EDEXCEL FUNCTIONAL SKILLS PILOT

Maths Level 1

Chapter 1

Working with whole numbers

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Carol Roberts

Chapter 1: Working with whole numbers

Use these free pilot resources to help build your learners' skill base
We are delighted to continue to make available our free pilot learner resources and teacher notes, to help teach the skills learners need to pass Edexcel FS Mathematics, Level 1.

But use the accredited exam material and other resources to prepare them for the real assessment
We developed these materials for the pilot assessment and standards and have now matched them to the final specification in the table below. They'll be a useful interim measure to get you started but the assessment guidance should no longer be used and you should make sure you use the accredited assessments to prepare your learners for the actual assessment.

New resources available for further support
We're also making available new learner and teacher resources that are completely matched to the final specification and assessment – and also providing access to banks of the actual live papers as these become available. We recommend that you switch to using these as they become available.

Coverage of accredited specification and standards
The table below shows the match of the accredited specification to the unit of pilot resources. This table supersedes the pilot table within the teacher notes.

Coverage and Range	Exemplification	Learner Unit
Understand and use whole numbers	• Understand place value • Write a number in words and figures • Put whole numbers in order • Use of the terms odd, even, multiple, factor	**A1** Reading and writing whole numbers **A2** Ordering and comparing whole numbers **A3** Rounding **A7** Squares and multiples Use of the terms odd, even, multiple and factor are covered specifically in our new publishing (see below)
Understand negative numbers in practical contexts	• Recognise but not calculate, e.g. identify the warmest and coldest from a set of temperatures • Use temperatures	**A13** Negative numbers
Add, subtract, multiply and divide whole numbers using a range of strategies	• Add, subtract, multiply and divide positive and negative whole numbers	**A4** Adding whole numbers **A5** Subtracting whole numbers **A6** Multiplying whole numbers **A7** Squares and multiples **A8** Multiplying larger numbers **A9** Dividing whole numbers **A10** Dividing with larger numbers **A11** Solving word problems **A12** Checking answers to calculations **A13** Negative numbers
		A14 Remember what you have learned

Where to find the final specification, assessment and resource material
Visit our website **www.edexcel.com/fs** then:
- **for the specification and assessments:** under **Subjects**, click on **Mathematics (Levels 1–2)**
- **for information about resources:** under **Support**, click on **Published resources**.

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A Working with whole numbers

You should already know how to:

- ✓ count, read, write, order and compare numbers up to 1000
- ✓ add and subtract whole numbers with up to three digits
- ✓ multiply and divide two-digit numbers by single-digit numbers
- ✓ approximate by rounding.

By the end of this section you will know how to:

- read, write, order and compare large numbers
- understand the symbols for greater than or less than
- round numbers to the nearest 10, 100 or 1000
- use a range of methods to add, subtract, multiply or divide
- recognise squares and multiples
- recognise negative numbers in context
- use a calculator to check answers.

1 Reading and writing whole numbers

Learn the skill

Every digit in a number has a value, depending on its position in the number. This is called its **place value**.

You can use a **place-value table** to work out the value of each digit. Write the digits, beginning from the right.

Remember

The individual figures in a number are called **numerals** or **digits**.

Example 1: Write the number 87 529 in words.

First, put the number in a place-value table.

M	H Th	T Th	Th	H	T	U
millions	hundred thousands	ten thousands	thousands	hundreds	tens	units
		8	7	5	2	9

The number 87 529 has 8 ten thousands, 7 thousands, 5 hundreds, 2 tens and 9 units.

Answer: eighty-seven thousand, five hundred and twenty-nine

When you write a cheque you have to write an amount in words and figures.

Example 2: Write the number five million, one hundred and two thousand and forty-five in figures.

Draw a place-value table and fill in the digits, from the right.

M	H Th	T Th	Th	H	T	U
5	1	0	2	0	4	5

Answer: 5 102 045

Tip

Write 0 in the columns to show there are no ten thousands and no hundreds.

Try the skill

1. Ring the correct way of writing each number in words.

a 4 322

A Forty-three thousand and twenty-two

B Four thousand, three hundred and twenty-two

b 16 308

A Sixteen thousand, three hundred and eight

B One hundred and sixty-three thousand and eight

c 816 395

A Eight million, sixteen thousand, three hundred and ninety-five

B Eight hundred and sixteen thousand, three hundred and ninety-five

d 1 455 372

A One million, four hundred and fifty-five thousand, three hundred and seventy-two

B One hundred and four million, fifty-five thousand, three hundred and seventy-two

2. The population of a town was worked out to be twenty-three thousand, four hundred and thirty. Write this number in figures.

3. Five hundred and sixty-six thousand, two hundred and fifteen people visited a museum over the holiday period. What is this number in figures?

4. In one year, a shop sold two million, four hundred and twenty thousand, seven hundred and two music CDs. Write this number in figures.

2 Ordering and comparing whole numbers

Learn the skill

You can put whole numbers in order by comparing the size of their digits, as long as they are in the same place value.

Example 1: write these numbers in order of size, starting with the smallest.
303 203 330 320 33 332

First put the numbers into a place value table.

