smaller** than the number.

When we **divide** a number by a number between 0 and 1, the result is **larger** than the number.

THREE SECRET AGENTS were supposed to meet at Waterloo Station but they forgot when.

The first agent Joe East turned up every **48 days**

The second agent Les Furby turned up every **60 days**

The third agent John Bind turned up every **72 days**

If they have only just met, how long before they are all at Waterloo Station on the same day?

Find the prime factors of each of the numbers and line them up:

$$\begin{array}{l} 48 = 2 \times 2 \times 2 \times 2 \times 3 \\ 60 = 2 \times 2 \times 3 \times 5 \\ 72 = 2 \times 2 \times 2 \times 3 \times 3 \end{array}$$

The L.C.M. is $2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 3 = 720$ So they will all meet after **720 days**.