

- ✓ Time: Encourage your child to use a watch or clock to tell the time, provide timed activities and read timetables
- ✓ Calendars: Plan family birthdays on a calendar & do a birthday countdown.
- ✓ Measure: Take advantage of measure opportunities in the kitchen; weighing, timing and temperature
- ✓ Money: Talk about best deals with your child, budgeting pocket money or wages.
- ✓ Estimating: plan for activities in advance like calculating the number of rolls of paper or paint required to decorate a room, the length of time activities may take.
- ✓ Logical thinking: Ask your child to explain their thinking and consider consequences of actions. e.g. using the information gathered from reading newspapers, using the internet and watching TV to draw conclusions and make choices that involve numeracy.

MATHEMATICS SYMBOLS CHART

+	Add	$\rightarrow$	Tends to
-	Subtract	$\propto$	Is proportional to
$\times$	Multiply	∞	Infinity
$\div$	Divide	Σ	The sum of (sigma)
=	Equal to		Parallel
$\pm$	Plus or minus	$\perp$	Perpendicular
>	Greater than	$\therefore$	Therefore
<	Less than	$\because$	Because
$\geq$	Greater than or equal to	π	<u>Pi</u> = 3.1415926...
$\leq$	Less than or equal to	$\angle$	Angle
$\neq$	Not equal to	$\in$	Set membership
$\approx$	Approximately equal to	$\mathbb{R}$	Real numbers
x^2	x squared	$\mathbb{Q}$	Rational numbers
$\sqrt{\quad}$	Square root	$\mathbb{Z}$	Integers
$\Rightarrow$	Implies	!	Factorial
$\Leftrightarrow$	If and only if	<u>P</u> (.)	Probability of event

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Extract from Pupil Planner Pages

Addition (+)

- sum of
- more than
- add
- total
- and
- plus

$$\begin{array}{r} 56 \\ + 319 \\ \hline 95 \end{array}$$

Subtraction (-)

- less than
- take away
- minus
- subtract
- difference between

$$\begin{array}{r} 12 \\ - 5 \\ \hline 7 \end{array}$$

Multiplication (×)

- multiply
- times
- product
- lots of

$$\begin{array}{r} 23 \\ \times 15 \\ \hline 115 \end{array}$$

Division (÷)

- divide
- share
- split
- groups of

$$\begin{array}{r} 189 \\ 4 \overline{) 73536} \end{array}$$

Equals (=)

- is equal to
- same as
- makes

%	Fraction	Decimal
1%	$\frac{1}{100}$	0.01
5%	$\frac{1}{20}$	0.05
10%	$\frac{1}{10}$	0.1
20%	$\frac{1}{5}$	0.2
25%	$\frac{1}{4}$	0.25
33 1/3%	$\frac{1}{3}$	0.33
50%	$\frac{1}{2}$	0.5
66 2/3%	$\frac{2}{3}$	0.66
75%	$\frac{3}{4}$	0.75
100%	1	1

30 mins = $\frac{1}{2}$ hour = 0.5 hrs
 15 mins = $\frac{1}{4}$ hour = 0.25 hrs
 45 mins = $\frac{3}{4}$ hour = 0.75 hrs

Length

10 mm = 1 cm
 100 cm = 1 m
 1 000 m = 1 km

Mass

1 000 g = 1 kg
 1 000 kg = 1 tonne

Capacity

1 000 ml = 1 litre
 1 cm³ = 1 ml

Simple Fractions of a Quantity

$$\begin{aligned} &\frac{2}{3} \text{ of } £469 \\ &= 24 \div 3 \times 2 \\ &= 16 \end{aligned}$$

Percentages (with a calculator)

$$\begin{aligned} &27\% \text{ of } £469 \\ &= \frac{27}{100} \times £469 \\ &= 27 \div 100 \times £469 \\ &= 0.27 \times £469 \\ &= £126.63 \end{aligned}$$