Compare digits in the H Th column. The first two numbers both begin with 3, but there isn't an entry for the third number. This means that 33 332 is **the smallest number**.

H Th	T Th	Th	H	T	U
3	0	3	2	0	3
3	3	0	3	2	0
	3	3	3	3	2

To find the next size number, look for the smallest digit in the T Th column. This is zero, shown in red above. This means that the next size number is 303 203.

Answer: 33 332 303 203 330 320

Try the skill

1. Put these numbers in order of size, starting with the smallest.
   a. 4320 4302 43022
   b. 707707 700777 7070770
   c. 82258 80528 82288

2. A garage has three cars for sale. Their mileages are:

Car A	7	9	0	0	9
Car B	9	2	0	0	7
Car C	7	2	9	0	9

   Which car has done the least mileage?

3. Three houses are for sale on the same street. The asking prices are £249 995, £259 599 and £249 959.

   Which is the smallest selling price?

4. The table shows the lottery prize draw amounts for the last four weeks.

Week 1	Week 2	Week 3	Week 4
£2 605 506	£2 065 005	£2 506 605	£2 056 006

   Which week had the highest amount in its prize draw?

3 Rounding

Learn the skill

You can round numbers to the nearest 10, 100 or 1000.

The value of the **key digit** tells you whether to round the number up or down:

- The key digit is immediately to the right of the place value you are rounding to.
  - Round **up** when the key digit is 5, 6, 7, 8 or 9.
  - Round **down** when the key digit is 1, 2, 3 or 4.

If you are rounding to the nearest *ten*, then the key digit is the *units* digit.

Example 1: Round 3457 to the nearest ten.

The key digit is to the right of the tens digit: 345<u>7</u>

The key digit, 7, is **more than 5** so **round up**, from 57 to 60.

Answer: 3460

If you are rounding to the nearest hundred, then the key digit is the tens digit.

Example 2: Round 3457 to the nearest hundred.

The key digit is the tens digit: 34<u>5</u>7

The key digit is 5 so **round up**, from 457 to 500.

Answer: 3500

If you are rounding to the nearest thousand, then the key digit is the hundreds digit.

Example 3: Round 3457 to the nearest thousand.

The key digit is the hundreds digit: 3<u>4</u>57

As 4 is less than 5, **round down**, from 3457 to 3000.

Answer: 3000

Tip

A number line can help you decide whether to round up or down.

3457 is closer to 3460 than 3450, so **round up**.

Tip

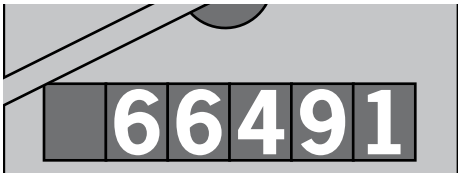
The hundreds digit is to the right of the thousands digit.

Try the skill

1. Round these numbers to the nearest ten.

   a 124 _____ b 349 _____ c 3985 _____

2. How many miles are shown on this car's mileometer, to the nearest ten miles?



3. Ring the number which is 725 rounded to the nearest ten:

a 700 b 720 c 730

4. Ring the number which is 8 307 rounded to the nearest ten:

a 8000 b 8300 c 8310

5. Round each of these numbers to the nearest hundred.

a 3885 _____ b 1946 _____ c 12 011 _____

6. Using a calculator, a bricklayer has worked out that he needs 14 675 bricks for a job. What is this number to the nearest hundred?

_____

7. Ring the number which is 4356 rounded to the nearest 100:

a 4300 b 4350 c 4400

8. Ring the number which is 69 049 rounded to the nearest 100:

a 69 000 b 69 050 c 69 100

9. Round each of these numbers to the nearest thousand.

a 1500 _____ b 13 499 _____

10. Round each of these numbers to the nearest thousand.

a 3357 _____ b 45 601 _____ c 21 075 _____

11. A woman earns £23 498 per year. How much is this, to the nearest thousand pounds?

_____

12. Ring the number which is 1 995 rounded to the nearest thousand:

a 1000 b 1900 c 2000

13. Ring the number which is 33 744 rounded to the nearest thousand:

a 30 000 b 33 000 c 34 000

4 Adding whole numbers

Learn the skill

Here are two different ways of adding numbers:

- **The "traditional, column" method**
- **The "partitioning" method.**

Both methods give the same answer.

The traditional way to add numbers is to write them in a column, with digits of the same place value lined up. You add each column of digits, starting from the right.

> **Tip**
> The important thing is to choose a method you like and can use to get the correct answer.

The "traditional, column" method

Example 1: Work out 78 967 + 7827

Align the place values:

Work right to left:

$$\begin{array}{r} 7\ 8\ 9\ 6\ 7 \\ {}^{1}\ 7_{1}\ 8\ 2_{1}\ 7 + \\ \hline 8\ 6\ 7\ 9\ 4 \end{array}$$

Start here

- 7 + 7 = 14, write 4, carry 1.
- 6 + 2 + 1 = 9
- 9 + 8 = 17, write 7, carry 1.
- 8 + 7 + 1 = 16, write 6, carry 1.
- 7 + 0 + 1 = 8

Answer: 86 794

The "partitioning" method

The **partitioning method** breaks the numbers up into parts that have the same place value. You then add these parts.

