

### Ungrouped Data

The table shows the number of siblings students have. The answers were  
3, 1, 2, 2, 0, 3, 4, 1, 1, 2, 0, 2

The number of times an event happened

2 people had 0 siblings. This means there are 0 siblings to be counted here

Number of siblings	Frequency
0	2
1	3
2	4
3	2
4	1

0  
3  
4

$2 + 2 + 2 + 2$  OR  $2 \times 4 = 8$

$3 + 3$  OR  $3 \times 2 = 6$

2 people have 3 siblings so there are 6 siblings in total

Best represented by discrete data (Not always a number)

OVERALL there are  
 $0 + 3 + 8 + 6 + 4$   
Siblings = 21 siblings

### Grouped Data

If we have a large spread of data it is better to group it. This is so it is easier to look for a trend. Form groups of equal size to make comparison more valid and spread the groups out from the smallest to the largest value.

Discrete Data  
The groups do not overlap

Cost of TV (£)	Tally	Frequency
101 - 150	THL II	7
151 - 200	THL THL I	11
201 - 250	THL	5
251 - 300	III	3

We do not know the exact value of each item in a group - so an estimate would be used to calculate the overall total (Midpoint)

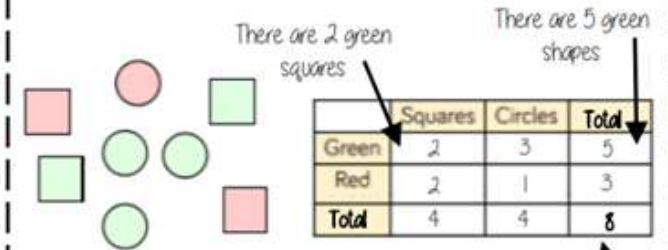
Continuous Data  
To make sure all values are included inequalities represent the subgroups

x Weight(g)	Frequency
$40 < x \leq 50$	1
$50 < x \leq 60$	3
$60 < x \leq 70$	5

eg this group includes every weight bigger than 60kg, up to and including 70kg

### Representing data in two-way tables

Two-way tables represent discrete information in a visual way that allows you to make conclusions, find probability or find totals of sub groups



Using your two-way table

To find a fraction

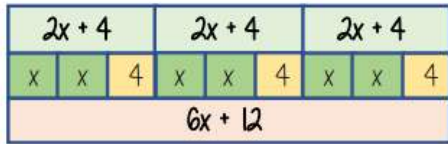
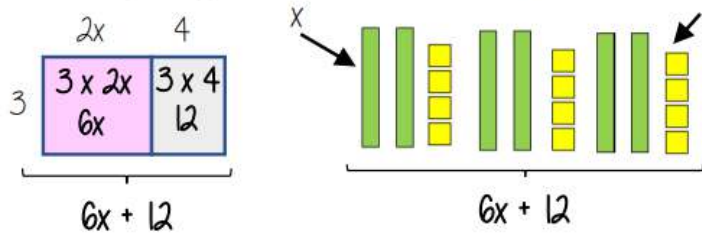
eg What fraction of the items are red? 3 red items

but 8 items in total =  $\frac{3}{8}$

**Interleaving:** Use your fraction, decimal percentage equivalence knowledge

## Multiply single brackets

$$3(2x + 4)$$



Different representations of  $3(2x+4) = 6x + 12$

## Equations with unknown on both sides

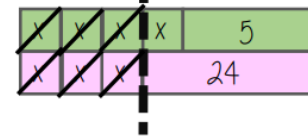
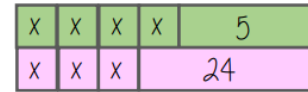
$$4x + 5 = 3x + 24$$

$$-3x \quad -3x$$

$$x + 5 = 24$$

$$-5 \quad -5$$

$$\underline{x = 19}$$



## Algebraic constructs

### Expression

A sentence with a minimum of two numbers and one maths operation

### Equation

A statement that two things are equal

### Term

A single number or variable

### Identity

An equation where both sides have variables that cause the same answer includes  $\equiv$

### Formula

A rule written with all mathematical symbols e.g. area of a rectangle.  $A = b \times h$

## Solve equations with brackets

**R**

$$3(2x + 4) = 30$$

Expand the brackets

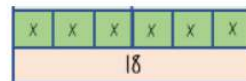
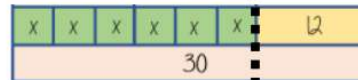
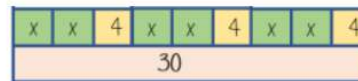
$$6x + 12 = 30$$

$$-12 \quad -12$$

$$6x = 18$$

$$+6 \quad +6$$

$$\underline{x = 3}$$



## Keywords

**Inverse:** the operation that undoes what was done by the previous operation. (The opposite operation)

**Commutative:** the order of the operations do not matter.

**Substitute:** replace one variable with a number or new variable.

**Evaluate:** work out

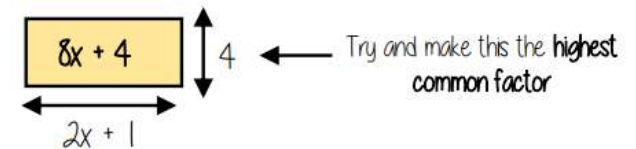
**Simplify:** grouping and combining similar terms

**Equivalent:** something of equal value

**Coefficient:** a number used to multiply a variable

**Solve:** find a numerical value that satisfies an equation

## Factorise into a single bracket $8x + 4$



The two values **multiply** together (also the area) of the rectangle

$$8x + 4 \equiv 4(2x + 1)$$

Note:

$$8x + 4 \equiv 2(4x + 2)$$

This is factorised but the HCF has not been used