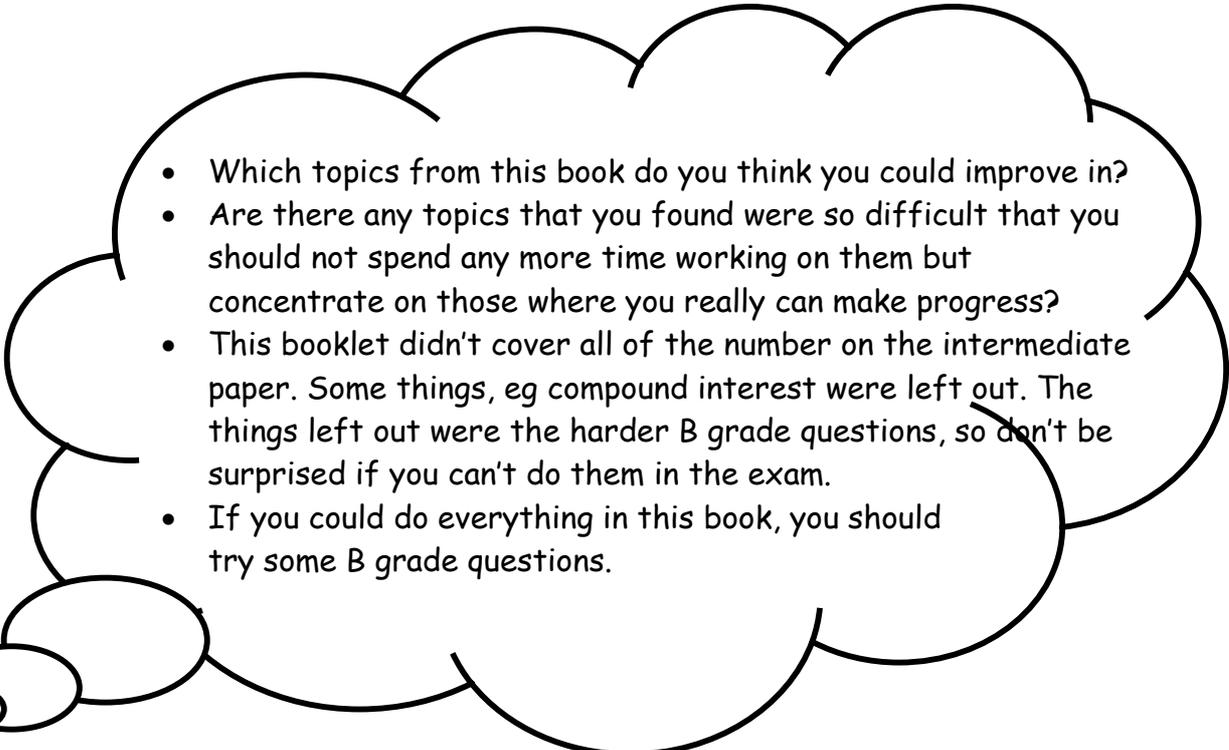


C if U can

Number

How will this booklet help you to move from a D to a C grade?

- The topic of number is split into six units - numbers 1, fractions, decimals and percentages 1, ratio and proportion, calculating, fr, dec and % 2 and numbers 2
- For each unit, you start by thinking about which types of question you are confident with, which types you're not sure about and which types cause you a real problem and assess yourself using the grid
- You then try some questions similar to those you have seen before - usually D grade questions so you can see whether your self assessment is accurate
- You then have some questions to try which are harder - these are C grade questions. There are hints to help you if you don't know where to start
- There are also some C grade questions with even bigger hints available from your teacher if you need them and there are also some C grade questions with no help (also available from your teacher) for when you feel brave enough!

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- Which topics from this book do you think you could improve in?
 - Are there any topics that you found were so difficult that you should not spend any more time working on them but concentrate on those where you really can make progress?
 - This booklet didn't cover all of the number on the intermediate paper. Some things, eg compound interest were left out. The things left out were the harder B grade questions, so don't be surprised if you can't do them in the exam.
 - If you could do everything in this book, you should try some B grade questions.

Brass is made up of copper and zinc.
 Every 100 grams of brass contains 20 grams of zinc.

a. Work out the weight of zinc in 60 grams of brass

Brass contains 4 parts by weight of copper to
 1 part by weight of zinc

b. Work out the weight of copper in 350 grams of brass

CLUE:-

What fraction of 100 is 20?