Example 2: Work out 78 967 + 7 827

78 967 + 7827

Units: 7 + 7 =	14
Tens: 60 + 20 =	80
Hundreds: 900 + 800 =	1700
Thousands: 8000 + 7000 =	15 000
Tens of thousands: 70 000 + 0 =	70 000

Answer: 86 794

Try the skill

Use your preferred method to add the following numbers.

1. 13 236 + 2 592

2. **a** 3 708 + 29 142 **b** 50 019 + 102

3. 12 789 + 18 521

4. **a** 2 067 + 34 120 **b** 21 997 + 10 985

5. 869 + 1 037 + 43 454

6. A band played for two nights in the same town. The audience figures for the two nights were 5879 and 4233. How many people saw the band?

7. In three rounds of a computer game a boy scored 2346 points, 4559 points and 3008 points. How many points did he score in total?

8. At two semi-final football matches, the attendances were 34 236 and 19 474. How many attended the two matches in total?

Tip

It may help to use a place-value table to help you align the digits for the partitioning method.

Tip

Addition questions usually use the words **total** or **altogether**.

Mental strategies for adding: Using number bonds

Example 1: 90 + 18 + 10 + 4 + 12 + 16

= 90 + 10 + 18 + 12 + 4 + 16

= 100 + 30 + 20

Answer: 150

Regrouping numbers like this makes it easier to add them in your head.

Tip

Try to add pairs of numbers which will give you an answer that is easy to remember e.g. 4 + 16 = 20

Try the skill

Add these numbers in your head.

1. 2 + 15 + 8 + 5

2. 23 + 9 + 7 + 11

3. 18 + 36 + 12 + 14

4. 56 + 17 + 44 + 3

5 Subtracting whole numbers

Learn the skill

Here are two methods for subtracting numbers:

- **The "traditional, column" method**
- **The "adjust and amend" method.**

In the **traditional method** you write the bigger number above the smaller number, lining up digits with the same place values. Then subtract the digits in each column, starting from the right.

Tip

Choose a method you like and can use to get the correct answer.

Remember

When you subtract one number from another, you are **finding the difference** between them.

The "traditional, column" method

Example 1: Work out 2373 – 676

Write the numbers in place-value columns. Subtract each column, starting from the right.

$$\begin{array}{cccc} {}^{1}\cancel{2} & {}^{1}3 & {}^{6}\cancel{7} & {}^{1}3 \\ & 5 & 2 & 6 \; - \\ \hline 1 & 8 & 4 & 7 \end{array}$$

Start here

Thousands: 1000 – 0 = 1000

Hundreds: You can't take 500 from 300 so take 1000 from 2000 (change 2 to 1): 1300 – 500 = 800

Tens: 6 – 2 = 4

Units: You can't take 6 from 3 so take 10 from 70 (change 7 to 6): 13 – 6 = 7

Answer: 1847

The "adjust and amend" method

Example 2: 757 – 668

Adjust 757 to 768 because 768 – 668 is easier to subtract.

To do this you need to **add 11**.

Now do the subtraction: 768 – 668 = 100

Amend this answer by **subtracting 11**.

Answer: 100 – 11 = 89

Tip

You don't have to adjust 757 to 768. You can adjust either number as you want: the aim is to make the subtraction easier!

Remember

You need to subtract 11 here to make up for adding 11 earlier.

Try the skill

Use your preferred method to find the answers.

1. 13 436 – 7392

2. a 25 355 – 18 261 b 72 300 – 41 856

3. a 16 502 – 8169 b 63 713 – 37 088

4. a 27 405 – 18 637 b 80 326 – 79 488

Tip

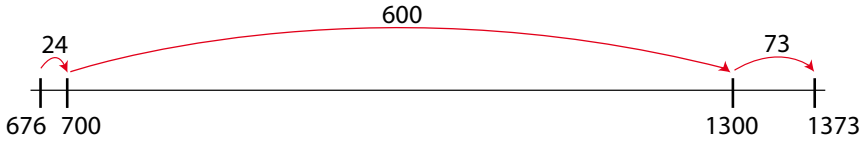
Check your answer makes sense. 13 436 – 7 392 is about 13 000 – 7 000 = 6 000. Is your answer close to 6000?

Mental strategies for subtracting: using counting on

To **count on in jumps**, you jump from the smaller number to the bigger number. Add the jumps together to work out the **difference** between the two numbers.

Example 2: Work out 1373 – 676

The number line below shows how to work out the jumps.



Count on from 676 to 700: 24

Count on from 700 to 1300: 600

Count on from 1300 to 1373: 73 +

Add: 697

Answer: 697

Tip

You don't have to 'jump' like this. You could for example jump from 600 to 1000 and then to 1200. Choose jumps which you feel comfortable with.

Try the skill

Subtract these numbers in your head.

1. 602 – 493

2. 12 303 – 898

3. 18 497 – 502

4. 953 – 368

Tip

'Counting on' is a good method to use if you prefer adding to subtracting.

