

# Functional Skills Maths Entry Level 3

# **Study & Test Practice**

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# Functional Skills Maths Entry Level 3

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## Study & Test Practice

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#### Section One — Number

#### **Numbers**

#### All Numbers are Made of Digits

I) A digit is just one of these:

0 I 2 3 4 5 6 7 8 9

- 2) All numbers are made by putting these digits together.
- 3) For example, 21, 48, 321 or 648.

#### Two-digit Numbers

The first digit of a two-digit number tells you how many tens the number has.

The second digit tells you how many units (ones) the number has.



#### Three-digit Numbers

The first digit of a three-digit number tells you how many hundreds the number has.

The second digit tells you how many tens the number has.

The third digit tells you how many units the number has.



#### Finding the Lowest Number From the First Digit

- I) First find the numbers with the fewest digits.
- 2) From these, find the one with the lowest first digit. That's the lowest number.



#### Finding the Lowest Number Using the Other Digits

- 1) If two numbers have the same number of digits, and their first digit is the same, find the one with the lowest second digit.
- 2) If the second digit is also the same, find the one with the lowest third digit.



#### Finding the Highest Number Using the First Digit

- I) First find the numbers with the most digits.
- 2) From these, find the one with the highest first digit. That's the highest number.



#### Finding the Highest Number Using the Other Digits

- 1) If two numbers have the same number of digits and their first digit is the same, find the one with the highest second digit.
- 2) If the second digit is also the same, find the one with the highest third digit.

#### EXAMPLE:

Fernando has £345, Sunita has £3, Jane has £8, Chris has £341. Who has the most money?

I) Find the numbers with the most digits:

£345, £341

2) Find the number with the highest first digit:

They're both 3

3) Find the number with the highest second digit:

They're both 4

4) Find the number with the highest third digit:

£345 The third digit of 345 is 5, which is higher than the third digit of 341 (which is 1). So Fernando has the most money.

Biggest, most, greatest and largest just mean highest.

Pr	Practice Questions	
I)	Find the smallest number in this list: 190, 27, 5, 16, 3, 210	
2)	Find the highest number in this list: 190, 27, 5, 16, 3, 210	
3)	Phil has 6 days of holiday left, Colm has 14, Dorothy has 17 and Jill has 2. Who has the most days of holiday left?	
4)	The table below shows how much money four people have in their bank account           Sarah         £424           Heather $6473$	s.
	Katie £452	
	Jane £475	
	a) Who has the most money in their account?	
	b) Who has the least money in their account?	
5)	A flat pack wardrobe comes with the following screws: 10 small gold, 15 large gold, 4 small silver and 25 large silver.	
	a) What type of screw is the most common?	
	b) Which screw is there the fewest of?	

#### **Adding and Subtracting**

#### You Need to Know When to Add

- 1) The questions you get in the test will be based on real-life situations.
- 2) You won't always be told what calculation to do to answer the question.
- 3) You'll need to work out for yourself what calculation to do.
- 4) Sometimes it will involve adding numbers together.
- 5) Addition is shown by a + sign.

#### EXAMPLE:

Charlene is ordering some tickets online.

The costs of the tickets, booking fee and delivery are shown below.

How much will one ticket cost her in total if she picks it up herself?

Ticket	£12
Booking fee	£2
Delivery	£3

Answer: you need to add together the price of a ticket plus the booking fee. You don't need to add on the delivery fee because Charlene is picking up the ticket herself. So the calculation you need to do is:

Sometimes you need to include units in your answer. Units tell you what type of number you've got. In this case the units are pounds, '£'.

#### EXAMPLE:

Janice is cleaning her house. How long it takes to clean each room is shown below. How long does it take to clean all the rooms?

Kitchen, 2 hours	Dining room, I hour
Living room, 2 hours	Bathroom, I hour

Answer: you need to add together the times for all the rooms. So the calculation you need to do is:

2 + 1 + 2 + 1 = 6 hours  $\leftarrow$  The units here are 'hours'.

#### You Need to Know When to Subtract

- I) Sometimes you'll need to subtract take one number away from another.
- 2) Subtraction is shown using a sign.

EXAMPLE:

Warren is paying for some crisps. The crisps cost  $\pounds 2$ . He pays with a  $\pounds 10$  note. How much change should he get back?

Answer: you need to take away how much the crisps cost from how much money he paid with. So the calculation you need to do is:

10 - 2 =**£8** 

# EXAMPLE:Sybil works a 7 hour shift.<br/>Her notes for her time sheet are shown on the right.<br/>How long did she spend packing?Picking 2 hours<br/>Phones 4 hours<br/>Packing ?Maswer: you need to take away the times you know from the total<br/>time she is at work. So the calculation you need to do is:<br/>7-2-4=1 hour is spent packing.Sometimes there is more than one way to answer a question. For example, here you could have<br/>added together the two times you knew (2 + 4 = 6) and then taken that away from 7 (7 - 6 = 1).

As long as your method and answer are correct, you'll get the marks.

#### You Might Need to Add and Subtract

#### EXAMPLE:

Suri orders salmon and then lemon tart. She has a voucher for £2 off any meal. How much does she have to pay for lunch?

Answer: this calculation has two steps.

- I) Add up the price of the meal: 10 + 4 = 14
- 2) Then take away the voucher: 14 2 = 12

Suri has to pay £12.

Salmon	£١٥
Roast Chicken	£١٥
Lemon Tart	£4

#### Always Check Your Answer

- I) Adding and subtracting are opposite calculations.
- 2) Once you've got your answer, you can check it using the opposite calculation.
- 3) You should get back to the number you started with.

#### EXAMPLE:

What is 176 – 12?

Answer: |76 - |2 = |64|

You can use a calculator to work this out. You'll be able to take a calculator into the test and use it whenever you need to. There's a bit more on calculators below.

Check it using the opposite calculation: 164 + 12 = 176

#### EXAMPLE:

What is 9 + 15?You only need to do one of these<br/>calculations to check your answer.Answer: 9 + 15 = 24You only need to do one of these<br/>calculations to check your answer.Check it using the opposite calculation: 24 - 9 = 15OR24 - 15 = 9

#### Using a Calculator

- 1) Make sure it says '0' before you start.
- 2) Press the buttons carefully.
- 3) Always check the display to make sure you've pressed the right button.
- 4) Press the = button at the end of every calculation.
- 5) You can add and subtract using a calculator.

#### EXAMPLE:

James wants to buy a new fridge. One fridge costs  $\pounds 155$  and another costs  $\pounds 130$ . What is the difference in price between the two fridges?

The calculation you need to do is 155 - 130.



Don't just write down 25 though. You need to think about what the answer on your calculator means and add in any units.

The difference in price is **£25**.

Pr	Practice Questions		
I)	What is 2 + 3?		
2)	What is 25 + 14?		
3)	What is 20 – 4?		
4)	What is 176 – 98?		
5)	Tristan is buying a Blu-ray player. Model A is £78 and model B is £95. How much more expensive is model B?		
6)	Crissy has 742 packs of Christmas cards. She sells 337. How many packs does she have left?		
7)	Amir has 75p in his pocket. He spends 60p but gets 2p back. How much money does Amir have now?		
8)	Geraint has 260 CDs. He sells 125 to one shop and 50 to another. He then buys another 35 from the wholesaler. How many CDs does Geraint have now?		
9)	Kristel has 49 notepads in her cupboard and 37 at her desk. How many notepads does Kristel have in total? Show how you check your answer.		

#### **Multiplying and Dividing**

#### You Need to Know When to Multiply

- 1) Some calculations will involve multiplication one number "times" another.
- 2) Multiplication is shown using a × sign.

#### EXAMPLE:

Sharon needs to buy some flour for a cake. A packet of flour costs  $\pounds 2$ . Sharon needs 3 packets. How much does the flour cost Sharon in total?

 $£2 \times 3 = £6$ 

#### EXAMPLE:

Claude buys a bike. He has to pay £126 a month for 4 months. How much will Claude pay in total for the bike?

Answer: you need to calculate 126 times 4.



#### You Need to Know When to Divide

- I) Some calculations will involve division.
- 2) Division is shown using a ÷ sign.

#### EXAMPLE:

Frank drives to work and back 5 days in a row. He drives 50 miles in total. How many miles does Frank drive each day? Answer: the 50 miles needs to be divided by 5 days. So you need to calculate 50 divided by 5.  $50 \div 5 = 10$  miles  $\checkmark$  The units here are 'miles'.



Some Questions Need Answers that are Whole Numbers

- I) You won't always end up with a whole number when you divide.
- 2) But sometimes, you'll need to give a whole number as your answer.

#### EXAMPLE:

Maddie has 14 large chocolate buttons to give out equally to her 5 students. How many buttons will each student get?

Calculation:  $14 \div 5 = 2.8$ 

You can't have 2.8 buttons, so the answer needs to be a whole number.

2.8 is between 2 and 3. There aren't enough buttons for 3 each. So Maddie will give each student **2 buttons**.

#### EXAMPLE:

Richard needs 75 chocolate biscuits for a coffee morning. The biscuits come in packs of 4. How many packs should Richard buy?

Calculation: 75 ÷ 4 = 18.75

Richard can't buy 18.75 packs, so your answer needs to be a whole number.

18.75 is between 18 and 19. If Richard buys 18 packs of biscuits, he won't have enough. So Richard will need to buy **19 packs**.

Pi	ractice Questions
I)	What is 35 × 4?
2)	What is 24 ÷ 2?
3)	Cassandra has put out chairs for a concert. There are 25 rows of chairs. Each row has 5 chairs. How many chairs are there in total?
4)	There are 14 screws in a packet. Justin buys 5 packets of screws. He needs 68 screws. Has Justin bought enough screws?
5)	A secretary buys 3 boxes of A1 paper. Each box has 10 packets. There are 25 sheets of paper in each packet. a) How many sheets of paper are there in one box?
	b) How many sheets of paper has the secretary bought all together?
6)	Connie needs to send 27 Christmas cards. The cards she likes come in packs of 5. How many packs should she buy?
7)	Paula has 124 daffodils. She needs 10 daffodils to make a bunch. How many bunches of daffodils can she make?

#### Always Check Your Answer

- I) Multiplying and dividing are opposite calculations.
- 2) Once you've got your answer, you can check it using the opposite calculation.
- 3) You should get back to the number you started with.

#### EXAMPLE:

What is  $137 \times 4$ ?

Answer: 137 × 4 = 548

Check it using the opposite calculation:  $548 \div 4 = 137$  OR  $548 \div 137 = 4$ 

#### EXAMPLE:

Stella needs 14 fabric heart patches to sew onto some bags. The hearts are sold in packs of 5. How many packs should Stella buy? Answer:  $14 \div 5 = 2.8$ . Stella will need to buy **3 packs**. Check it using the opposite calculation:  $5 \times 2 = 10$  (not enough),  $5 \times 3 = 15$  (enough). So Stella must buy 3 packs.

#### Practice Questions

I)	What is 6 × 10? Show how you check your answer.					
2)	Rachael is pickling eggs. Each jar will hold 5 eggs. Rachael has 125 eggs in total. How many jars of pickled eggs can she make? Show how you check your answer.					
3)	Suzuki needs to send 18 invitations in the post. Stamps come in packs of 12. How many packs of stamps should Suzuki buy? Show how you check your answer.					

#### Decimals

#### Not All Numbers Are Whole Numbers

- 1) Decimals are numbers with a decimal point (.) in them. For example, 0.5, 1.3.
- If you're saying the number out loud, you say "point" where the "." is. For example, 1.3 is one point three.
- 3) They're used to show the numbers in-between whole numbers.
- 4) Digits to the right of the "." are worth less than one.

#### EXAMPLES:

- The number 0.9 is a bit smaller than the number 1.
- The number 1.1 is a bit bigger than the number 1.
- The number 1.9 is a bit smaller than the number 2.
- The number 1.0 is the same as the number 1.
- The number 1.5 is exactly halfway between the numbers 1 and 2.
- The number 2.54 is bigger than the number 2.51.