*Are you confident, close
 or clueless? Assess how good
 you think you are before
 you start.*

C if U can calculating

*At the end of the
 section, go back
 and think about
 your self
 assessment. Was it
 a good judgement?
 Make any notes
 you need to here.*

	Confident	Close	Clueless
Find answers without using a calculator			
Use a calculator effectively for complex calculations			
Convert between a variety of units where conversion factors are given			
Convert between units using what you know about metric and imperial equivalents			
Calculate speed and other compound measures			

Simple ones first

Can it B4

Change 7m^2 to cm^2

Michael buys 3 files to keep his homework in. The total cost of these files is £5.40. Work out the total cost of 7 of these files

Use your calculator to work out the value of

$$\frac{5.4 \times 8.1}{12.3 - 5.9}$$

Each year Brentwood School hold a sponsored swim. The money raised is shared between two charities, A and B, in the ratio 5:1

- In 2003 a total of £1800 was raised. How much was given to charity A?
- In 2004 charity A was given £1850. How much was given to charity B?

CLUE:-

How many parts is the money split into? For part b, how many parts of the money does £1850 represent?

*Sometimes, the questions
worth more marks just have
several parts*

C if U can do these.....

Jack shares £180 between his two children Ruth and Ben.
The ratio of Ruth's share to Ben's share is 5:4

- Work out how much each child is given
- Ben then gives 10% of his share to Ruth. Work out the percentage of the £180 that Ruth now has

CLUE:-

This looks harder because it includes percentages but the numbers involved are easy

*Don't cheat and use a calculator because
you can't in the exam!*

Alex has a mobile phone.
Each month he pays
13·4p for each minute he uses his
mobile phone
and
a fixed charge of £18·75
in January, Alex uses his mobile
phone for 405 minutes.
Work out the total amount Alex pays

Without using a calculator but using
the information that
 $38 \times 323 = 12\,274$
find the value of

- $0\cdot38 \times 323$
- $12\,274 \div 380$
- 37×323

Now C if U can do these.....

Prendeeep bought a necklace in the USA. He paid 108 dollars(\$)

Arthur bought an identical necklace in Germany.

He paid 117 Euros (€)

£1 = \$1.44

£1 = 1.6 €

Calculate, in pounds, the difference between the prices paid for the two necklaces.

Show how you worked out your answer

CLUE:-

You will have to convert each price to pounds first

Fatima has 35 CDs and tapes.
The ratio of the number of CDs to
the number of tapes is 3:4

Work out how many CDs she has

Fred has a recipe for 30 biscuits.
Here is a list of ingredients for 30
biscuits.

Self raising flour	230g
Butter	150g
Caster sugar	100g
Eggs	2

Fred wants to make 45 biscuits
Rewrite his list of ingredients to
make 45 biscuits

*Make certain you can do these
easy ones first.*

Check it B4

Share £250
in the ratio 3:7

Write down the ratio
12:20
in its simplest form

Andy, Belinda and Carl
share £126 in the ratio
5:3:1

How much does Belinda
get?

James and Sam went on holiday by plane.
The pilot said the speed of the plane was 285 kilometres per hour.
James told Sam that 285 km per hour was about the same as
80 metres per second.
Was James correct?
Show working to justify your answer.

CLUE:-

You could start by changing km per hour to metres per hour

Mark drives 34 890 miles in a year.

He wants to know roughly how many miles this is per week.

- a. Write down a calculation Mark could do in his head to **estimate** how many miles he drives each week.
- b. On Thursday Mark drives 132 km in 1 hour 30 minutes. Calculate his average speed in kilometres per hour

CLUE:-

To calculate in your head, the numbers will have to be easy. How will you round them?

Can U crack these? Are you confident, close or clueless? Assess how good you think you are before you start

C if U can Ratio and proportion

Confident
Close
Clueless

*Could you do them?
Write any notes you need to remember.*

	Confident	Close	Clueless
Simplify a ratio			
Recognise when a ratio is in its lowest terms			
Divide a quantity into a given ratio - 2 or 3 parts			
Use the fact that numbers are in proportion if their ratios stay the same as the numbers change			
Solve word problems using ratio and proportion			

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Work out

a. $\frac{2}{5} + \frac{3}{8}$

b. $5\frac{2}{3} - 2\frac{3}{4}$

CLUE:-

Change to improper fractions in part b first

*If you don't know
what these
statements mean,
turn the page.*

C if U can
Fr, dec and % 2

Confident

Close

Clueless

*Could you do them?
Do you need to make
any notes?*

	Confident	Close	Clueless
Change between fractions, decimals and percentages			
Find percentages of quantities			
Increase and decrease quantities by a percentage			
Find one quantity as a percentage of another			
Solve word problems involving percentages			

These shouldn't be too challenging.