6 Multiplying whole numbers

Learn the skill

You can multiply numbers in any order.

Example 1: Work out 3 × 5 × 12

Here are two different ways.

1 First work out 3 × 5 = 15.
Then work out 15 × 12 = 180.

2 First work out 5 × 12 = 60.
Then work out 3 × 60 = 180.

Answer: 180

The second way is probably the easiest, because the second multiplication, 3 × 60, is easier than 15 × 12.

When you **multiply** a number by **10**, all the digits in the number move **one place to the left.**

Example 2: Work out 86 × 10

H	T	U	
	8	6	× 10
8	6	0	

So, 86 × 10 = 860

Answer: 860

20 = 2 × 10. To multiply by 20, multiply by 2 first, then multiply by 10.

Example 3: Work out 25 × 20

25 × 20 = 25 × 2 × 10 = 50 × 10 = 500

Answer: 500

When you **multiply** a number by **100**, all the digits in the number move **two places to the left.**

When you **multiply** a number by **1 000**, all the digits in the number move **three places to the left.**

Example 4: Work out **a** 86 × 100 **b** 86 × 1000

	Th	H	T	U	
			8	6	
		8	6	0	× 10
	8	6	0	0	× 10
8	6	0	0	0	× 10

a 86 × 100 = 8600 Answer: 8 600

b 86 × 1000 = 86 000 Answer: 86 000

Tip

Look for combinations of numbers that are easy to multiply.

Remember

100 = 10 × 10
1000 = 10 × 10 × 10
Use these to break down the calculation.

Try the skill

See which of these questions you can work out in your head

1. **a** Work out 8 × 6 × 5 = _____

   b School meals cost £3.00 a day. How much will it cost a student to have school meals for four weeks?

   _____

2. Work out:
   a 23 × 10 = _____ **b** 890 × 10 = _____ **c** 10 × 64 = _____

3. Photocopier paper costs £8 per box. How much do ten boxes cost?

   _____

4. Work out:
   a 21 × 40 = _____ **b** 47 × 20 = _____ **c** 122 × 30 = _____

5. Potatoes cost 72 pence per kilogram. A cook buys a 50 kg sack of potatoes. How much does he have to pay?

   _____

6. Work out:
   a 3 × 100 = _____ **b** 15 × 100 = _____ **c** 100 × 26 = _____

7. Fifteen friends each put in £100 to buy a birthday present. How much can they spend on the present?

   _____

8. Work out:
   a 35 × 200 = _____ **b** 56 × 300 = _____ **c** 400 × 14 = _____

9. Twenty charity workers each raise £200. How much do they raise in total?

   _____

10. Work out:
    a 24 × 1000 = _____ **b** 60 × 1000 = _____ **c** 1000 × 302 = _____

11. Carol earns £2000 per month as a part-time store manager. How much does she earn in one year?

    _____

12. Work out:
    a 13 × 2000 = _____ **b** 12 × 5000 = _____ **c** 108 × 3000 = _____

Tip

Some people remember how to multiply whole numbers by 10 by writing zero on the end of the number: e.g.
15 × 1**0** = 15**0**
Do you think this is a good idea?

Tip

20 = 2 × 10
30 = 3 × 10
40 = 4 × 10

Tip

200 = 2 × 100
300 = 3 × 100
400 = 4 × 100

Remember

Don't forget to include units (for money or measurements) in your answers.

7 Squares and multiples

Learn the skill

Multiples

These numbers are taken from the three times table.

3,	6,	9,	12,	15, ...
(1x3)	(2x3)	(3x3)	(4x3)	(5x3)

These numbers are called multiples of 3.

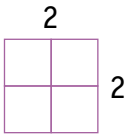
Example 1: Write down the first four multiples of 4.

1x4, 2x4, 3x4, 4x4

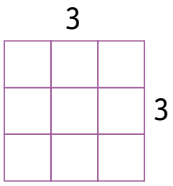
Answer: 4, 8, 12, 16

Squares

Area = 1 x 1 = 1



Area = 2 x 2 = 4



Area = 3 x 3 = 9

1, 4 and 9 are called **square numbers**.

Square numbers are the answers you get when you multiply whole numbers by themselves.

Example 2: what is the next square number after 9?

4 × 4 Answer: 16

Remember

Multiples and squares are always whole numbers.

Try the skill

1. 6, 12, 18, 24 are the first four multiples of six. What are the next two multiples?

   _____

2. Write down the first five multiples of

   a 5 _____

   b 10 _____

   c 7 _____

3. What is the next square number after 16? _____

4. Circle all the square numbers in this box.

4	49	25	30	7
1	64	56	36	100

8 Multiplying larger numbers

Learn the skill

Here are two different ways of multiplying numbers.

The "traditional, column" method

Write each number, one below another, with digits of the same place value lined up, and use long multiplication.

Example 1: Work out 48 × 32

Write 48 and 32 in the grid. Line up the units.