#### You Can Show Decimals on a Number Line

- 1) A number line is a line with numbers spaced out along it in order.
- 2) The further right a number is on a number line, the bigger it is.
- 3) The space in-between the whole numbers can be split into divisions.
- 4) If the space is split into 10 divisions then each division is equal to 0.1.
- 5) You can see this on a number line:



#### Decimals are Used in Money and Measuring

- 1) Decimals are used in money to show pounds (£) and pence (p).
- 2) Money is always written with two digits after the decimal point, even if they're just 0s at the end.

#### EXAMPLES:

- £7.38 means 7 pounds and 38 pence.
- You write £5.90 not £5.9 for 5 pounds and 90 pence.
- £5.09 is 5 pounds and 9 pence.
- 3) Decimals are also used in measuring.
- 4) For example, you can use them to show metres (m) and centimetres (cm).

You don't need to have

two digits after the point

for measurements.

#### EXAMPLES:

- 3.20 m means 3 metres and 20 centimetres.
- 3.2 m means 3 m and 20 cm too.
- I.62 m means I m and 62 cm.

#### How to Put Decimals in Order

You might need to arrange a list of decimal numbers in order of size.



#### Finding the Largest or Smallest Decimal Number

You might need to give the largest or smallest number from a list of decimal numbers.

	EXAMPLE:						
	Jan weighs 75.4 kg, Dylan weighs 52.5 kg and Andy weighs 75.9 kg. Who weighs the most?						
	<ol> <li>Find the number with the highest whole number: The numbers with the highest whole numbers are 75.4 kg and 75.9 kg.</li> </ol>						
		<ul> <li>2) Look at the first number after the decimal place. The one with the highest number is the largest:</li> <li>9 is bigger than 4, so 75.9 is the largest.</li> </ul> You could also answer this by putting the numbers into size order, then reading off the largest and the largest.					
		So Andy weighs the most.					
Pr	actic	e Questions					
I)	ls   .	32 smaller or bigger than 11.42?					
	•••••						
2)	Write	e 6 pounds and 43 pence as a decimal.					
	•••••						
3)	lf Car	ndice spends over £15 she gets free delivery. She spends £15.49. Is her delivery free?					
	•••••						
4)	Vehic Can ł	les over 2.8 m tall can't go under a railway bridge. Joe's wagon is 2.84 m tall. ne drive under the bridge?					
		~ 					
5)	Put tl	hese numbers in order starting with the smallest: 6.2, 7.9, 3.4, 7.8					
- /		6 , , , , , , , , , , , , , , ,					
6)	() Per condift 95 ( 1/2 loss condift 95 9 l/2 and Den condift 95 2 l/2 \\//h = is the structure ()						
5)	<u></u>						
7)	El. mar	has (212 E4 Andi has (209 12 and Oliver has (212 E9 ) M/h a has the mast man of					
7)	riynn	nas £212.56, Aadi nas £209.13 and Oliver nas £212.59. VVno has the most money?					
	•••••						

#### Adding and Subtracting Decimals

- I) You can add and subtract decimals using a calculator.
- 2) It's exactly the same as with whole numbers just remember to type the decimal point into the calculator.

EXAMPLE:						
	Sooki wants to know how much she has spent shopping.					
	Potatoes £1.99					
	Cheese £2.99					
	Beans £0.59					
	Answer: add together everything Sooki has spent.					
	1.99 + 2.99 + 0.59 = <b>£5.57</b>					
	1.99+2.99+0.59=5.57					

#### Multiplying and Dividing Decimals

You can multiply and divide decimals in exactly the same way as whole numbers.



Pr	actice Questions
I)	What is 1.99 + 2.99?
2)	What is 15.99 – 10.50?
3)	What is 3.5 × 5?
4)	What is 7.8 ÷ 10?
5)	Sonny wins £30 on a scratch card. He spends £6.15 of this in the shop. How much does he have left?
6)	Nicola is buying a top for £24.99. She has a gift token for £12.50. How much does the top cost her?
7)	Donald has a voucher for £2 off if he spends over £5 on fresh fruit. So far he has bought kiwis for £1.55 and strawberries for £2.85. Can he use his voucher?
8)	Christie drives 13.2 miles each day. How many miles does she drive in 10 days?
9)	Sanjay has 10.5 g of agar to share equally between two mixes. How much should he put into each mix?
10)	Tim spends £36.75 on three books. Each book was the same price. How much did each book cost?

#### **Fractions**

#### Fractions Show Parts of Things

- I) If something is divided up into equal parts, you can show it as a fraction.
- 2) There are two bits to every fraction:



#### EXAMPLE:



#### How to Write Fractions

Here's how to write some common fractions:



You can also get mixed fractions. Mixed fractions are when you have whole numbers and fractions together. For example,  $I\frac{l}{4}$  (one and a quarter).

#### Practice Questions

- 1) Becca has 2 cans of pop. She drinks 1. What fraction did Becca drink?
- 2) Cliff had 4 desk calendars. He gave 3 away.
  a) How many calendars does he have left?
  b) What fraction of calendars does he have left?

- 1)  $\frac{3}{4}$  is just another way of writing  $3 \div 4$ .
- 2) So you can type fractions into your calculator by dividing the top by the bottom.
- 3) This turns them into decimals.

XAMPLE:	
What is $\frac{1}{2}$ as a decimal?	
$\frac{1}{2}$ is the same as 1 ÷ 2. So the calculation you need to do is: 1 ÷ 2 = <b>0</b> .	5
$1 \div 2 = \square 5$	



#### 'Of' means 'times'

- 1) Sometimes, you might need to calculate a 'fraction of' something.
- 2) In these cases, 'of' means 'times' (multiply).





#### Writing Fractions as Decimals

- 1)  $\frac{1}{4}$  is the same as saying 1 ÷ 4 = 0.25, which is a decimal.
- 2) Here's what some common fractions are written as decimals:



#### **Ordering Fractions**

- I) Fractions are just numbers.
- 2) So they can be put in order of size like any other numbers.
- 3) From smallest to biggest:  $\frac{1}{4} \rightarrow \frac{1}{3} \rightarrow \frac{1}{2} \rightarrow \frac{3}{4} \rightarrow 1$
- 4) Here it is on a number line:



#### EXAMPLE:

An office is buying some computers from either X-traComp Computers or Ultravision Computers. The computers cost the same price but X-traComp will give them  $\frac{1}{2}$  off and Ultravision will give them  $\frac{1}{3}$  off.

Who should they buy the computers from? Give a reason for your answer.

 $\frac{1}{2}$  (0.5) is bigger than  $\frac{1}{3}$  (0.33).

So they should buy them from X-traComp as they will be cheaper.

#### Practice Questions



#### Rounding

#### Rounding to the Nearest 10

- "Rounding to the nearest 10" means finding the nearest number ending in 0. For example, 10, 60, 230.
- 2) If the last digit is less than 5, round down to the ten below.
- 3) If the last digit is 5 or more, round up to the ten above.

#### EXAMPLE:

Sam has 32 sandwiches. How many does he have to the nearest 10? The last digit is 2. This is less than 5, so you need to round it down. Sam has **30 sandwiches** to the nearest 10. You can see this on a number line:



#### Rounding to the Nearest 100

- "Rounding to the nearest 100" means finding the nearest number ending in 00. For example, 100, 600, 2300.
- 2) If the last two digits are less than 50, round down to the hundred below.
- 3) If the last two digits are 50 or more, round up to the hundred above.

#### EXAMPLE:

Zara has 250 envelopes.

How many envelopes does she have to the nearest hundred?

The last two digits are 50, so round up to the hundred above.

Zara has **300 envelopes** to the nearest hundred.

#### Rounding Decimals

- You might need to round decimal numbers to make them whole numbers.
   For example, if the question is about money (£ or p) or measurements (m, km, kg).
- 2) Look at the first digit after the decimal point.
- 3) If it's less than 5, round the number down.
- 4) If it's 5 or more, round the number up.

#### EXAMPLE:

Ramesh is buying some material. It costs 232.4p per metre. How much is this to the nearest pence?

Look at the first digit after the decimal point.

4 is less than 5, so round down.

The material costs **232p** per metre to the nearest pence.

#### EXAMPLE:

Some sweets cost  $\pm 3.50$  per kg. How much do they cost to the nearest pound?

The first digit after the decimal point is a 5, so you need to round up.

The sweets cost £4 per kg to the nearest pound.

#### **Practice Questions**

- I) Tom has 134 red pens.
  - a) How many pens does Tom have to the nearest 10?
  - .....
  - b) How many pens does Tom have to the nearest 100?
- 2) Alex has 550 fax machines. How many does he have to the nearest 100?

-----

3) Cheese costs £6.26 per kg. How much is this to the nearest pound (f)?

#### Estimating

#### Estimating Uses Rounding

- I) An estimate is a close guess at what an answer will be.
- 2) You can use rounding to estimate an answer.

## Kyle has 32 fairy cakes and 118 cup cakes. Estimate how many cakes Kyle has in total. See pages 22-23 for more on rounding. 1) First round both numbers to the nearest 10. 32 rounds down to 30. 118 rounds up to 120. 2) Then add 30 and 120: 120 + 30 = 150 So Kyle has about 150 cakes in total.

#### **Estimating Money Calculations**

#### EXAMPLE:

Carl is buying supplies on the company credit card. So far he has spent  $\pounds 15.99$ ,  $\pounds 13.99$ , and  $\pounds 127.99$ .

Estimate how much he has spent so far.

I) First round all the numbers to the nearest  $\pounds I$ .

£15.99 rounds up to £16.

£13.99 rounds up to £14.

£127.99 rounds up to £128.

2) Then add them together: 16 + 14 + 128 = £158.00

So Carl has spent about **£158.00** so far.

#### **Estimating Sizes**

You might need to estimate the size of one thing when given the size of something else.



#### Practice Questions



#### Some Number Patterns Involve Counting

- I) Number patterns are lists of numbers that follow a pattern.
- 2) They can involve counting, or addition, subtraction, multiplication or division.

#### EXAMPLE:

Darryl organises a cleaning rota.

The bathroom must be cleaned every 5 days.

It has been cleaned on Tuesday in week I.

Mark in the next 3 times the bathroom should be cleaned.

Week I	Week 2	Week 3
Monday	Monday	Monday
Tuesday bathroom	Tuesday	Tuesday
Wednesday	Wednesday	Wednesday
Thursday	Thursday	Thursday
Friday	Friday	Friday
Saturday	Saturday	Saturday
Sunday	Sunday	Sunday

The bathroom needs to be cleaned every 5 days.

From Tuesday, count on 5 days — that's the next day it needs to be cleaned. So the next day it needs to be cleaned is Sunday in week 1. Then count on 5 days from here and so on.

So the bathroom should be cleaned on...

- Sunday of week I
- Friday of week 2
- Wednesday of week 3

#### Number Patterns Involving Multiplication and Division

#### EXAMPLE:

Flo has some shares in a company. They double in value each month. In January they are worth £35. How much are the shares worth at the end of March?

The pattern here is  $\times 2$  for each month until March.

January = £35

February =  $\pounds$ 35 × 2 =  $\pounds$ 70

 $March = £70 \times 2 = £140$ 

At the end of March the shares are worth £140.

#### EXAMPLE:

There is a sale on in Josie's shop. She is trying to sell half her stock of crisps every hour. She has 16 boxes. How many boxes will she have left after 3 hours? The pattern here is  $\div$  2 every hour for 3 hours. I hour,  $16 \div 2 = 8$  boxes, 2 hours,  $8 \div 2 = 4$  boxes, 3 hours,  $4 \div 2 = 2$  boxes. After 3 hours Josie has 2 boxes left.

#### **Practice Questions**

 Lloyd went to the doctors on the 10th Oct. He was prescribed some tablets to be taken every 4 days starting that day. On which dates in October does Lloyd need to take the tablets?



Oc	October					
1	2	3	4	5	6	7
8	9	Dr's 10 app.	11	12	13	14
15	16	17	18	19	<sub>Наіr</sub> 20	21
22	23	24	25	26	Dinner? 27	28
29	Chris Bday 30	31				

(× 2). Triple means

multiply by  $3 (\times 3)$ .