Percentages (without a calculator)

Find 17.5% of £220

10% is 22
 5% is 11
 2.5% is 5.5
 17.5% is 38.5

Place Value

$$3.45 \times 10 = 34.5$$

Th	H	T	U	.	$\frac{1}{10}$	$\frac{1}{100}$
			3		4	5
		3	4	.	5	

Solving Equations

$$\begin{array}{rcl} \text{Solve } 2x - 3 = 11 & & +3 \\ 2x = 14 & & \div 2 \\ \underline{x = 7} & & \end{array}$$

30 days has September, April, June and November. All the rest have 31, except February alone which has 28 days clear and 29 each leap year.

60 seconds per minute
 60 minutes per hour
 24 hours per day
 7 days per week
 52 weeks per year
 365 (366) days per year

Brackets, power Of, Division, Multiplication, Addition, Subtraction

- e.g. (i) $6 + 5 \times 7 = 6 + 35 = 41$
 (ii) $(6 + 5) \times 7 = 11 \times 7 = 77$
 (iii) $2 + 4^3 \div 8 - 3 = 2 + 64 \div 8 - 3 = 2 + 8 - 3 = 7$

Number Line



Decimal Notation

All pupils should be familiar with decimal notation for money although they may use incorrect notation.

✓	✗
£2.35	£2.35p
£4.60	£4.6
£0.25	0.25p
32p	0.32p

Pupils should also be familiar with the use of decimal notation for metric measures, but sometimes misinterpret the decimal part of the number. They may need to be reminded for example that 1.5 metres is 150 centimetres not 105 centimetres.

Pupils often read decimal numbers incorrectly e.g. 8.72 is often read as eight point seventy two instead of eight point seven two.

They may also have problems with comparing the size of decimal numbers and may believe that 2.36 is bigger than 2.8 because 36 is bigger than 8. If they need to compare numbers it may help to write all of the numbers to the same number of decimal places e.g. 2.36 and 2.80

ROUNDING ANSWERS

Pupils should round their answers to one more decimal place or significant figure than the numbers in the question

Rounding to nearest 10

73 to nearest 10 $\rightarrow$ 70
496 to nearest 10 $\rightarrow$ 500

Rounding to nearest whole number/ten/hundred

237.8 $\rightarrow$ 238 (to nearest whole number)
 $\rightarrow$ 240 (to nearest 10)
 $\rightarrow$ 200 (to nearest 100)

Rounding to 1 decimal place (to 1 d.p.)

5.31 $\rightarrow$ 5.3 (to 1 d.p.)
11.97 $\rightarrow$ 12.0 (to 1 d.p.)

Rounding to more than 1 decimal place/to significant figures (to s.f.)

6.2459 $\rightarrow$ 6.246 (to 3 d.p) $\rightarrow$ 6.25 (to 3 s.f)

ORDER OF OPERATIONS

BOMDAS: The order of operations

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Brackets
Off
Multiply
Divide
Add
Subtract

Examples

$$\begin{aligned} 30 - 4 \times 3 \\ = 30 - 12 \\ = 18 \end{aligned}$$

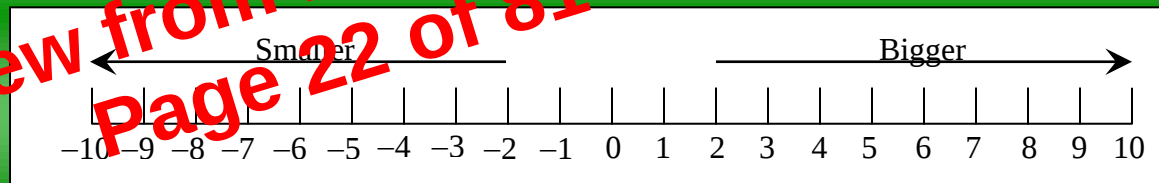
$$\begin{aligned} 30 + 50 \div (2 + 8) \\ = 30 + 50 \div 10 \\ = 30 + 5 \\ = 35 \end{aligned}$$

The important *facts* are that **brackets** are done first, then **powers**, **multiplication** and **division** and finally **addition** and **subtraction**.