		4	8	
		3	2	×
		9^{1}	6	
1	$_{1}4^{2}$	4	0	+
1	5	3	6	

Multiply by 2 first:
8 × 2 = 16, write 6, carry 1
4 × 2 = 8, 8 + 1 = 9

Multiply by 30:
write 0 in the units column
3 × 8 = 24, write 4, carry 2
3 × 4 = 12, 12 + 2 = 14

Adding: 96 + 1440 = 1536

Answer: 1536

The "grid" method

Use place value to break or partition each number in the multiplication into different parts.

Example 2: 48 × 32

Partition each number:
48 = 40 + 8
32 = 30 + 2

×	40	8
30	1200	240
2	80	16

Answer: 1536

Tip

Choose a method you like and can use to get the correct answer.

Tip

Write the different parts carefully in the grid so that the correct parts are multiplied together.

Try the skill

1. a 46 × 35 = b 23 × 19 = c 84 × 67 =

2. Twenty-seven friends each pay £25 for a day-trip on a boat. How much do they pay in total?

3. Two hundred and fifty people each buy a £15 ticket for a concert. How much was raised from ticket sales?

4. a 64 × 27 = b 58 × 45 = c 85 × 36 =

5. On average, 275 people attend a local swimming pool every week. How many people go swimming in a year?

Tip

52 weeks = 1 year.

6. A company employs 55 security guards. Each guard earns £7 an hour and works for 5 hours per day. How much does the company pay in total per day?

9 Dividing whole numbers

Learn the skill

You should know how to divide by small numbers.

Example 1: Work out 60 ÷ 4

60 ÷ 4 can be written as: $4\overline{)6^{2}0}$ with 1 5 above

6 ÷ 4 = 1 with remainder 2, write 1 above the 6, carry the 2.

20 ÷ 4 = 5, write 5 above the 0.

Answer: 15

When you **divide** a number by **10**, all the digits in the number move **one place to the right**.

Example 2: 250 ÷ 10

All the digits move one place to the right.

H	T	U
2	5	0
	2	5

÷ 10

Answer: 25

When you **divide** a whole number by **100**, all the digits in the number move **two places to the right**.

Example 3: 4800 ÷ 100

All the digits move two places to the right.

Th	H	T	U
4	8	0	0
	4	8	0
		4	8

÷ 10, ÷ 10, ÷ 100

Answer: 48

20 = 2 x 10. To divide by 20, divide by 10 then divide by 2.

Example 4: 240 ÷ 20

Divide the number by 10 first, then divide the result by 2.

240 ÷ 20 = 240 ÷ 10 ÷ 2
= 24 ÷ 2 = 12

Answer: 12

Tip

Division is the **opposite** of multiplication, so the **opposite rules** apply.

Try the skill

Work out these divisions:

1. **a** 24 ÷ 8 = _____ **b** 36 ÷ 4 = _____

c 64 ÷ 4 = _____ **d** 96 ÷ 6 = _____

2. **a** $7\overline{)63}$ **b** $9\overline{)72}$

3. **a** What is twenty-five divided by five?

_____

b Share £45 equally among five people.

_____

c Split £72 into six equal shares.

_____

4. **a** 200 ÷ 10 **b** 1560 ÷ 10 **c** 2030 ÷ 10

_____ _____ _____

5. **a** 230 ÷ 10 **b** 4050 ÷ 10 **c** 600 ÷ 10

_____ _____ _____

6. **a** 1300 ÷ 100 **b** 24 600 ÷ 100 **c** 30 500 ÷ 100

_____ _____ _____

7. Circle the correct answer.

a 75 300 ÷ 100 = **A** 753 **B** 7 503 **C** 7530

b 120 400 ÷ 100 = **A** 1204 **B** 2 040 **C** 1240

8. **a** 360 ÷ 30 **b** 2700 ÷ 90 **c** 5400 ÷ 20

_____ _____ _____

9. Circle the correct answer.

a 450 ÷ 50 = **A** 9 **B** 90

b 6400 ÷ 80 = **A** 8 **B** 80 **C** 800

10. **a** 1500 ÷ 300 **b** 4800 ÷ 400 **c** 56 000 ÷ 800

_____ _____ _____

11. Circle the correct answer.

a 35 000 ÷ 500 = **A** 70 **B** 700 **C** 7000

b 28 000 ÷ 200 = **A** 14 **B** 140 **C** 1400

Tip

You can make divisions in question 1 easier by halving both numbers.

e.g. 32 ÷ 8 is the same as 16 ÷ 4 or 8 ÷ 2

Answer: 4

Tip

A question that includes **shares** or **sharing** usually means you need to **divide**.

Tip

Some people remember how to divide whole numbers by 10, by removing the zero from the end: e.g. 15**0** ÷ 1**0** = 15
Does this always work?

Tip

If a whole number ends with 2 zeros, dividing this number by 100 is the same as removing 2 zeros: e.g 15**00** ÷ 100 = 15

Tip

30 = 3 x 10
50 = 5 x 10
80 = 8 x 10
90 = 9 x 10

10 Dividing with larger numbers

Learn the skill

Here are two useful methods for dividing by bigger numbers:

- **The "traditional method"**
- **The "repeated subtraction" method.**

Tip

Choose the method you prefer and that gives you the right answer.