2) Willow is growing some bacteria. She has 15 bacteria to start with. They double in number every hour. How many will she have in 4 hours?

#### Units

#### **Everything You Measure Has Units**

- I) When you measure something you need to give the units.
- 2) Units tell you what type of number you've got. For example, you can't just say that a distance is 4 you need to know if it's 4 metres or 4 miles.



#### Units of Length

I) Length is how long something is.



This means that 1 cm is	Length
the same as 10 mm.	→ I cm = I0 mm
Another way of saying this is	l m = 100 cm
that there are 10 mm in 1 cm.	l km = 1000 m

You might also see length measured in feet and inches.
 For example, these units are sometimes used to give someone's height.

#### Units of Weight

I) Weight is how heavy something is.



 You might also see weight measured in stones or pounds. For example, these units are sometimes used to give a person's weight.

#### Units of Capacity

- Capacity is how much something will hold.
   For example, how much liquid a jug will hold.
- 2) Common units of capacity are: 

  millilitres (ml)
  centilitres (cl)
  litres (L)
- 3) Here's how some of these units are related: Capacity I cl = 10 ml I L = 100 cl (or 1000 ml)
- 4) You might also see capacity measured in pints.For example, the capacity of a milk bottle is often measured in pints.

Practice Questions						
I)	Circle the unit of length:	metre	kilogram	centilitre		
2)	Circle the unit of weight:	centimetre	gram	litre		
3)	Circle the unit of capacity:	millilitre	kilometre	gram		
4)	Underline the units in the fo	llowing sentenc	es:			
	a) An antique clock is 1.7 r	metres tall and	40 centimetres wid	de.		
	b) A cardboard box weighs	200 g. When	it's filled with bool	<s 14="" it="" kg.<="" th="" weighs=""></s>		
	c) A barrel contains 160 lit	res of oil.				
5)	How many metres are in a ki	lometre?				
6)	) How many grams are in a kilogram?					
7)	How many centilitres are in a	a litre?				
,						
8)	) In the following pairs, circle the unit that is bigger.					
	a) millimetre or centimetre					
	b) kilometre or metre					
	c) centilitre or millilitre					
# Length

## Length is How Long Something is

You might have to answer questions where you have to do calculations with lengths.

#### EXAMPLE:

Colette has a 1.5 m length of fabric. She buys another 1 m long piece. What is the total length of fabric Colette has now?

To find the total length, add together the lengths of the two pieces:

Total length = 1.5 m + 1 m = 2.5 m

So Colette has **2.5 m** of fabric.

## EXAMPLE:

Matthew needs to paint a line halfway along a football pitch. The pitch is 100 m long. Where should Matthew paint the line?

To find out where halfway along the pitch is, divide the length of the pitch by 2:

Halfway along the pitch =  $100 \text{ m} \div 2 = 50 \text{ m}$ 

So Matthew needs to paint the line at **50 m**.

#### **Practice Questions**

1) Anna has covered 4 km on her run. If she carries on for another 2 km, how far will she have run in total?

2) Simon is painting his garden fence. The fence is 80 m long. So far he has painted 45 m. How much does he have left to paint?

3) Andy has three planks of wood. Two planks are each 1.5 m long. One plank is 2.5 m long. What is the total length of all three planks?

.....

## Changing from One Unit to Another

- 1) If a number has units after it, then you can only add or take away, or divide or multiply by another number with the same units.
- 2) So to answer some questions, you might need to change from one unit to another.



You won't get tables like this in your test, so you'll need to learn them.



Length

I cm = 10 mm

l m = 100 cm1 km = 1000 m

# EXAMPLE:

Calvin's ladder is 2 m long. He extends it by 110 cm. How long is the ladder now?

You need to add 110 cm to 2 m, but you can't because the units are different.

So first you need to change one of the lengths, so that they both have the same units.

You can see from the table that I = 100 cm. So to change m into cm you multiply by 100:

Now the units are all the same (cm), you can add the two lengths together:

200 cm + 110 cm = 310 cm.

So Calvin's ladder is **310 cm** long when it's extended.

#### Practice Questions

Marie is building a wall. It is 1.5 m high. Marie wants to add another 50 cm to the wall. I) How high will the wall be when Marie has finished it?

2) Virginie is making a bracelet by putting beads on a string. Each bead is 5 mm wide. The string is 14 cm long. How many beads can Virginie fit on the string?

Section Two — Measure

# Comparing Lengths

Sometimes you might have to compare lengths (or widths, or heights).

E	XAMPLE:				
	A basketball team is looking for a new player.	Player	Height		
	The heights of five possible players	I	1.89 m		
	are shown in the table	2	1.92 m		
		3	<b>I.98</b> m		
		4	1.80 m		
	Which players could they choose?	5	2.00 m		
	You need to look for players who are 1.90 m or more.				
	• Player I is only 1.89 m, so he is too small.				
	• Player 4 is only 1.80 m, so he is also too small.				
	<b>Players 2</b> , <b>3</b> and <b>5</b> are all over 1.90 m. So the basket could choose any of these players.	ball team			
	2) The team decide to choose the tallest player they can Which player should they choose?				
	Player 5 is 2 m tall. This makes him the tallest player. So they should choose <b>player 5</b> .				

## Practice Question

- I) Tony wants to buy a rug. The rug needs to be:
  - at least 1.8 m long
  - no longer than 2.7 m.

Which of the following rugs could Tony choose?

Rug	l	2	3	4	5
Length	<b>I.9</b> m	<b>2.9</b> m	<b>2.6</b> m	1.5 m	<b>2.6</b> m

.....

#### **Estimating Lengths**

In your test, you might be asked to estimate how long something needs to be.



#### Practice Question

 A row of 8 parking spaces need to be made for some new flats. Estimate how long the row of parking spaces needs to be.



# Perimeter

#### Finding the Perimeter

The perimeter is the distance around the outside of a shape.

To find a perimeter, you add up the lengths of all the sides.



## EXAMPLE:

Fiona wants to put some wire fencing around her chicken run.

The diagram below shows the chicken run.



How much fencing does Fiona need to buy?

The fencing will go all the way around the outside of the chicken run. So to answer this question, you need to work out the perimeter of the chicken run.

Write down the lengths of all the sides of the run and add them together.

Perimeter = 1.5 m + 2 m + 1 m + 1 m + 2.5 m + 3 m = 11 m

So Fiona needs to buy **II m** of fencing.



- 2) Kirstie is putting a wallpaper border on the wall in her bathroom.
  - The border will go around the whole room, except for where the door is.
  - The door is 0.85 m wide.



What is the total length of wallpaper that Kirstie needs to buy?

# Weight

# Weight is How Heavy Something is

You need to be able to solve problems involving weight.

## EXAMPLE:

Aiden fills a box with books and board games. The books weigh 4.5 kg. The board games weigh 2.5 kg. The empty box weighs 0.2 kg. How much does the filled box weigh?

Add up the weights of the books, the board games and the empty box:

4.5 kg + 2.5 kg + 0.2 kg = 7.2 kg

So the filled box weighs 7.2 kg.

## EXAMPLE:

A sack of potatoes weighs 25 kg. Alan's trailer can carry a maximum of 240 kg. He needs to transport 14 sacks of potatoes. Can he do this in 1 trip?

First, work out the weight of 14 sacks of potatoes. To do this multiply 25 kg by 14:

25 kg × 14 = 350 kg

350 kg is more than the maximum weight Alan's trailer can carry (240 kg). So Alan **can't** transport all 14 sacks in 1 trip.

#### EXAMPLE:

Ellie buys a 1.5 kg bag of muesli. She buys a 450 g box of muesli too. What is the total weight of muesli Ellie has bought?

First you need to change one of the weights, so they both have the same units.

Remember, 1 kg = 1000 g. So to change kg to g you multiply by 1000. Weight | kg = 1000 g

1.5 × 1000 = 1500 g.

This table is also on p. 29.

Now the units are all the same (g), you can add the two weights together:

1500 g + 450 g = 1950 g.

So the muesli weighs **1950** g in total.

Pr	Practice Questions				
I)	Sunaira recently lost 5.5 kg in weight. Before this she weighed 78 kg. How much does she weigh now?				
2)	Paul needs to carry 5 bags to his car. Each bag weighs 5 kg. Paul can safely carry 20 kg in one go. How many bags can he carry in one go?				
3)	Harriet buys I kg of pasta. She uses 350 g for a recipe. How much does she have left?				

## **Comparing Weights**

It's often useful to compare the different weights of things. For example, if you want to work out the heaviest or lightest thing in a group.

# EXAMPLE:

Melissa, Sam and Jo need to find a fourth person for their rowing team.

The team can't weigh more than 228 kg in total.

The three of them currently weigh 167 kg.

Who should they ask to be their fourth member?

 Work out the amount of weight they have left over for a fourth member:

Person	Weight (kg)
Lucy	58
Rachel	68
Clare	62
Kate	63

Weight left over = 228 kg - 167 kg = 61 kg

 So the fourth member needs to weigh 61 kg or less. The only person in the table that weighs less than 61 kg is Lucy.

They should ask **Lucy** to be their fourth member.

You might need to estimate the weight of something in your test.

# Brad buys the following items at a supermarket: Apples — 0.9 kg, Potatoes — 1.2 kg, Carrots — 1.15 kg Estimate the weight of Brad's shopping. Round each weight up or down to give a whole number. Then add all 3 weights together. 0.9 kg rounds up to 1 kg. 1.2 kg and 1.15 kg both round down to 1 kg. So each group of items weighs about 1 kg. 1 + 1 + 1 = 3 kg So Brad's shopping weighs about 3 kg.

#### Practice Questions

 Liz is going backpacking. She wants to buy the lightest sleeping bag she can. Look at the table. Which sleeping bag should Liz buy?

Sleeping bag	Weight (g)
Sleep Right XV	1160
Comfort Pro VII	1400
Sleeper Light	800
Travelmaster 3000	1000

2) Dennis is on a low fat diet.Which of the following sandwiches would be the best choice for his lunch?

Sandwich	Fat (g)
Chicken Mayonnaise	15.2
Tuna Mayonnaise	12.2
Ham and egg salad	13.5

3) Paula weighs 55.2 kg. Louise weighs 59.6 kg. Estimate how much the two weigh in total.

# Capacity

## Volume and Capacity

Volume is the amount of space something takes up.

Capacity is how much something will hold.



#### Questions on Capacity and Volume

You need to be able to answer questions involving capacity and volume.

#### EXAMPLE:

Jodie showers twice a day. Each shower uses about 45 litres of water. How much water does Jodie use showering each week?

Each day Jodie uses: 45 litres  $\times 2 = 90$  litres of water

In a week, Jodie uses 7 times this amount: 90 litres  $\times$  7 = 630 litres

So Jodie uses 630 litres of water for showering each week.

#### EXAMPLE:

Mark is filling a 65 litre fish tank using a 5 litre bucket. How many full buckets of water will it take to fill the tank completely?

Divide the capacity of the tank by the capacity of the bucket.

65 ÷ 5 = 13

So, **13 full buckets** of water would fill the tank.

# EXAMPLE:

Gareth has made 5 L of stock.

How many 500 ml measuring jugs can he fill with the stock?

You need to divide 5 L by 500 ml, but you can't because the units are different.

So first you need to change one of the measurements so the units are the same.

Remember, I L = 1000 ml. So to change L to ml you multiply by 1000.

5 × 1000 = 5000 ml

Capacity | cl = 10 ml | L = 100 cl (or 1000 ml)

Now the units are all the same (ml), you can divide the amount of stock by the capacity of a measuring jug.

5000 ml ÷ 500 ml = 10

So Gareth can fill **10 measuring jugs** with the stock.

#### Practice Questions

I)	A 500 ml bottle is filled with 200 ml of water.
	a) What is the capacity of the bottle?
	b) What is the volume of water in the bottle?
2)	Gary has bought a fountain. It takes him three full 2.5 litre buckets of water to fill it. How much water is in the fountain?
3)	Catherine is going cycling with 3 friends. They take 2 L of water for each person. At the end of the day they have 0.8 L of water left. How much water have they drunk?
4)	A jug is filled with I litre of orange juice. Four 200 ml glasses are poured from the jug. How much orange juice is left in the jug?