INTEGERS (2)

Some pupils have problems understanding the size of negative numbers and believe that -10 (read as 'negative 10') is bigger than -5 .

A number line can be of help when ordering numbers. Moving to the right, numbers getting bigger. Moving to the left, numbers getting smaller.

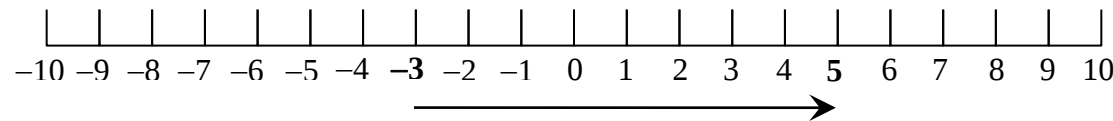


E.g. $-3 + 8$

Starting
point

Direction

Distance
to move



Care should be taken with the use of language.

'**Negative**' is used as an adjective to describe the sign of the number. '**Minus**' is used as a verb, indicating the operation of subtraction.

Ratio and Proportion (2)

If sharing money in given ratios pupils must:

- **Calculate** the number of shares by adding the parts of the ratio together.
- **Divide** the given quantity by the number of shares to find the value of one share.
- **Multiply** each ratio by the value of one share to find how the money has been split.

Example £35 is split between Jack and Jill in the ratio 3:2. How much does Jack receive and how much does Jill receive?

Solution Number of shares	=	2 + 3	=	5
value of 1 share	=	£35 ÷ 5	=	£7
Jack's share	=	2 × £7	=	£14
Jill's share	=	3 × £7	=	£ 21.

(Check by adding the value of the shares £14 + £21 = £35)

Time, Distance, Speed



$$\text{Average Speed} = \frac{\text{Distance}}{\text{Time}}$$

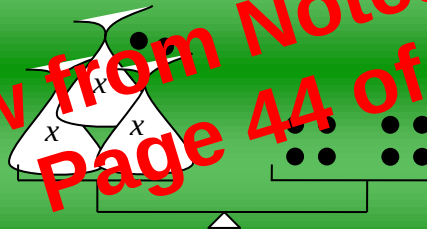
$$\text{Distance} = \text{Average Speed} \times \text{Time}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

Please NOTE - in Physics, pupils will use V instead of S for average speed. V is velocity which is speed and direction

Algebra - Solve Simple Equations

The method used for solving equations is balancing. Each equation should be set out with a line down the right hand side where the method is written, as in the examples below. It is useful to use scales like the ones below to introduce this method as pupils can visibly see how the equation can be solved.



This represents the equation
 $3x + 2 = 8$
See example 4 below

Example 1: Solve $x + 5 = 8$

$$\begin{array}{l|l} x + 5 = 8 & -5 \text{ from both sides} \\ \hline \underline{\underline{x = 3}} & \end{array}$$

In the example shown pupils must state that they will “subtract 5 from both sides.” If they only say, “Subtract five,” ask them, “Where from?” and encourage them to tell you, “Both sides,” on every occasion.

Pupils should be encouraged to check their answer mentally by substituting it back into the original equation.

Algebra - Solve Inequations

Terminology

$>$	Greater than
$<$	Less than
$\geq$	Greater than or equal to
$\leq$	Less than or equal to

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Example 1:

Solve the inequation $x + 3 > 6$ choosing solutions from $\{0, 1, 2, 3, 4, 5, 6\}$

$$\begin{array}{l|l} x + 3 > 6 & -3 \text{ from both sides} \\ \hline x > 3 & \end{array}$$

$$\underline{\underline{x = \{4, 5, 6\}}}$$

Example 3:

For the following sequence find the term that produces an output of 90.

Input	Output
1	2
2	10
3	18
4	26
5	34
6	42
n	$8n - 6$
	90

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We go through the same process as before to find the n^{th} term, which is $8n - 6$.

Now we set up an equation.

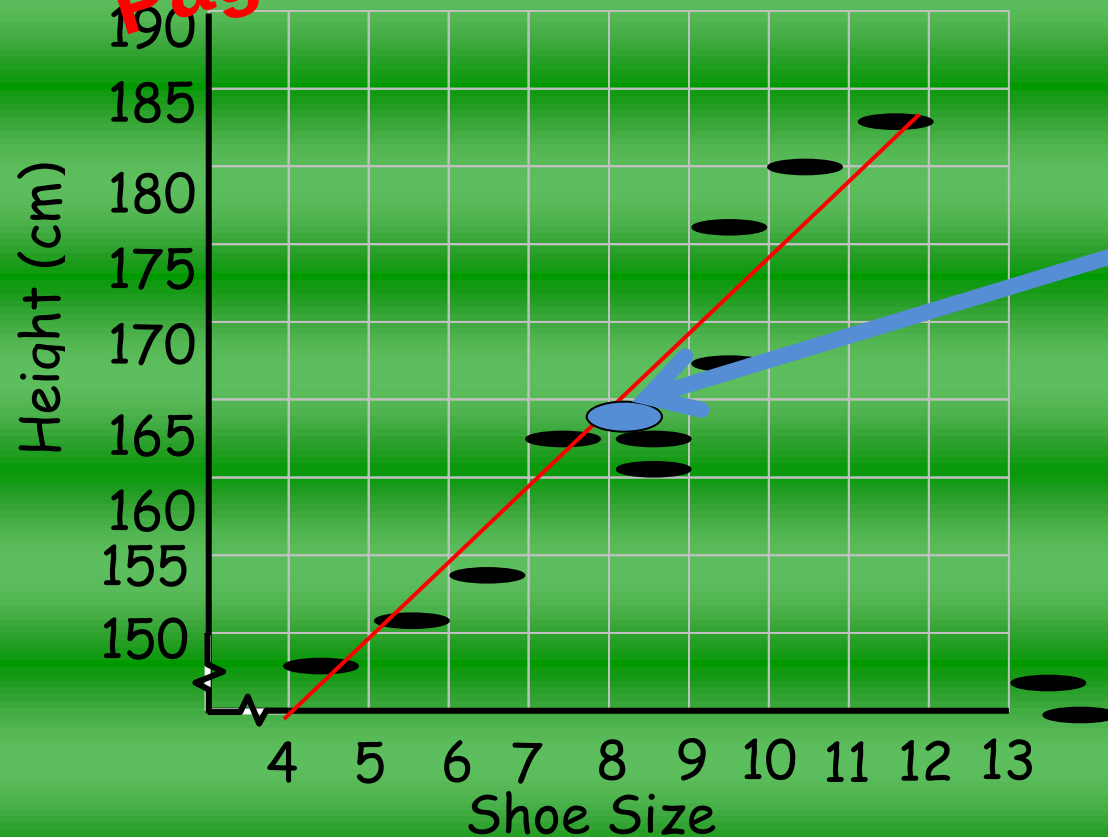
$$\begin{array}{r|l} 8n - 6 = 90 & + 6 \\ 8n = 96 & \div \text{ by } 8 \\ \underline{n = 12} & \end{array}$$

Therefore the 12th term produces an output of 90.

Drawing a Line of Best Fit

A line of best fit can be drawn to data that shows a correlation. The stronger the correlation between the data, the easier it is to draw the line. The line should go through the mean point and should have approximately the same number of data points on either side.

Shoe Size	6	9	7	10	4	9	8	11	5	8
Height (cm)	155	177	159	180	150	168	162	183	152	164



Mean point
Shoe size = 7.7
Height = 165