The "traditional, column" method

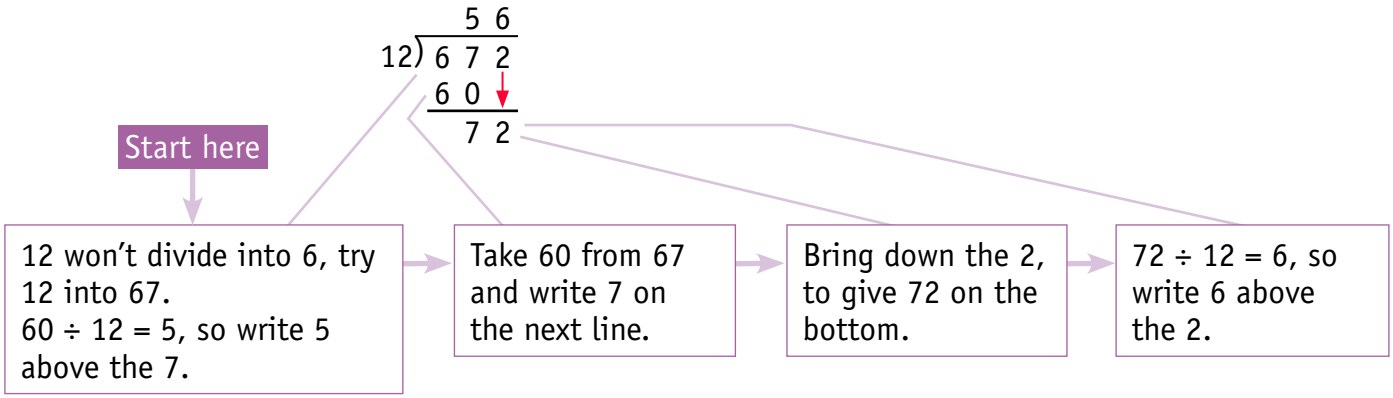
This method is similar to short division.

Example 1: Work out 672 ÷ 12

Set it out as a normal short division.

$$12\overline{)\,6\,7^{7}2}\quad 5\,6$$

Or set it out as long division like this.



Answer: 56

Tip

This short method of division can be difficult if you don't know your tables very well.

The "repeated subtraction" method

In this method, you break the division into smaller steps, by subtracting until there is nothing left.

Example 2: Work out 672 ÷ 12

$$12\overline{)\,6\,7\,2}$$

$$\begin{array}{rcl} 6\,0\,0 & = & 50 \times 12 \\ \hline 7\,2 & & \\ 6\,0 & = & 5 \times 12 \\ \hline 1\,2 & & \\ 1\,2 & = & 1 \times 12 \\ \hline 0 & & \\ & & 56 \times 12 \end{array}$$

Subtract the highest multiple below 672 (600). 672 – 600 = 72.

Subtract the highest multiple below 72 (60). 72 – 60 = 12.

Subtract 12: 12 – 12 = 0.

Answer: 56

Tip

Draw up a table of multiples:

2 × 12 =	24
5 × 12 =	60
10 × 12 =	120
20 × 12 =	240
50 × 12 =	600
100 × 12 =	1200

Remember

Multiples are the answers in the times tables.

Try the skill

1. Use your preferred method to work out these divisions.

a $13\overline{)234}$

b $11\overline{)517}$

c $14\overline{)322}$

d $15\overline{)255}$

e $405 \div 15$

f $875 \div 25$

g $592 \div 16$

h $1512 \div 24$

Tip

There are different ways of dividing with larger numbers. It is important to choose a method that you like and can use to get the correct answer.

11 Solving word problems

Learn the skill

When given word problems to solve:

- Find the important information so you can write the correct calculation
- Decide whether to add, subtract, multiply or divide.

Example: At a football match there were 15 687 'home' fans and 8622 'away' fans. How many fans were at the match altogether?
This question needs addition to solve it.

Write the calculation, using numbers and the correct symbols.

$$15\,687 + 8\,622 = \begin{array}{r} {}^{1}{}^{1}1\,5\;{}^{1}6\,8\,7 \\ 8\;\;6\,2\,2\;+ \\ \hline 2\,4\;\;3\,0\,9 \end{array}$$

Answer: 24 309

Remember

Always read the problem very carefully.

Tip

Altogether usually tells you to **add** the numbers.

Try the skill

1. Alan has saved £837 and wants to spend some of his money. He wants to leave £195 in his account. How much can he take out?

2. In 2006, a bookstore sold 34 236 books. The store aims to sell 19 474 more in 2008. What is the bookstore's target for 2008?

3. A car has done 33 778 miles. It needs to be serviced when it has done 46 000 miles. How many more miles can it do before it is serviced?

4. Jackie has £473 in a bank account. She pays in £46. Then she writes out one cheque for £289 and another for £67. How much is in the account after each transaction?

Tip

- **Take** often means **subtract**.
- **How many more** or **how much more** usually tells you to **subtract**.

Tip

Break the problem down into separate addition and subtraction calculations.

5. Robina takes out a loan and agrees to pay back £85 per month for 36 months. How much will she pay back in total?

Tip

In this problem, **per month** and **in total** are clues that tell you to **multiply**.