#### **Comparing Volumes or Capacities**

You might need to compare different volumes or capacities in your test.

#### EXAMPLE: Hannah uses about 4.5 L of water to water her vegetables. Which watering can is the best for Hannah to use? Watering Capacity can L 5 L 2 4 L 3 10 L The capacity of watering can 2 is too low — 4 L is less than 4.5 L, so Hannah would need to fill the can more than once. The capacity of watering can 3 is too big. It holds much more than Hannah needs. It'd probably be quite hard to carry. Watering can I seems like the best can to use. It can hold 5 L of water.

This is just over the 4.5 L Hannah needs to water her vegetables.

#### **Estimating Volumes or Capacities**

For some problems you might need to estimate volumes or capacities.



#### Practice Questions

 Charlie is having a new hot water tank fitted in his guest house. He wants it to have a capacity of over 160 L.

Hot water tank	Capacity
Duchess XL	150 L
Herald 175	175 L
Issigo ZF	130 L
AEB 224	165 L

Which of the tanks in the table above could he have fitted?

 Sue wants to buy a small bottle of shampoo to take on holiday. The bottle can have a maximum capacity of 100 ml. She finds 3 bottles she could buy: 85 ml, 125 ml and 50 ml.

Sue wants to buy the biggest bottle she can. Which one should she buy?

3) The bottles below each have a capacity of 1000 ml. Estimate the volume of liquid in each one.

A:

 Volume of liquid in bottle A:

 Volume of liquid in bottle B:

B:

#### Temperature is How Hot or Cold it is

- 1) Temperature is a number that shows how hot or cold something is.
- 2) An object with a high temperature is warm or hot. For example, the inside of an oven.
- 3) An object with a low temperature is cool or cold. For example, the inside of a fridge.
- Temperature can have different units. The most common are called degrees Celsius (°C).

# EXAMPLES:

- The temperature in a normal oven can reach around 230 °C.
- The temperature on a summer's day in the UK might be 26 °C.
- The temperature in a fridge is usually around 5 °C.
- Water turns to ice at 0 °C.

#### Calculations Involving Temperature

You might be asked to work out the difference between two temperatures.

#### EXAMPLE:

The temperature today is 17 °C. Yesterday the temperature was 14 °C.

What is the difference in temperature between today and yesterday?

To find the difference, subtract the smaller temperature from the larger one.

17 °C – 14 °C = 3 °C

So the difference in temperature is 3 °C.

## **Comparing Different Temperatures**

It is often useful to compare different temperatures.

## EXAMPLE:

The Parker family want to go on a day trip to the coast. The table shows the temperature forecast for 3 different places.

The Parkers want to visit the place that's likely to be warmest. Where should they go?

	Temperature (°C)
Sandy Head	20
Minkie Bay	23
Port Anne	19

You need to find the place with the highest temperature in the table. The table shows that Minkie Bay has the highest temperature (23  $^{\circ}$ C).

So the Parkers should visit Minkie Bay.

#### Practice Questions

I)	Circle the highest temperature:	27 °C	38 °C	21 °C		
2)	Circle the lowest temperature:	2 °C	0 °C	5 °C		
3)	) The temperature in Jeff's flat on Monday morning was 18.5 °C. On Tuesday morning it was 17 °C.					
	a) What is the difference in ter	mperature t	between the	e two mornings?		
	b) On which morning was it wa	armest?				
			••••••			
4)	Caitlin has 3 recipes for biscuits. One says to set the oven to 200 °C, another says 190 °C and the final recipe says 225 °C. Caitlin decides to set the oven to the lowest temperature. Which temperature is this?					

#### **Estimating Temperatures**

You might need to estimate the temperature of something.

## EXAMPLE:

At a leisure centre, the temperature in the gym is about 20 °C. The water in the jacuzzi is about 40 °C. Estimate the temperature inside the sauna.

You need to use the information you're given to come up with a sensible answer here.

It's twice as warm in the jacuzzi as it is in the gym.

It could be twice as warm in the sauna as it is in the jacuzzi. (Saunas are very hot.)

40 °C × 2 = 80 °C

So the temperature in the sauna could be **around 80 °C**.

This isn't the only right answer here — the point is to make a sensible guess. For example: the sauna probably isn't colder than the gym — so a guess of 10 °C wouldn't be very sensible.

#### **Practice Question**

 In January, the average temperature in Keith's garden was 6 °C. In May, it was 14 °C. August was the hottest month — the average temperature was 24 °C.

Estimate the temperature in Keith's garden in each of the following months:

a) March

.....

b) July

# **Scales**

#### Scales are Used to Measure Things

- I) A scale is something that you use to measure things.
- 2) Scales are found on things like rulers, kitchen scales, measuring jugs and thermometers.

#### Measuring Length

You can use the scale on a ruler to measure length.



## **Measuring Volume**

You can use the scale on a measuring cylinder to measure volume.





## Measuring Weight



## Measuring Temperature



#### Practice Questions

1)	Every day, Anna records the temperature in her conserv The thermometer on the right shows the temperature one morning in °C. What temperature is shown on the thermometer?	vatory.	0 2 10
2)	On the right is the dial from a set of weighing scales. What is the weight shown?	450 450 450 450 400 kg 25 350 25 300 450 400 kg	

# Money



# Use Pounds OR Pence in Calculations — Not Both

- I) You may get a question that uses pounds and pence.
- 2) If you do, you'll need to change the units so that they're all in pounds or all in pence.

#### EXAMPLE:

Cian buys a DVD online for £7.49. He pays 99p for postage. How much has he spent in total?

I) Change the price of the postage from pence to pounds.

 $99p \div 100 = \pounds 0.99$ 

Both prices are now in the same units (£).
 So add together the cost of the DVD and the postage.

 $\pounds7.49 + \pounds0.99 = \pounds8.48$ 

So Cian has spent **£8.48**.

Pr	Practice Questions				
I)	a)	What is £3.84 in pence?	b)	What is £1.27 in pence?	
2)	a)	What is 61p in pounds (£)?	b)	What is 231p in pounds (£)?	
3)	Wh	nich is more expensive, a pen that costs 65p	or o	ne that costs £0.69?	
4)	<ul> <li>4) Steph is buying a box of cereal bars that cost £1.98. She has a voucher for 50p off. How much will Steph pay?</li> </ul>				
5)	Gra Wh	ace has been shopping. She bought bread for nat was the total cost of her shopping? Give	÷ £1.2 your	20, milk for 90p and eggs for £1.45. r answer in pounds (£).	

# More Calculations Involving Money

There are lots of different types of calculations you can do with money.

EXAMPLE
Will is looking at two TVs in a shop. One costs £259 and the other costs £324. What is the price difference between the two TVs?
Answer:
You need to subtract the smaller price from the larger one.
Price difference: $\pounds 324 - \pounds 259 = \pounds 65$
So there is a <b>£65</b> price difference between the two TVs.

51

## EXAMPLE:

Keri buys 2 cakes for £3. How much would it cost her to buy 5 cakes?

 First you need to work out how much I cake costs. You know that 2 cakes cost £3, so you need to divide £3 by 2.

Cost of I cake:  $\pounds 3 \div 2 = \pounds 1.50$ 

2) Now multiply the price of I cake by 5.

Cost of 5 cakes: £1.50 × 5 = £7.50

So it would cost Keri £7.50 to buy 5 cakes.

EXAMPLE:

Sabrina would like to buy a newspaper for  $\pounds 1.20$ , a packet of crisps for 55p and a birthday card for  $\pounds 2.40$ . She has  $\pounds 4.20$  in her purse. Does she have enough money to buy all 3 things?

1) First, you need to change all the prices into the same units. So change the price of the crisps from pence to pounds.

 $55p \div 100 = \pounds 0.55$ 

See page 50 for help changing pence to pounds.

2) Now add up the cost of all 3 things.

 $\pounds$ 1.20 +  $\pounds$ 0.55 +  $\pounds$ 2.40 =  $\pounds$ 4.15

The cost of the 3 things is  $\pounds$ 4.15. Sabrina has  $\pounds$ 4.20 in her purse.  $\pounds$ 4.20 is more than  $\pounds$ 4.15, so **yes** she has enough money to buy all 3 things.

#### **Practice Questions**

 James is buying some pet fish. He buys 4 angelfish for £18. How much would it cost him to buy 5 fish?

.....

2) Janice is having a dinner party. She wants to spend £30 on food, £25 on drinks and £10 on decorations. She has an overall budget of £60. Can she afford to spend what she wants?

#### Value for Money Calculations

1) If you're buying a pack of something, you can work out how much you're paying for each item.

Price per item = total price ÷ number of items

2) You can then compare the price per item for that pack with other packs.

#### EXAMPLE:

A shop sells tins of sweetcorn in packs of 3 or 6. The 3-pack costs  $\pounds$ 1.50. The 6-pack costs  $\pounds$ 2.70.

3-pack: Price per tin =  $\pounds 1.50 \div 3 = \pounds 0.50$ 6-pack: Price per tin =  $\pounds 2.70 \div 6 = \pounds 0.45$ 

The 6-pack costs less per tin, so it's better value than the 3-pack.

3) You can also compare costs by looking at how much you'd pay per gram of something.

Price per gram = total price ÷ number of grams

# EXAMPLE:

A 340 g tin of sweetcorn costs 82p. A 200 g tin of sweetcorn costs 60p.

340 g tin: Price per gram = 82p ÷ 340 = 0.24p

200 g tin: Price per gram =  $60p \div 200 = 0.3p$ 

The 340 g tin costs less per gram, so it's better value than the 200 g tin.

#### **Practice Questions**

1) At a bakery you can buy 6 bread rolls for  $\pounds 2$ . At a different bakery you can get 8 bread rolls for  $\pounds 2.40$ . Which deal is the best value for money?

.....

 A 450 g tin of treacle costs 72p. A 750 g tin of treacle costs 135p. Which is the best value for money?

.....

# Calendars

#### Calendars Show the Date

- 1) Calendars show all of the days, weeks and months in a year.
- 2) A calendar for the month of October is shown below.

The days of the week	MON	TUES	WED	THURS	FRI	SAT	SUN	You can see from the
Either Sunday or			1	2	3	4	5	calendar that the 5th of
Monday comes first.	6	7	8	9	10	11	12	October is a Sunday.
Each line of	13	14	15	16	17	18	19	
numbers shows the	20	21	22	23	24	25	26	
dates for one week.	27	28	29	30	31			

#### <u>OCTOBER</u>

## Working Out Dates Using a Calendar

You might be asked questions where you need to look at calendars and work out dates.

			A	PRI	<u>L</u>		
Dave has ordered a new dining table.	MON	TUES	WED	THURS	FRI	SAT	SUN
t is being delivered on the second						1	2
Thursday in April.	3	4	5	6	7	8	9
On what date is Dave's table	10	11	12	13	14	15	16
being delivered?	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
·							
<ol> <li>First, find the day along the top of the Thursday is the 4th day along. The da the calendar) are the dates of every The</li> </ol>	cale tes b hurse	ndar. Delow day ir	ı it (i n the	n the mon	blue th.	e box	on
<ol> <li>First, find the day along the top of the Thursday is the 4th day along. The da the calendar) are the dates of every TI</li> <li>Now count down to the second date. This is the second Thursday of the mod</li> </ol>	cale tes b hurse	ndar. below day ir — tł	vit (i nthe ne 13	n the mon th.	blue th.	e box	on

EXAMPLE:

Karen wants to go on holiday with her sister Ruth for a weekend in March.

Marc	h					
Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Karen can't go between the 1st and the 8th of March. Ruth can't go between the 25th and 31st of March.

Suggest a weekend when the sisters could go on holiday together.