C een it B4

28

What is

$$\frac{16}{64}$$

as a decimal and as a percentage

How much would a jacket priced at £90 cost in the sale if there was 20% off?

Class 11A has 30 pupils.
18 of these pupils are girls.
What percentage of the class are girls?

Here are two fractions $\frac{3}{5}$ and $\frac{2}{3}$

Write down how you would explain which is the larger fraction.
These grids may help with your explanation.

CLUE :-

The grids will definitely help - start by drawing the fractions

Now C if U can do these.....

Asif, Barbara and Curtley share some money.

Asif receives $\frac{3}{8}$ of the money.

Barbara receives $\frac{1}{3}$ of the money.

What fraction of the money does Curtley receive?

CLUE:-

You will need to change the fractions so that they have the same denominator (bottom number)

James sells books.
He sells each book for
£7.60 plus VAT at $17\frac{1}{2}\%$.
He sells 1650 books.
How much money does James
receive?

A year ago, Donna weighed
51.5 kg.
She now weighs $8\frac{1}{2}\%$ less.

How much does she weigh now?
Give your answer to an appropriate
degree of accuracy.

*These are very similar,
just a bit harder!*

Now C if U can do these.....

A shop is having a sale.
Each day, prices are reduced by 20%
of the price on the previous day.
Before the start of the sale, the price of a television is £450.
On the first day of the sale, the price is reduced by 20%

- work out the price of the television on the first day of the sale
- on the third day of the sale

On the first day of the sale, the price of a cooker is £300

- work out the price of the cooker before the start of the sale.

CLUE:-

Don't forget you need to think about the second day before answering part b!

Write $3\frac{2}{3}$ as an improper fraction

Write $1\frac{5}{6}$ as an improper fraction

Work out $3\frac{2}{3} - 1\frac{5}{6}$

Give your answer as a mixed number

A school has 1200 pupils.
575 of these pupils are girls

$\frac{2}{5}$ of the girls like sport

$\frac{3}{5}$ of the boys like sport

work out the total number of pupils
in the school who like sport

*Couldn't be easier - but it's
going to get harder soon!*

Can it B4

Work out

$$\frac{1}{8} + \frac{3}{4}$$

Put these in order of size,
starting with the smallest

$$\frac{1}{4} \quad 0.3 \quad 28\% \quad \frac{2}{5}$$

Work out

$$\frac{5}{8} \text{ of } \pounds 9.60$$

Simon repairs computers.

He charges $\pounds 56.80$ for the first hour he works on a computer
and $\pounds 42.50$ for each extra hour's work.

Yesterday, Simon repaired a computer and charged a total of $\pounds 269.30$

- a. Work out how many hours Simon worked yesterday on this computer

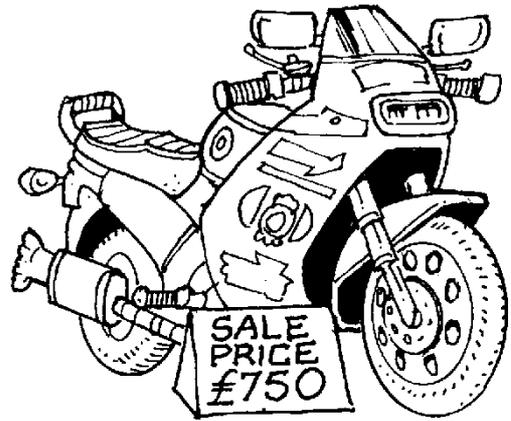
Simon reduces his charges by 5% when he is paid promptly.
He was paid promptly for yesterday's work on the computer.

- b. Work out how much he was paid, to the nearest penny

CLUE:-

Subtract the first hour's work charge and then work out how many hours were worked
at the lower rate. Don't forget to add the charges for the first hour back on.

Marcus sees a motorbike advertised for £750
 This is the price after a reduction of 20%
 Work out the original price of the motorbike



CLUE:-

What percentage of the original cost is the motorbike in the sale?

Can you do these? Decide how good you think you are before you look at the examples - are you confident, close or clueless?

**C if U can
 Fr, dec
 and % 1**

Confident

Close

Clueless

How did you do with the examples?

Write any notes you need to remember.

	Confident	Close	Clueless
Simplify fractions (write in lowest terms) and change improper fractions to mixed numbers			
Change between fractions, decimals and percentages			
Add, subtract, multiply and divide fractions			
Find a fraction of a quantity or write one number as a fraction of another			
Solve word problems involving fractions			

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Tom uses his calculator to multiply 17.8 by 0.97.
His answer is 18.236.

Without finding the exact value of 17.8×0.97 , explain why his answer must be wrong

Sally estimates the value of $\frac{42.8 \times 63.7}{285}$ to be 8

write down 3 numbers Sally could use to get her estimate

CLUE:-

There isn't one right answer to the last part. Think what would be sensible.

Can you cope with these questions? Decide how good you think you are before you look at the examples - are you confident, close or clueless?

C if U can Numbers 2

	Confident	Close	Clueless
Continue sequences of numbers and generate sequences from given information			
Investigate number patterns, describe them in words and using the nth term			
Use standard form			
Know and use the rules of indices			
Solve word problems involving indices			

Were they easier or harder than you had thought? What do you need to remember?

Teen it B4

34

Write these numbers in standard form

- a. 38 500 000
- b. 0.000005

Write these as ordinary numbers

- a. 2.7×10^3
- b. 3.12×10^{-3}

The first 5 terms of an arithmetic sequence are

2 9 16 23 30

find, in terms of n , an expression for the n th term of this sequence

Express the following numbers as products of their prime factors

- 60
- 96
- find the highest common factor of 60 and 96
- work out the lowest common multiple of 60 and 96

CLUE:-

Use your first two answers to help with the last two

Check out the clues!

Now C if U can do these.....

6

Use a calculator to work out

a. $2.4^3 =$

b. $\sqrt{39.69} =$

c. use your calculator to work out the value of $(7.91 - \sqrt[3]{81}) \times 4.32$ and

$$6.23 + 1.491$$

give your answer to 3 significant figures

CLUE:-

In the last part, remember order of operations (brackets first.....)

List these numbers in order of size, smallest to largest

$$3.7 \times 10^{-5}, 0.04 \times 0.008, 2.6 \times 10^{-6}, 0.05 \times 0.08$$

A nanosecond is

0.000 000 001 second

a. write the number 0.000 000 001 in standard form

A computer does a calculation in 5 nanoseconds

b. how many of these calculations can the computer do in 1 second. Give your answer in standard form.

*Very similar, just
harder numbers!*

Now C if U can do these.....

36

Here are the first five terms of an arithmetic sequence.

-1, 3, 7, 11, 15

- a. find, in terms of n , an expression for the n th term of this sequence

In another arithmetic sequence, the n th term is $8n - 16$.
John says that there is a number that is in both sequences

- b. explain why John is wrong

CLUE:-

You need to compare the first five terms of each sequence.

Write these fractions in order of size, starting with the smallest fraction

$$\frac{3}{4} \quad \frac{1}{2} \quad \frac{3}{8} \quad \frac{2}{3} \quad \frac{1}{6}$$

Alison said that the length of her kitchen was 3.5467 m. Alison's answer was not sensible.

- Explain why Alison's answer was not sensible.

What is the length of Alison's kitchen

- To 1 significant figure
- To 2 decimal places

Course U can - these are the easy ones!

Teen it B4

Write each of these numbers correct to 1 significant figure

- 26 366
- 0.0004349
- 45 071
- 0.050869

Write each of these numbers correct to 2 decimal places

- 54.26741
- 0.026638
- 526.8449
- 1.795

If the product of the primes is

$$2 \times 2 \times 3 \times 5$$

what is the number

Write as a power of 5

a. $5^4 \times 5^2$

b. $5^9 \div 5^6$

c. if $2^x \times 2^y = 2^{10}$ and $2^x \div 2^y = 2^4$ work out the value of x and the value of y

CLUE:-

Rules of indices - in part c, the numbers when added equal 10 and when subtracted equal 4

A floppy disk can store 1 440 000 bytes of data

a. write the number 1 440 000 in standard form

A hard disk can store 2.4×10^9 bytes of data

b. calculate the number of floppy disks needed to store the 2.4×10^9 bytes of data

CLUE:-

Work with the same type of numbers

Can you cope with these questions? Decide how good you think you are before you look at the examples - are you confident, close or clueless?

C if U can Numbers 1

Confident

Close

Clueless

At the end of the section, think about your self assessment. Would you make the same judgement now? Make any notes you need to here

	Confident	Close	Clueless
Put numbers in order (including a mixture of fractions and decimals)			
Know how to write numbers in terms of their factors (or prime factors)			
Find the HCF (highest common factor) or the LCM (lowest common multiple)			
Understand how to round numbers to a number of decimal places or significant figures			
Know how to use a calculator properly for those questions where one is allowed			