6. A gym charges £49 per month for membership. What will be the total cost of membership for one year?

7. a Sandra needs to save £595 to pay for a holiday. He can save £35 per week. How many weeks will it take him to save the money he needs?

   b Twenty-four friends split the hire of a party hall equally. The hire cost comes to £840. How much does each person pay?

8. A householder pays £384 for electricity in a year. She pays in twelve equal monthly instalments. How much does she pay each month?

9. A business woman's profit for one year is £230 222. One year later it is £235 749. How much more profit did she make in the second year?

10. Over a weekend, a computer expert earns £480 for working 12 hours. How much does she earn per hour?

12 Checking answers to calculations

Learn the skill

You can check answers using different methods.

1. Check using opposite calculations

Add and subtract are opposite calculations.

Example 1: Check that 425 – 36 = 389 is correct.

Start with the answer: 389.

Do the opposite of the calculation.

You took away 36 so, to check, you add 36: 389 + 36.

When you do the addition, you get: 389 + 36 = 425.

425 is the number you started with.

Answer: The calculation is correct.

Tip

Multiplication and division are opposite calculations.

2. Check using estimation

This means using numbers that have been rounded up or down, to see if an answer is 'about right'.

Example 2: Is the answer to 2104 × 19 = 21 080 correct?

Check by rounding the numbers to the nearest ten.

2104 rounded to the nearest ten is 2100.

19 rounded to the nearest ten is 20.

2100 × 20 = 42 000

The answer of 21 080 is nowhere near the estimated answer of 42 000.

Answer: No.

Tip

Do not be put off by all the keys on a calculator. You only need to use
+ − × ÷ = keys and the number keys at this point.

3. Check using a calculator

Example 3: twenty four friends split the hire of a party hall equally. The hire cost comes to £840.
How much does each person pay? Answer: £35. **Check this answer is correct.**

The problem can be solved on a calculator using division.

Key in 8 4 5 ÷ 2 4 =

The display shows 35 so the answer is correct.

Tip

If there isn't an ON key, most calculators can be switched on using the AC button.

Try the skill

Use opposite calculations to check the answers in questions 1 and 2.

1. **a** 256 + 462 = 718

b 343 − 219 = 124

c 4133 + 2167 = 6300

d 2577 − 1568 = 1008

2. **a** 15 × 48 = 720

b 672 ÷ 21 = 32

c 25 × 25 = 650

d 3312 ÷ 24 = 138

Use estimation in questions 3 and 4 to decide if the answers given might be correct or if they are definitely wrong.

3. **a** 345 × 22 = 7590

b 17 × 3402 = 25 883

c 1689 + 1022 + 3449 = 6160

Remember

You can round bigger numbers to the nearest 100.

4. 3241 people each paid £11 to attend an arts event held over three days. The manager calculates ticket sales to be £356 510. Is his calculation likely to be correct?

Use a calculator to check the answers in questions 5 and 6.

5. A pilot has flown 276 000 miles in one year. He flies the same number of miles every month. He calculates the monthly distance to be 23 000 miles. Is he correct?

6. Samir has £479 in his bank account. He writes a cheque for £150 and pays in £85. He works out that the balance should be £414. Is he correct?

13 Negative numbers

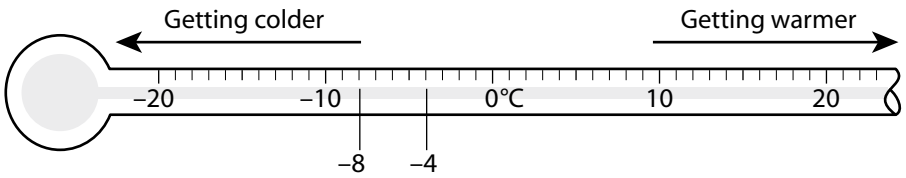
Learn the skill

Most of the numbers you deal with every day are positive, for example, the counting numbers 1, 2, 3, 4, 5...

In some practical situations, such as temperature, numbers can be negative.

Temperatures below zero are icy, and are shown as negative numbers.

A negative or minus sign written in front of a number, for example, –5, shows that it is negative.



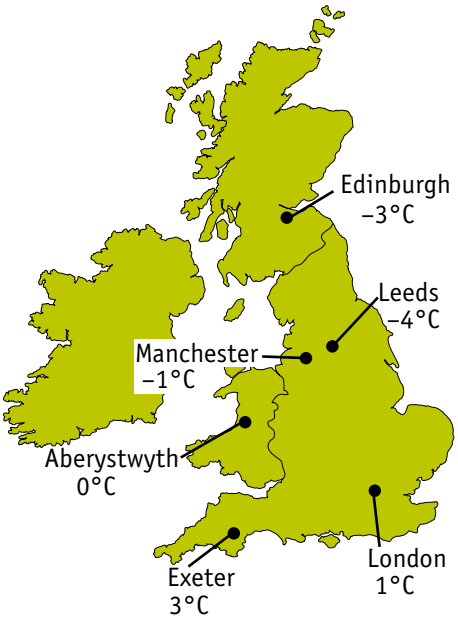
–8°C is colder than –4°C, so –8 is less than –4.

Tip

A common mistake is to think that –8 is bigger than –4, because 8 is greater than 4. Picture the numbers on a number line, to see which is bigger.

Try the skill

1. Here is a map of Great Britain showing the temperatures in some cities.



   a In which cities are temperatures above zero?

   _____

   b Which city has the lowest temperature?

   _____

   c Which city is warmer than London ?

   _____

2. A woman has an overdraft facility of £200 with her cheque account. She has a balance of £85 and writes a cheque for £160. What is her new balance?

3. Is –5 more than –4? Yes/No

4. Circle which of these statement's are true

4>3	2>0	–2>0
–12 < –10	–12 < 10	–10 < –12
–3 > –2	–4 > –3	

Tip

Draw part of a number line to help you work out the answer.

Tip

> means greater than
< means less than

14 Remember what you have learned

First complete this ...

- Every digit in a number has a value, depending on its position in the number. This is called its _____ _____.
- The key digit is immediately to the right of the place value you are rounding to.
  - Round _____ when the key digit is 5, 6, 7, 8 or 9.
  - Round _____ when the key digit is 1, 2, 3 or 4.
- When you multiply a number by 10, all the digits in the number move _____ place to the left.
- When you multiply a number by 100, all the digits in the number move _____ places to the left.
- When you multiply a number by 1000, all the digits in the number move _____ places to the left.
- When you divide a number by 10, all the digits in the number move _____ place to the right.
- When you divide a whole number by 100, all the digits in the number move _____ places to the right.
- Add and _____ are opposite calculations.
- Multiply and _____ are opposite calculations.
- A negative or minus sign written in front of a number, for example, –5, shows that it is _____.

Tip

- Addition questions usually use the words **total** or **altogether**.
- **More** usually means you need to **add**.
- **Take** often means **subtract**.
- **How many more** or **how much more** usually tells you to **subtract**.
- A question that includes **shares** or **sharing** usually means you need to **divide**.

Use the skill

1. A customer's car needs a service at 48 000 miles. His car has done 33 650 miles.

   How many more miles can he drive the car before its service is needed?

   A ☐ 14 350 C ☐ 15 350
   B ☐ 14 450 D ☐ 16 650

2. A cable television company has 67 045 customers.

   What is this number in words?

   A ☐ six million, seven thousand and forty-five
   B ☐ sixty-seven thousand and forty-five
   C ☐ six thousand, seven hundred and forty-five
   D ☐ sixty-seven hundred and forty-five

3. At a football match, 44 645 fans attended.

What is this figure to the nearest hundred?

- **A** ☐ 44 650
- **B** ☐ 44 600
- **C** ☐ 44 640
- **D** ☐ 44 700

4. Rosie has £450 in her current account. In one day she spends £659 on a holiday and pays a cheque into her account for £121.

Use a calculator to work out what the new balance should be.

- **A** ☐ £330
- **B** ☐ −£330
- **C** ☐ −£88
- **D** ☐ £88

5. Thirty-nine thousand and five households receive a free newspaper every week.

What is this number in figures?

- **A** ☐ 39 005
- **B** ☐ 3905
- **C** ☐ 390 005
- **D** ☐ 30 905

6. One weekend, 86 000 people visited Clacton. The following weekend 139 270 people visited Clacton.

How many more people went on the second weekend than the first?

- **A** ☐ 216 270
- **B** ☐ 990 270
- **C** ☐ 53 270
- **D** ☐ 44 270

7. Deklan sells 14 pictures for £50 each.

How much money does he collect?

- **A** ☐ £140
- **B** ☐ £70
- **C** ☐ £700
- **D** ☐ £64

8. A group of seven friends win a total lottery prize of £2583. They each have an equal share of £369.

Which calculation can they use to check if this is correct?

- **A** ☐ 2583 × 369
- **B** ☐ 369 ÷ 7
- **C** ☐ 2583 × 7
- **D** ☐ 369 × 7

9. A hotel charges £65 for one room for one night.

How much in total will it charge for two rooms for three nights?

A ☐ £195
B ☐ £130
C ☐ £390
D ☐ £325

10. The table shows the average temperatures in Paris between November and February.

Temperatures in Paris (°C)			
Nov	Dec	Jan	Feb
−4	−2	0	4

What is the lowest temperature?

A ☐ −4°C
B ☐ −2°C
C ☐ 0°C
D ☐ 4°C

11. A householder pays £876 a year in house insurance. She pays in twelve equal monthly instalments.

How much does she pay per month?

A ☐ £70.50
B ☐ £76
C ☐ £86
D ☐ £73

12. A business makes £38 457 profit in June.

What is this amount, to the nearest thousand?

A ☐ £38 000
B ☐ £38 500
C ☐ £39 000
D ☐ £40 000

13. A music store sells 760 CDs in one week, then 907 and 952 in the following two weeks.

How many CDs does it sell in the three weeks?

A ☐ 2509
B ☐ 2519
C ☐ 2609
D ☐ 2619

14. What is the correct way to use rounding to check the answer to 28 × 832?

A ☐ 20 × 830
B ☐ 30 × 830
C ☐ 20 × 840
D ☐ 30 × 840