I)	First, cross out any dates	March							
	when the sisters can't go. 🔪	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	
				4	0	2	А		
				-1	4	5	+	5	
2)	) Next, look for a weekend	-6	-7-		9	10	11	12	
<b>Z</b> )		13	14	15	16	17	18	19	
		20	21	22	23	24	25	-26-	
	avallable.	-07	20	20	20	24			
		21	20	25	00	JT			
	(A weekend is Saturday to Sunday.)								

So the sisters could go on holiday on either the **12th-13th or 19th-20th**. Pick one of these for your answer.

#### Practice Question

- I) A town has a festival which starts on the second Sunday of May.
  - On what date does the festival begin? a)

.....

b) The festival lasts for 7 days. On what date does it end?

		l	MAY	/		
SUN	MON	TUES	WED	THURS	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

c) On the 6th day of the festival there is a funfair. On what date does this happen?

## Time Has Lots of Different Units

You need to be able to use lots of different units for time. You also need to be able to change between them. Here are how some of the units of time are related:

60 seconds = 1 minute	7 days = 1 week	10 years = 1 decade
60 minutes = 1 hour	365 days = I year	100 years = 1 century
24 hours = 1 day	12 months = 1 year	

15 minutes = a quarter of an hour
30 minutes = half an hour
45 minutes = three quarters of an hour

# EXAMPLES:

I) How many seconds are there in 2 minutes?

There are 60 seconds in 1 minute, so to find out how many seconds there are in 2 minutes, you need to multiply 60 by 2:

#### 60 × 2 = **120 seconds**

2) How many days is 48 hours?

I day is the same as 24 hours, so to find out how many days there are in 48 hours, you need to divide 48 by 24:

#### Practice Questions

I)	How many minutes are there in half an hour?
2)	How many days are there in a year?
3)	How many days are there in 3 weeks?

## The 12-Hour Clock and the 24-Hour Clock

- 1) You can give the time using the 12-hour clock or the 24-hour clock.
- 2) The 24-hour clock goes from 00:00 (midnight) to 23:59 (one minute before the next midnight).

the next midnight).

06:00 is 6 o'clock in the morning. 18:00 is 6 o'clock in the evening.

3) The 12-hour clock goes from 12:00 am (midnight) to 11:59 am (one minute before noon), and then from 12:00 pm (noon) till 11:59 pm (one minute before midnight).

EX	2:00 am is 2 o'clock in the morning. 2:00 pm is 2 o'clock in the afternoon.	Noon is also called midday.
) Fo	or times in the afternoon, you need to add 12 hours to go from the 12-hour clo	ck to the

4) For times in the afternoon, you need to add 12 hours to go from the 12-hour clock to the 24-hour clock. Take away 12 hours to go from the 24-hour clock to the 12-hour clock.



#### Practice Questions

I) Change the times below from the 24-hour clock to the 12-hour clock.

	a)	10:30	b)	15:35
2)	Cha	nge the times below from the 12-hour cloc	k to	the 24-hour clock.
	a)	7:10 pm	b)	5:20 am
	u)		0)	5.20 um
3)	Ant	ony is meeting a friend at 9 pm. His watch	read	s 21:30 as he arrives. Is he late?
,		,		
	•••••		•••••	

## Working Out Lengths of Time

To work out how long something took, break it into parts.



#### Working Out Times

- 1) You may need to work out what time something will happen. For example, when something will start or finish.
- 2) The best way to do this is to split the time into chunks.



Pr	ractice Questions
I)	A play starts at 7:00 pm and finishes at 9:30 pm. How long is the play?
2)	Ryan catches a train at 10:55 am and gets off at 11:50 am. How long was his journey?
3)	An electricity company are planning a power cut. They will switch the power off at 5:15 am and turn it back on at 9:30 am. How long will the power cut last?
4)	Tom is expecting a phone call from his mother in three quarters of an hour. The time is now 18:45. What time will Tom's mother ring?
5)	Kiera is going to a friend's house. Her journey involves a half hour bus ride and then a 10 minute walk. If she gets on the bus at 6:00 pm, what time will she arrive?
6)	Gary sets off for the gym at 18:55. It takes him 20 minutes to walk there. If he stays at the gym until it closes at 21:00, how long will Gary have spent in the gym?

#### Timetables Have Information About When Things Happen

- I) Timetables have columns and rows.
- 2) Columns are the strips that go up and down. Rows are the strips that go across.
- 3) There are lots of different types of timetables the best way to learn how to use them is to practise.

## EXAMPLE:

The timetable below shows train times. What time would you need to leave Preston to get to Deansgate for 12:30?

Preston	10:32	11:02		12:02
Buckshaw Parkway	10:44	11:14	11:45	12:14
Bolton	11:09	11:40	12:10	12:40
Deansgate	++:27	<mark>12:07</mark> ≯	2:29	I 3:07

- I) Find Deansgate in the timetable.
- 2) Follow that row until you reach the last time before 12:30. It's 12:29.
- 3) Go up the column till you reach the Preston row this is the leaving time from Preston.
- 4) So you'd need to leave Preston at 11:33.

# EXAMPLE:

The timetable for a country show is shown below.

	Saturday	Sunday	
10:00 am	Livestock show	Bakery judging	
11:00 am	Woodland walk	Tractor show	
1:30 pm	Butchery class	Birds of prey show	
2:30 pm	Lawnmower racing	Sheep shearing	
3:00 pm	Brass band contest	Celebrity chefs	

- I) What time does the tractor show start? Answer: **II:00 am** (on Sunday).
- 2) On which day is the butchery class? Answer: **Saturday**.
- 3) When is the birds of prey show? Answer: **1:30 pm on Sunday**.

#### You Need to be Able to Create Timetables

There are no set rules for making timetables. You just need to use the information you're given and put it together in a sensible way.

#### EXAMPLE:

Victoria is planning her son's birthday party.

The party will include: • Party games

- Lunch
- A clown show

Draw a timetable for the party. Think about how long each activity will last and what time the party will start and finish.

#### Answer:

There isn't just one right answer for this question. There are lots of timetables that would work. Here's what you might do:

- 1) Pick a start time for the party. It's a children's party, so let's say 11 am.
- Decide a sensible order for the activities to go in.
   For example, you'd probably wouldn't start off with lunch.
- 3) Think about how long each activity might last.
  - For example, party games might last for I hour.
  - Lunch might last for 1 hour.
  - The clown show might last for 30 minutes.
- 4) Then work out what time each activity will start and finish.

Your timetable might end up looking something like this:

	Start	Finish	
Party games	l I am	I2 pm	
Lunch	l2 pm	l pm	the activities overlap.
Clown show	l pm	I.30 pm	]
			-

ГГ	Fractice Questions							
I)	Debbie wants to travel by train from St David's to Topsham.							
	a)	If she wants to get there by 17:30,	St David's	16:25	16:55	17:25		
	,	which train should she catch?	St James Park	16:29	17:01	17:29		
			Digby	16:33	17:07	17:33		
			Topsham	16:39	17:13	17:39		
	b)	She now needs to be there by 17:15 instead. Can she catch the same train from St David's?						
2)	Lyn	ynn is going on a one day training course. Her timetable for the day is shown below.						
	a)	What time does 'Reptile Care' start?	Time		Activity			
			09:00 - 10:4	Introductio		ion		
		How long is 'Large Animal Care'?	. 10:45 - 11:0		Iorning B	reak		
b)	b)		11:00 - 12:4	5 Large Animal Car		al Care		
		12:45 - 13:3	) Lunch		1			
			. 13:30 - 15:0	0 1	Reptile Care			
c)	``		15:00 - 15:3	0 Afternoon Breal		Break		
	Which is longer — morning break or	15:30 - 17:0	0 Mar	Marine Animal Care				

- 3) Taneeka is organising a fashion show. The show will start at 7:30 pm. There will be:
  - A catwalk lasting I hour.
  - A party with food and drink.

Write a timetable for the show. You'll need to allow time for guests to arrive and sit down at the start. You should also choose a sensible time for the show to finish.

# Section Four — Shape and Space

# Angles

# Angles Tell You the Size of a Corner

I) This is an angle.



3) Smaller angles are sharp and pointy. Bigger angles are wide and flat.



- 4) A right angle is a special type of angle. A right angle looks like this:
- 5) To spot a right angle, look for a square corner.

# 

# Some Shapes Have a Line of Symmetry

- 1) You can find out whether a shape has a line of symmetry by folding it in half.
- 2) If the sides fold together exactly, then the fold is a line of symmetry.



# Some Shapes Have More Than One Line of Symmetry

Some shapes have two or more lines of symmetry.



Lines of symmetry can go up and down, left to right or corner to corner.

# Some Shapes Have No Lines of Symmetry

Some shapes won't fold exactly in half, no matter where you fold them.





Section Four — Shape and Space

# **2D Shapes**

# 2D Shapes are Flat

2D shapes are flat shapes.



## A Square is a 2D Shape

- I) Squares have four straight sides.
- 2) All the sides are the same length.
- 3) Squares also have four corners.
- 4) All the angles at the corners are right angles.




## Rectangles are 2D Shapes

- I) Rectangles have four straight sides.
- 2) Sides that are opposite each other are the same length.
- 3) Rectangles also have four corners.
- 4) All the angles at the corners are right angles.



# Triangles are 2D Shapes

- 1) Triangles have three straight sides. The sides can be different lengths.
- 2) Triangles also have three corners. The angles at the corners can be different sizes.



# Circles are 2D Shapes

- I) Circles have one curved side.
- 2) They don't have any corners.





# **3D Shapes**

# 3D Shapes are Solid

3D shapes are solid shapes.

You need to know these 3D shapes...

- Cube
   All the flat parts of a cube are squares.
   A cube has lots of corners.
   All the angles at the corners are right angles.
- 2) Cuboid



3) Cylinder



## 70



# Plans

# Plans Show How Things are Laid Out in an Area

- 1) A plan shows the layout of an area. For example, a plan might show a room and all the objects in it.
- 2) Plans are drawn as if you are looking down on the area from above.
- 3) Plans show objects as 2D shapes. For example as squares or rectangles.

## EXAMPLE:

A plan of a room is shown below:



The plan has been drawn on a grid.

The squares in the grid are all the same size.

You can tell how big each object is by counting how many squares it covers.

The sofa is 4 squares long. The chair is 2 squares long.  $4 \div 2 = 2$ So the sofa is twice (2 times) as long as the chair. Another way to say this is that the chair is half as long as the sofa.

# Using Plans

Plans are useful for deciding where a new object will fit in an area.



## Practice Questions

- Sharon is designing her new kitchen.
   A plan of it is shown on the right.
  - a) What shape is the table?
  - b) The fridge is the same size as the cooker.Draw a square to show where the fridge could go.

.....

2) A plan of Sarah's room is shown on the right.

Sarah wants to put a set of drawers next to her bed.

- The drawers are twice as big as the TV.
- They are square.

Draw the set of drawers on the plan.







Movement can be described by talking about direction.

I) Clockwise — 2) Anticlockwise movement in the movement in the same direction as opposite direction to the hands of a clock. the hands of a clock. 4) **Right** — movement towards the right. 3) Left — movement towards the left. You can also talk about the amount of movement. I) Whole turn — 2) Half turn — 3) Quarter turn turning half a circle. turning one turning a quarter whole circle. of a circle. EXAMPLE: 220° 20° The dial on an oven is set to 0°. 200 40°

The dial is turned half a turn to the right.

What temperature is the oven set to now?

- I) Half a turn means turning half a circle.
- 2) To the right is going this way:
- 3) So the dial moves like this:



1809

160

140

609

80

120° 100°

The oven is set to 120°.

# The Four Compass Points

- The four compass points are North, South, East and West.
- Starting at North and going clockwise, the compass points always follow the same order. Use this rhyme to help you remember the order:

Never (North), Eat (East), Soggy (South), Wheat (West).

3) You can use compass points to give directions.



NORTH

SOUTH

> EAST

WEST <

## Practice Question

I) Loo	ok at the map of France.	
a)	Is Paris east or west of Alençon?	Alençon Paris
		Le Mans Marie's House N
Ma	rie lives south of Paris.	
She	e is driving to Mayet to visit a friend.	
b)	Should she go clockwise or anticlockwise along t	he Paris ring road?
c)	Which direction should she head in from Le Mar	ns?

# Section Five — Handling Data

# Lists

# Lists Can Be Used to Show Information

- I) A list is a simple way of showing information.
- 2) Another word for information is data.
- 3) The data in a list can be in words, numbers or both.

## EXAMPLES:



# Using the Information in Lists

You need to be able to use information from lists.

EXAMPLE:					
This is the price list for a furniture store:	large bookcase	£50			
How much will it cost to buy the	small bookcase	£45			
small bookcase and get it delivered?	desk	£40			
Answer:	delivery charge	£10			
<ol> <li>Read down the list until you find the small bookcase.</li> <li>Then read across to find the price: £45</li> </ol>					
<ol> <li>Read down the list until you find the word 'delivery'.</li> <li>Read across to find the price: £10</li> </ol>					
3) Now add the two prices together: $\pounds 45 + \pounds 10 = \pounds 55$					
So it will cost <b>£55</b> to buy the small bookcase and get it delivered.					

	THE ADIES
Ì	EXAMPLE:
	Karen, Hannah and Jo are arranging to meet up. Jo makes a list of the dates when each of them is free.
	Jo: 10 <sup>th</sup> , 12 <sup>th</sup> , 20 <sup>th</sup>
	Karen: 9 <sup>th</sup> , 12 <sup>th</sup> , 16 <sup>th</sup>
	Hannah: 6 <sup>th</sup> , 9 <sup>th</sup> , 12 <sup>th</sup>
	What date are all three friends free to meet up?
	Answer: look for a date that appears after each girl's name.
	I) Start at the beginning of the list. The first date Jo is free is the $10^{th}$ .
	<ol> <li>Now look at the dates after Karen's name. Karen is not free on the 10<sup>th</sup>. So the girls can't meet up on the 10<sup>th</sup>.</li> </ol>
	3) The next date Jo is free is the $12^{th}$ .

- 4) Check the dates after Karen's name again. Karen is also free on the 12<sup>th</sup>.
- 5) Now check the dates after Hannah's name. Hannah is free on the 12<sup>th</sup>.

So all three friends are free to meet up on the  $12^{th}$ .

# Practice Questions

- 1) The list below shows how much weight each person in a weight loss group has lost.
- How much weight has Faye lost? a) \_\_\_\_\_ b) Who has lost the most weight? ..... 2) Look at the menu on the right.
  - How much will it cost to buy soup and a sandwich? a) b) How much more expensive is the tea cake than the scone?

Tina	0.45 kg
Faye	0.9 kg
Danni	0.4 kg
Thom	1.35 kg

Tea cake	£1.10
Soup	£1.20
Sandwich	£1.60
Scone	£1.00

# **Tables**

# Tables are a Way of Showing Information

Tables show information in columns and rows.

They're often easier to read than lists.



## EXAMPLE:

This table gives you information about two different people — Tim and Steph.

	Tim	Steph <	The words in the dark blue boxes are headings. They tell you what's in the rest of the table.
Favourite food	Pizza	Pasta	
Favourite drink	Coffee	Tea	For example, it tells you
Favourite sport	Squash	Tennis	that Tim's favourite sport is squash and Steph's
Favourite hobby	Chess	Singing	favourite sport is tennis.

You need to be able to use information in tables.

			Time of	Time	e of
	The table shows the times of the		Low Tide	High	Tide
	low and high tides at a beach.	Monday	05:32	:	45
	What is the time of the high tide	Tuesday	06:01	12:	13
	on Wednesday?	Wednesday	06:32	12:4	46
		Thursday	07:00	13:	15
		Friday	07:31	13:4	44
	Answer:				
<ol> <li>First look at the headings.</li> <li>Find where it says "Time of High Tide" along the top.</li> <li>Then find where it says "Wednesday" down the side.</li> </ol>					
	2) Move one finger down from "Tir	me of High Tide	e"	Time of Low Tide	Time of High Tide
	and another along from "Wedne	esday".	Monday	05:32	11 45
	Your fingers will meet at the tim	e of the	Tuesday	06:01	12/13
	high tide on Medneader 12:44		Wednesday	06:32	2:46
	high tide on wednesday: 12:40	<b>.</b>	Thursday	07:00	13:15
		F	Friday	07:31	13:44

# EXAMPLE:

A group of people were asked if they were left-handed or right-handed. The results are shown in the table below.

	Women	Men
Left-handed	36	27
<b>Right-handed</b>	164	173

How many women took part in the survey?

Answer: add up the number of left handed women		Women	I
Answer, add up the number of left-handed women	Left-handed	(36)	Ι
and the number of right-handed women.	Right-handed	164	Ι

How many people were right-handed?

Women Men Answer: add up the number of right-handed Left-handed 36 27 women and the number of right-handed men. **Right-handed** 164 173 <

164 + 173 = **337** 

)	The	e table on th	e right shows the times	s of sunrise			
,	and	l sunset duri	ng a week.			Time of	Time of
	`					Sunrise	Sunset
	a)	What time	is sunrise on Tuesday?		Monday	07.01	19.08
					Tuesday	07:03	19.00
		•••••••	•••••••••••••••••••••••••••••••••••••••	••••	Wednesday	07:04	19:05
	b)	What time is sunset on Friday?			Thursday	07.05	19:03
					Friday	07:07	19:01
	c)	ls sunset la	ter on Wednesday or c	on Thursday	?		
2)	A s The	urvey was d e results of t	one to find out people's he survey are shown in	s favourite t the table.	ype of film.		
						Women	Men
	a)	How many	men liked Horror films	s best?	Romance	57	43
					Horror	20	40
		••••••		••••	Sci-fi	32	35
	b)	How many	women took part in th	ne survev?	Action	66	57
	c)	 How many	people said that Action	n films were	e their favourite	type of film	?
3)	c) Cla Par	How many ire wants to t of her frier	people said that Action buy a wedding present nd's wedding list is show	n films were for her frie vn in the ta	e their favourite end. ble below.	type of film	?
)	c) Cla Par	How many  ire wants to t of her frier	people said that Action buy a wedding present nd's wedding list is show	n films were for her frie vn in the ta Price	e their favourite end. ble below. Already boug	type of film	?
)	c) Cla Par	How many ire wants to t of her frier	people said that Action buy a wedding present nd's wedding list is show Wine glasses	n films were for her frie vn in the ta Price £60	e their favourite end. ble below. Already boug	type of film	?
)	c) Cla Par	How many  ire wants to t of her frier	people said that Action buy a wedding present nd's wedding list is show Wine glasses Candles	n films were for her frie vn in the ta Price £60 £36	e their favourite and. ble below. Already boug	type of film	?
)	c) Cla Par	How many  ire wants to t of her frien	people said that Action buy a wedding present nd's wedding list is show Wine glasses Candles Lamp shade	n films were for her frie vn in the ta Price £60 £36 £40	e their favourite end. ble below. Already boug	type of film	?
)	c) Cla Par	How many ire wants to t of her frier	people said that Action buy a wedding present nd's wedding list is show Wine glasses Candles Lamp shade Salad bowl	n films were for her frie vn in the ta <u>Price</u> £60 £36 £40 £45	e their favourite end. ble below. Already boug	type of film	?
)	c) Cla Par	How many ire wants to t of her frier	people said that Action buy a wedding present nd's wedding list is show Wine glasses Candles Lamp shade Salad bowl Silver photo frame	n films were for her frie vn in the ta Price £60 £36 £40 £45 £55	e their favourite end. ble below. Already boug	type of film	?
;)	c) Cla Par The Son Clai that	How many ire wants to t of her frien e presents ar ne of them h ire wants to t hasn't alrea	people said that Action buy a wedding present nd's wedding list is show Wine glasses Candles Lamp shade Salad bowl Silver photo frame re quite expensive. nave already been bough buy her friend the chea ady been bought. Whice	n films were for her frie vn in the ta <u>Price</u> <u>£60</u> <u>£36</u> <u>£40</u> <u>£45</u> <u>£55</u> nt by other apest prese h present s	e their favourite end. ble below. Already boug v people. nt she can, hould she choos	type of film	2
•)	c) Cla Par The Son Clai that	How many ire wants to t of her frien e presents ar ne of them h ire wants to t hasn't alrea	people said that Action buy a wedding present nd's wedding list is show Wine glasses Candles Lamp shade Salad bowl Silver photo frame re quite expensive. nave already been bough buy her friend the cheat dy been bought. Whice	n films were for her frie vn in the ta Price £60 £36 £40 £45 £55 ht by other apest present sh present s	e their favourite end. ble below. Already boug v people. nt she can, hould she choos	type of film	

# Tally Charts Help You Record What You've Counted

Tally charts are good if you need to count something. For example, the number of different types of bird in a park.

E	XAMPLE:			
	I) Each line in the chart is	Type of bird	Tally	
	called a tally mark.	Robin		There are 2 robins.
	2) In this case, I tally mark	Blue tit		There are 3 blue tits.
	means I bird has	Sparrow		There is I sparrow.
	been seen.	Pigeon		There are 3 pigeons.
	3) To find out how many of	Seagull	J##1	There are 6 seagulls.
	each bird has been seen, count up the tally marks.	In a tally, eve a group of 4 So IIIt I mea	ry 5th m like this: ans 6 (a g	ark crosses HT roup of 5 plus 1).

# Practice Question

 A travel agent does a survey to find out what people's favourite type of holiday is. The travel agent collects people's answers in a tally chart.

Favourite type of holiday	Tally
Beach	
Skiing	
Safari	HH II
Cruise	HH HH
Sightseeing	<b>HH</b> I

- a) How many people said that a beach holiday was their favourite type of holiday?
- b) How many people said a cruise was their favourite type of holiday?

c) Six people said that their favourite type of holiday was skiing. Fill this in on the tally chart.

# Bar Charts Let You Compare Data

- 1) A bar chart is a simple way of showing data (information).
- 2) Data is shown on a bar chart as bars.





# Line Graphs Can Show How Things Change Over Time

- 1) Line graphs are useful for showing things that change over time. For example, distance or temperature.
- 2) Data is shown on a line graph as a line.

# EXAMPLE:

A firework is launched into the air. The line graph below shows how the height of the firework changes over time.

I) Each cross is a piece of data.

For example, the cross at 2 seconds shows that the firework is **40 metres** high after **2 seconds**.

The cross at 5 seconds shows that the firework is halfway between 20 metres and 30 metres high after **5 seconds**. This means it is **25 metres** high.

25 is halfway between 20 and 30.



- You can use the graph to find out the height of the firework at any time up to 6 seconds. For example, to find the height of the firework at 4.5 seconds...
  - Draw a line up to the graph from 4.5 seconds. (Halfway between 4 and 5.)
  - Then draw a line across to find out the height.
     It's between 30 and 35 metres high
     probably about 33 metres.



## Practice Question

- The line graph shows how the temperature in a garden changed during the morning.
  - a) What was the temperature at 8.00?
  - b) What was the temperature at 9.30?



# Test Help

# Always Show Your Working

- 1) In the test it's really important that you show all of your working there are lots of marks for the methods you use and the calculations that you do.
- 2) If you don't show how you worked your answer out, you may not get all of the marks even if your final answer is right.
- 3) So, even if you type a calculation into your calculator to work it out, you must write the calculation down for the examiner to see as well.

# You May Have to Use an Answer in Another Calculation

- 1) Sometimes you may need to use the answer to one question to work out the answer to another question.
- 2) If you get the answer to the first question wrong, you'll also get the answer to the second one wrong.
- 3) BUT if you use the right method, and you use the answer that you got for the first question in your calculation, then you can still get full marks for the second question.
- 4) So even if you're unsure about an answer, don't give up make sure you keep going until the end of the question.

# **Always Check Your Answers**

It's really important that you check your answers. Checking your answers helps you to spot mistakes that you've made, and in some questions there are marks for showing that you've checked your answer. There are lots of ways you can check answers. For example...

- 1) Reverse the calculation (see pages 7 and 12 for more on this).
- 2) Do the calculation again using a different method to see if you get the same answer.
- 3) Think about whether your answer is sensible. For example, if you're working out the cost of someone's lunch and your answer comes out as hundreds of pounds then you've probably made a mistake somewhere.

# Task I — An Evening Out

I. (a) Wayne and Monica are going to the theatre to watch a play.



## Bus timetable:

Churchton	1605	1705	1805	1905
Bishops Mill	1635	1735	1835	1935
Farthing Street	1650	1750	1850	1950
The High School	1655	1755	1855	1955
The Queensbury Theatre	1700	1800	1900	2000
Station Road	1715	1815	1915	2015

(i) What time does the play start in the 24-hour clock?

(1 mark)

Wayne and Monica live in Bishops Mill. They need to get to the theatre at least 15 minutes before the play starts.

(ii) What time should they catch the bus?

.....

(1 mark)

(b) Wayne and Monica are both students.

Queensbu	ry Theat	re
What's on	: Richard II	I
Prices for to	night's shov	v:
	Circle	Stalls
Adult	£30	£35
OAP	£25	£28
Student	£25	£28
Child (under 16)	£15	£17

(i) How much would it cost them to buy two student tickets in the circle?

(ii) How much more expensive would it be for them both to sit in the stalls?

 (c) At the interval, Wayne and Monica buy some ice creams.



They buy two double-scoop ice creams.

(i) How much should they pay without the special offer?

	(1 mark)
(ii) How much do they pay with the special offer?	
	(1 mark)
(d) Wayne and Monica decide to get a taxi home. They live 10 miles from The taxi charges £1.25 per mile.	the theatre.
(i) How much does it cost them to get home?	
	(1 mark)
(ii) Show how you check your calculation.	
	(1 mark)

 Arthur is hosting a dinner party. He has invited Susie, Neil, Duncan, Tyson and Sarah.



(a) (i) Arthur would like each person to have 3 Tasty Treats with a drink before dinner. How many packs of Tasty Treats should he buy?

		••
		••
		••
		••
		••
	(5 mark	 s)
(ii)	Arthur's guests will be arriving at 7.15 pm. He'd like to serve the Tasty Treats half an hour later. What time should he put them in the oven?	
	() mark	 

(b) Arthur decides to make Yorkshire puddings as a starter.

Yorkshire puddings (makes 3 large ones) 70 g plain flour 2 eggs 100 ml milk mustard (to taste)



(i) How much flour does Arthur need to make 6 Yorkshire puddings?



(c) Arthur has bought a new table cloth on the Internet. The table cloth is 2.55 m long.



# Task 3 — Buying a Car

You are looking for a new car.
 You want to find a car that can seat 4 people, has 5 doors, is under £12 000 and has driven less than 20 000 miles.



(a) Which car should you buy? List your car's features and explain why you chose it.

**Test-Style Questions** 

Table I shows the insurance groups of some cars.

Table 2 shows the costs of insuring cars in the different insurance groups.

Brand of Car	Insurance Group
Towlio 500	9
Theo	50
Braz-racer	50
The Min-ute	9
The Fell Ranger	33

Table I

Insurance group	One-off yearly fee	Cost per month for minimum 12 months
1-10	£300	£30
11-20	£400	£35
21-30	£600	£55
31-40	£1000	£87
41-50	£1500	£130

Table 2

(b) (i) How much does it cost to insure your chosen car for one year if you pay monthly?

(ii) Should you pay a one-off fee for the year or pay monthly? Give a reason for your answer.

 The plan below shows your drive and garage.



# Task 4 — Going on Holiday

4. Lola is planning a snowboarding trip to Val d'Essert. Lola says:





(a) Is Lola right?

Give a reason for your answer.



5. There are flights to Val d'Essert on Fridays and Mondays at 16:00. Lola wants to go for 3 nights.

Mon 2	<b>Tues 3</b> Dave's bday - meal out	Wed 4	Thurs 5	Fri 6	Sat 7	<b>Sun 8</b> Jill's Wedding
Mon 9 Dr's 9 am	Tues 10	Wed 11	Thurs 12	Fri 13	Sat 14	Sun 15
Mon 16	Tues 17 Football 7.30pm	Wed 18	Thurs 19	Fri 20	<b>Sat 21</b> Spa day	Sun 22

(a) Choose which day Lola should fly out. Give a reason for your choice.

(2 marks) (b) (i) The flight is 4 ½ hours long. At what time would Lola land?

.....

(1 mark)

(ii) It will take Lola half an hour to travel from the airport to her hotel. Once she gets to the hotel she will have dinner. Then she will meet some friends for drinks.

Draw a possible timetable for Lola's evening in the space below.

6. Lola has saved £600 for her trip.She has made a list of all the things she needs to pay for.

<u>Snowboarding Costs:</u>	
Return Flíghts:	£245.00
Hotel:	£164.00
Insurance:	£52.50
Train to and from airport:	£43.50

(a) How much money does Lola need in total?

(1 mark)

(b) How much money will Lola have left over for spending money?

(1 mark)

(c) How much will Lola have left over for spending money if her dad gives her a lift to and from the airport?

 7. Lola can only take liquids onto the plane in containers with a capacity of 100 ml or less.



(a) Should Lola take container A or container B on the plane?



(b) (i) How much hand cream will she have left if she takes 100 ml from container X?

	(2 marks)
	(
(ii) Check your calculation.	
	(1 mark)
	(1 many

8. Lola is buying some crisps on the plane.



Which bag is the best value for money? Give a reason for your answer.

(1 mark)

**Test-Style Questions** 

# Task 5 — A Car Boot Sale

- 9. Frank is going to sell some things at a car boot sale. The sale is on Wednesday the 23rd.
  - (a) Mark the date on the calendar below with a tick ( $\checkmark$ ).

(]	mark)
	munt

Mon	Tues	Wed	Thurs	Fri	Sat	Sun	
	1	2	3	4	5	6	
 7	8	9	10	cínema <b>11</b>	12	13	
 14	Netball?	16	17	18	19	20	
 21	22	23	24	Christmas!!	At mum's <b>26</b>	27	
 28	29	30	31				

- (b) Frank decides to sell his stamp collection.
  - (i) He has 878 UK stamps and 436 foreign stamps. How many of each type of stamp does he have to the nearest 100?

(2 marks)

(ii) Frank sets the stamp collection price at £42.No one is interested, so he decides to halve the price each hour until it sells. The car boot sale starts at 8:00 and Frank sells the stamp collection at 10:00. How much did Frank sell the stamp collection for?

 (c) Frank also decides to sell his beer mat collection. One customer is only interested in circular beer mats.



(i) How many circular beer mats does Frank have?

	(1 mark)
(ii)	Should the customer buy the beer mats separately or as part of the deal? Give a reason for your answer.

.....

Test-Style Questions

(2 marks)

(d) Frank makes a table to show how much money he made on some of the different items he has sold.

	Money
Beer mats	£5.75
CDs	£36.49
Thimbles	£5.53
Books	£11.98

(i) Which item did he make the most money on?

(ii) Estimate how much money Frank made in total.

# Answers

# Answers — Practice Questions

Page 17

QI 4.98

## Section One — Number

## Page 4

QI	3			
Q2	210			
Q3	Dorothy			
Q4	a) Jane			
	b) Sarah			
Q5	a) Large silver			
	b) Small silver			
Page 8				
<u> </u>				

QI	2
Q2	39
Q3	16
Q4	78
Q5	£17
Q6	405
Q7	17p
Q8	120
Q9	86
	86 – 49 = 37 OR
	86 - 37 = 49

## Page 11

QI	140
Q2	12
Q3	125
Q4	Yes (he has 70 screws)
Q5	a) 250 sheets
	b) 750 sheets
Q6	6 packs
Q7	12 bunches

## Page 12

Q1 60  $60 \div 6 = 10 \text{ OR}$   $60 \div 10 = 6$ Q2 25 jars  $25 \times 5 = 125$ Q3 2 packs  $12 \times 1 = 12 \text{ (not enough)}$  $12 \times 2 = 24 \text{ (enough)}$ 

#### Page 15

QI	Smaller
Q2	£6.43
Q3	Yes
Q4	No
Q5	3.4, 6.2, 7.8, 7.9
Q6	Jess
Q7	Oliver

Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10	5.49 17.5 0.78 £23.85 £12.49 No (he has only spent £4.40) 132 miles 5.25 g 0 £12.25
<b>Pag</b> Q1	e 18 $\frac{1}{2}$
Q2	a) 1 b) $\frac{1}{4}$
<b>Pag</b> QI Q2 Q3 Q4 Q5 Q6	e 21 0.75 3 110 £187.50 £280 a) 7 b) 21
<b>Pag</b> QI	e <b>23</b> a) 130 b) 100
Q2 Q3	600 £6
<b>Pag</b> QI Q2 Q3 Q4 Q5	e 25 E.g. $600 + 100 = 700$ OR $620 + 80 = 700$ . 100 + 50 + 20 = 170 $\pounds 40 \times 20 = \pounds 800$ $\pounds 20 - \pounds 2 - \pounds 3 - \pounds 1 - \pounds 1 - \pounds 4$ $= \pounds 9$ 6 m

Page 27 Q1 10, 14, 18, 22, 26, 30 Q2 240

## Section Two — Measure

## Page 30

- QI metre Q2 gram
- Q3 millilitre
- Q4 a) metres and centimetres
  - b) g and <u>k</u>g
  - c) <u>litres</u>
- Q5 1000 (m)
- Q6 1000 (g)
- Q7 100 (cl)
- Q8 a) centimetre
  - b) kilometre c) centilitre
  - c) centin

## Page 31

- QI6km
- Q2 35 m
- Q3 5.5 m

### Page 32

Q1 200 cm (or 2 m) Q2 28 beads

### Page 33

Q1 Tony can choose from rugs 1, 3 and 5.

### Page 34

QI E.g. each car needs about 2 m of space. So the row of spaces will be 16 m long.
You could have a different answer here as long as it's sensible.

## Page 36

Q1 18 cm Q2 7.25 m

## Page 38

Q1 72.5 kg Q2 4 Q3 650 g

#### Page 39

QI Sleeper Light Q2 Tuna Mayonnaise Q3 E.g. 55 kg + 60 kg = 115 kg

### 102

## Page 41

- QI a) 500 ml b) 200 ml Q2 7.5 L
- Q2 7.3 L Q3 7.2 L
- Q4 200 ml (or 0.2 L)

#### Page 43

- QI Herald 175 or AEB 224
- Q2 85 ml
- Q3 A: 500 ml B: 250 ml A is about half full and B is about a quarter full.

### Page 45

- QI 38 °C
- Q2 0 °C
- Q3 a) 1.5 °C
- b) Monday
- Q4 190 °C

### Page 46

QI a) E.g. 9 °C (accept 8-12 °C) In March, it's likely to be warmer than in January, but cooler than in May.

### b) E.g. 22 °C (accept 16-23 °C)

In July, it's likely to be warmer than in May but it must be cooler than 24 °C.

#### Page 48

- Q1 3.5 cm (or 35 mm)
- Q2 a) 300 ml b) 150 ml
  - c) 50 ml

#### Page 49

Q1 2 °C Q2 170 kg

#### Page 51

Q1 a) 384p b) 127p Q2 a) £0.61 b) £2.31 Q3 A pen costing £0.69. Q4 £1.48 Q5 £3.55

#### Page 52

QI £22.50

Q2 No (she wants to spend £65).

## Page 53

Q1 8 bread rolls for £2.40. Q2 The 450 g tin for 72p.

## Section Three — Dates and Time

#### Page 55

QI a) the I3th of May b) the I9th of May c) the I8th of May

### Page 56

- Q1 30 minutes Q2 365 days
- Q3 21 days

### Page 57

- Q1 a) 10:30 am
- b) 3:35 pm Q2 a) 19:10
  - b) 05:20
- Q3 Yes, he is late (by 30 minutes).

### Page 59

- QI 2 and a half hours (or 2.5 hours or 150 minutes).
- Q2 55 minutes
- Q3 4 hours and 15 minutes (or 4.25 hours or 255 minutes)
- Q4 19:30 (or 7:30 pm)
- Q5 6:40 pm (or 18:40)
- Q6 I hour and 45 minutes (or 1.75 hours or 105 minutes)

## Page 62

- Q1 a) The 16:55 train.b) Yes, she can still catch the same train (it arrives before 17:15).
- Q2 a) 13:30
  - b) I hour and 45 minutes (or an hour and three quarters).
  - c) Afternoon break.
- Q3 For example:

Activity	Start	Finish
Guests arriving	7.30 pm	8.00 pm
Catwalk	8.00 pm	9.00 pm
Party	9.00 pm	11.00 pm

There are lots of different ways you can do this timetable. Just make sure you've included all the information in the question.

## Section Four — Shape and Space





- Q2 a) 2
  - b) I
  - c) 0
  - d) 2

## Page 68

- QI a) circle
  - b) square
  - c) rectangle
  - d) triangle
  - e) rectangle
  - f) triangle
- Q2 B
- Q3 rectangle

## Page 70

- Q1 a) cylinder
- b) cube
- c) cuboid
- Q2 cuboid
- Q3 A
- Q4 A cylinder (top) and a cube (bottom).
#### Page 72

## Q1 a) A circle

 b) Any square that's 4 squares big, placed in a sensible place.
 For example:



Q2 Any square that's 4 squares big, placed next to the bed. For example:



## Page 74

- QI a) east
  - b) clockwise
    - c) south

Se	ctio	n Five —							
Handling Data									
Pag	e 76								
QI	1 a) 0.9 kg								
	b) T	hom							
Q2	a) £	2.80							
	b) £	0.10 / 10 <sub>P</sub>							
Dee									
rag	e / 9	7.00							
QI	a) $\mathbf{U}$	7:03							
	b) I	9:01							
	c) Wednesday								
Q2	a) 40	0							
	b) I	75							
	c) 12	23							
Q3	lamp shade								
•									
Pag	e 80								
Οľ	'a) 4								
	b) 10	n							
	c)								
	с)	Farrantita tara a f							
		holiday							
		Boach	_						
		веасп							

Favourite type of holiday	Tally		
Beach	=		
Skiing	1##1		
Safari	1111		
Cruise	H#14#1		
Sightseeing			

#### Page 82

- QI a) 6 b) 5 c) Thursday Q2 a) 0
  - b) by bus c) by car
  - d) I

## Page 83

QI a) 4 °C b) 7 °C

# **Answers** — **Test-Style Questions**

#### Task I — An Evening Out (Page 85)

a) i) 7.30 pm + 12 hours = 19:30 (1 mark)
 ii) 1835 (1 mark)

They could catch an earlier bus, but then they'd be very early to the play.

- b) i) Student tickets in the circle cost £25 each. So £25 + £25 = £50 (1 mark).
  - ii) Student tickets in the stalls cost £28 each. So £28 + £28 = £56 (1 mark). To find out how much more expensive it is to sit in the stalls, take the circle price away from the stalls price. £56 - £50 = £6 more expensive (1 mark).

If you didn't get £50 for b)i) you'll have got a different answer to b)ii). You can still get the mark, as long as you use your answer to b)i) and the right method.

- c) i) One double-scoop ice cream costs £2.50.
   So £2.50 + £2.50 = £5.00 (1 mark).
  - ii) They only pay half with the offer, so £5.00 × 1 ÷ 2 = £2.50 (1 mark).

If you didn't get £5.00 for c)i) you'll have got a different answer to c)ii). You can still get the marks, as long as you use your answer to c)i) and the right method.

d) i) 10 miles × £1.25 = £12.50 (1 mark).
ii) £12.50 ÷ 10 = £1.25 OR £12.50 ÷ £1.25 = 10 (1 mark).

#### Task 2 — Hosting a Dinner Party (Page 88)

- 2 a) i) First work out how many Tasty Treats Arthur needs in total: 6 people × 3 Tasty Treats each = 6 × 3 = 18 (*I mark for 6 × 3, I mark for 18*). Now out how many boxes Arthur needs to buy. There are 5 Treats per box, so: 18 ÷ 5 = 3.6 (*I mark for 18 ÷ 5, I mark for 3.6*). 3.6 isn't a whole number, so Arthur will need to buy 4 packs (*I mark*).
  ii) 7.15 pm + 0.30 = 7.45 pm is when the Tasty Treats
  - 11) 7.15 pm + 0.30 = 7.45 pm is when the lasty lreats should be served (*I mark*). They take 15 mins to cook, so 7.45 pm - 0.15 = 7.30. The Tasty Treats should be put in the oven at 7.30 pm (*I mark*).
  - b) i) 3 × 2 = 6, so to make 6 Yorkshire puddings, Arthur needs 2 times as much flour.
    So 70 g × 2 = 140 g (1 mark for correct calculation, 1 mark for the correct answer).
    - ii) 50 g on the scales already (*I mark*).
       So he needs to weigh out 140 g 50 g = 90 g more flour (*I mark*).

Check: 90 g + 50 g = 140 g (1 mark).

If you read the scales wrong, you will get a different answer to the ones given above. But you can still get some marks if your subtraction calculation and check calculation are correct. c) i) The length of the table cloth is given in m and the length of the table is given in cm. So you need to convert the length of the table cloth into cm.
2.55 × 100 = 255 cm (*I mark*). The table cloth is 255 cm long and the table is

200 cm long. So yes, the table cloth will cover the table (*I mark*).

ii) It's a cylinder (I mark).

d) The volume of the bottle is given in L and the volume of the glass is given in ml. So you need to convert the volume of the bottle into ml.
0.75 × 1000 = 750 ml (*I mark*).
750 ml ÷ 125 ml = 6 glasses (*I mark*).

#### Task 3 — Buying a Car (Page 91)

- a) Towlio 500. It has driven 12 645.50 miles, it costs £4500, it can seat 5 people and has 5 doors. I chose it because it has driven less than 20 000 miles, costs less than £12 000, can seat 4 people and has 5 doors
  (1 mark for listing your chosen car's features, I mark for some evidence that you've considered at least 3 of the requirements in the question, 1 mark for Towlio 500).
  - b) i) The Towlio 500 is in insurance group 9 (1 mark). Groups 1-10 cost £30 per month to insure (1 mark). So the total cost of insurance for the year =  $£30 \times 12 = £360$  (1 mark).
    - ii) One-off (1 mark).
       Because it is £60 cheaper to pay it this way:
       £360 £300 = £60 (1 mark).

If you didn't get the Towlio 500 for a) you'll have got different answers to b)i) and ii). You can still get the marks, as long as you use your answers all the way through.

- c) i) A rectangle (I mark).
  - ii) Each square has sides that are 1 m wide. The garage door is three squares long, and so is 3 m wide (*I mark*). This is bigger than the car (1.9 m), so yes the car fits in the garage (*I mark*).
- d) 7 squares on the top = 7 m. 4 squares on the right side
   = 4 m. 7 squares on the bottom = 7 m. 4 squares on the left side = 4 m.

7 + 4 + 7 + 4 = 22 m (1 mark for correct calculation, 1 mark for correct answer).

## Task 4 — Going on Holiday (Page 94)

- 4 a) No (*I mark*). January and December get more snow (*I mark*).
  - b) 15 cm is the average daily snowfall in October (*1 mark*). This rounds up to 20 cm (*1 mark*).
- 5 a) Mon 9 OR Fri 13 (1 mark). These are the only days when flights leave and Lola has nothing on for three nights following that flight (1 mark).

The Monday flight is at 4 pm, so Lola should still make this even with the Dr's appointment in the morning.

b) i) 16:00 + 4<sup>1</sup>/<sub>2</sub> hours = 20:30 or 8.30 pm (*I mark*).
ii) For example:

Activity:	Time:		
Land at airport	20.30		
Arrive at hotel	21.00		
Dinner	21.15		
Drinks	22.00		

(I mark for arriving at the hotel at least half an hour after landing, I mark for including dinner after arriving at the hotel, I mark for including drinks after dinner.)

There are lots of possible ways you could have drawn your timetable — this is just one example. You're not told how long dinner should last in the question, so you need to decide this yourself.

6 a) Add up all the costs.

 $\pounds 245 + \pounds 164 + \pounds 52.50 + \pounds 43.50 = \pounds 505$  (1 mark).

- b) £600 £505 = £95 (1 mark).
- c) Add up the costs except the train tickets.
   £245 + £164 + £52.50 = £461.50
   Money left over: £600 £461.50 = £138.50
   OR

Add the cost of the train tickets to the amount of spending money she already has:  $\pounds 95 + \pounds 43.50 = \pounds 138.50$ . (1 mark for any correct

- calculation, I mark for the correct answer)
- 7 a) B (I mark).
  - b) i) 150 ml 100 ml = 50 ml
    - (1 mark for correctly reading off 150 ml, 1 mark for correct answer).
    - ii) 100 ml + 50 ml = 150 ml (*I mark*).

Your answer to this might be different if you didn't read the correct volume off the diagram for question b)i). But as long as your check shows the correct check for your calculation to b)i) you'll still get the mark.

8 65p ÷ 50 g = 1.3p per g (1 mark).
90p ÷ 75 g = 1.2p per g (1 mark).
Bag B is better value as it costs less per gram (1 mark).

## Task 5 — A Car Boot Sale (Page 98)

# 9 a) (I mark for a tick in the correct place as shown below).

Mon	Tues	Wed	Thurs	Fri	Sat	Sun	
	1	2	3	4	5	6	
7	8	9	10	cínema 11	12	13	
 14	Netball? 15	16	17	18	19	20	
 21	22	✓ <sub>23</sub>	24	Christmas!!	At mum's <b>26</b>	27	
 28	29	30	31				

b) i) 900 UK stamps (*I mark*). 400 foreign stamps (*I mark*).

- ii) The price halves every hour, so it should be divided by 2 every hour.
  - 10:00 8:00 = 2 hours (1 mark).
  - £42 ÷ 2 = £21 (1 mark).

 $\pounds 21 \div 2 = \pounds 10.50$ . Arthur sold the stamp collection for  $\pounds 10.50$  (*I mark*).

- c) i) 4 (I mark).
  - ii) 4 × 50p = 200p / £2.00 (1 mark). For second mark:

The customer should go for the deal as they pay the same price, but they get one more beer mat (*I mark*).

OR

The customer should pay for them separately as it's the same price and they only

want circular ones (1 mark).

It doesn't matter if you go for the deal or not, it's the calculation and the reason for your answer that is important.

- d) i) CDs (*I mark*).
  - ii) E.g.

Money made on beer mats =  $\pm 5.75$ Money made on CDs = about  $\pm 36.50$ Money made on thimbles = about  $\pm 5.50$ Money made on books = about  $\pm 12.00$ . Total money made =  $\pm 5.75 + \pm 36.50 + \pm 5.50 + \pm 12.00 = \pm 59.75$ (1 mark for sensible rounding estimates for at least 3 items, 1 mark for correctly adding together these estimates.)

You might get a different answer to this question, depending on how much you rounded by. As long as your rounding and final calculation is correct, you should still get the marks.

# Glossary

## 12-hour clock

The 12 hour clock goes from 12:00 am (midnight) to 11:59 am (one minute before noon), and then from 12:00 pm (noon) till 11:59 pm (one minute before midnight).

## 24-hour clock

The 24 hour clock goes from 00:00 (midnight) to 23:59 (one minute before the next midnight).

## 2D shape

A flat shape.

## 3D shape

A solid shape.

## A

#### Angle

A measurement that tells you the size of a corner.

## Anticlockwise

Movement in the opposite direction to the hands of a clock.

## B

## **Bar Chart**

A chart which shows information using bars.

## С

## Capacity

How much something will hold. For example, a beaker with a capacity of 200 ml can hold 200 ml of liquid.

## Circle

A 2D shape with one curved side and no corners.

## Clockwise

Movement in the same direction as the hands of a clock.

## **Compass Points**

The four directions in which a compass points. These are: North, South, East and West.

## Cube

A 3D shape in which all the flat parts are squares.

## Cuboid

A 3D shape in which some of the flat parts are rectangles.

## