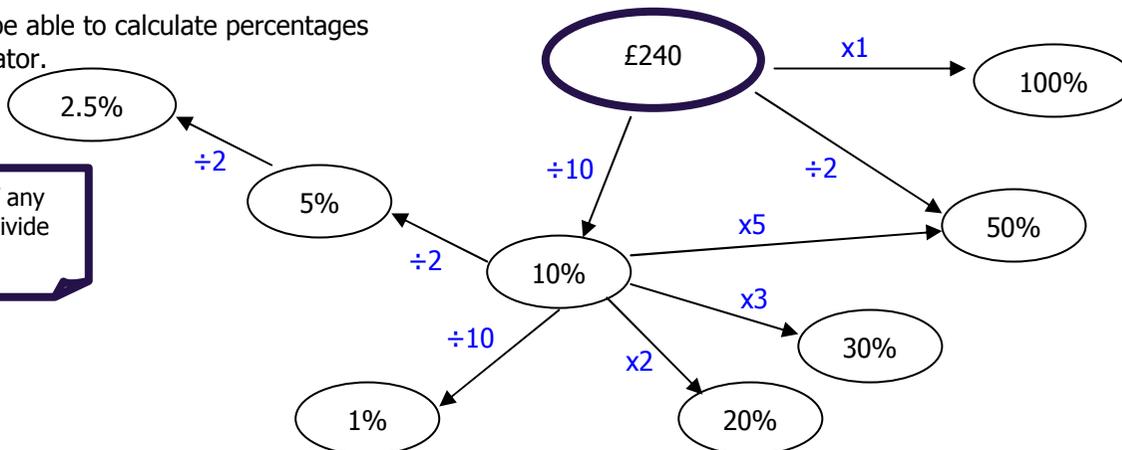


Students must be able to calculate percentages without a calculator.



To find 10% of any quantity, just divide by 10

The above example, shows how to find various percentages of a quantity:

$$10\% \text{ of } £240 = £240 \div 10 = £24$$

$$5\% \text{ of } £240 = \text{half of } 10\% = £24 \div 2 = £12$$

$$2.5\% \text{ of } £240 = \text{half of } 5\% = £12 \div 2 = £6$$

VAT

$$17.5\% \text{ of } £240 = 10\% + 5\% + 2.5\%$$

$$= £24 + £12 + £6$$

$$= £42$$

$$20\% \text{ of } £240 = \text{double } 10\% = £24 \times 2 = £48$$

$$30\% \text{ of } £240 = \text{triple } 10\% = £24 \times 3 = £72$$

$$50\% \text{ of } £240 = \text{half of } 100\% = 240 \div 2 = £120$$

Example questions

a) Find the new price of a £240 television if the original price has been increased by 10%.

$$10\% \text{ of } £240 = £240 \div 10 = £24$$

New price	=	old price	+	10%
	=	£240	+	24
	=	£264		

b) Find the new price of a £240 television if the original price has been reduced by 10%.

$$10\% \text{ of } £240 = £240 \div 10 = £24$$

New price	=	old price	-	10%
	=	£240	-	24
	=	£216		

Numeracy Booklet Parents' Edition



It is hoped that use of the information in the booklet will help you understand the ways some number topics are being taught to students at Swanwick Hall school, making it easier for you to help them with their school work, and as a result improve their progress.

Be positive about maths, even if you don't feel confident about it yourself.

Careers that need Maths

Maths affects everything we do in our lives. It forms the basis for many other subjects and is fascinating in its own right. It also leads on to a variety of fulfilling careers.

<http://www.mathscareers.org.uk>

This site aims to show the importance and relevance of mathematics to students of every age.

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Where?

- All school subjects
- Darts (no calculator needed!)
- Snooker (no calculator needed!)
- Chess & Draughts
- Suduko
- Computer programming
- Cards— pontoon (21)

How?

- Modify recipes for more/less people
- Estimating the final bill at the end of shopping while waiting at the till
- Calculating the cost of the family going to the cinema, swimming baths, etc.
- Weighing fruit and vegetables in the supermarket.
- Calculating how long a journey will take looking at train/bus/airline timetables
- Which is the best mobile phone deal over 12 months?
- Estimate the value of VAT and discuss the amount of money taken by the government for various items.
- Calculate salt intake per day, and compare to recommended daily amounts.
- Estimate the actual price of items with a 10% off marked price sticker.
- Follow the route on a paper map.

Try this at home ...

- Work out how much it costs to leave the TV on standby for a year?
- Work out how long does it take for sunlight to reach the earth?
- Estimate the cost of petrol used in a year?
- 'Give yourself' a £1000 and buy some shares and record your progress.
- Discuss statistics shown in TV adverts. (e.g. L'Oreal adverts)

Algebra

Students must understand that writing algebra is like writing instructions. Even a tiny mistake can make the whole thing meaningless.

Doing Algebra

- Work step-by-step.
- Make a note to say what you did in each step.
- Work down the page.
- Keep equals signs in a vertical line.
- Underline the answer.

For example:

Solve $3x + 4 = 22$

$$3x = 18$$

$$x = 6$$

(-4)

(÷3)

Notes to say what is happening in each step

Equal signs in a vertical line

Curly x, so not to be confused with multiplication sign.

Using Formulae

Students should be able to construct and use simple formulae.

For example:

The length of a string S, for the weight of W is given by the formula: $S = 16 + 3W$

(a) Find S in mm when $W = 3$ g

$$S = 16 + 3W \quad (\text{write formula})$$

$$S = 16 + 3 \times 3 \quad (\text{put in numbers})$$

$$S = 16 + 9 \quad (\text{solve the equation})$$

$$S = 25$$

Length of string is 25 mm

Basic Operations - Multiplication

Students must always know the times table to 10x10 by heart. Partitioning is a common method that is also used at Key Stage 2.

For example:

Find: 87×63

Step 1 Estimate the answer ($90 \times 60 = 5400$)

Step 2 Partition into tens and units and arrange the numbers on a grid.

$$87 = 80 + 7 \text{ and } 63 = 60 + 3$$

x	80	7
60		
3		

Step 3 Multiply the numbers.

x	80	7
60	4800	420
3	240	21

60x80=4800
60x7=420
3x80=240
3x7=21

Step 4 Add together the rows. (e.g. $4800+420=5220$
 $240+21=261$). Then add the row totals ($5220 + 261 = 5481$)

x	80	7	
60	4800	420	5220
3	240	21	261
			5481

Therefore $87 \times 63 = 5481$

Basic Operations - Division

Students must understand that division can be accomplished by knowing multiplication.

For example:

$5 \times 7 = 35$ therefore $35 \div 7 = 5$ and $35 \div 5 = 7$

The Bus Stop method is shown below to calculate $69 \div 3$ and $45 \div 3$.

$$3 \overline{)69} \quad 3 \overline{)69} \quad \therefore 69 \div 3 = 23$$

$$3 \overline{)45} \quad 3 \overline{)45} \quad \therefore 45 \div 3 = 15$$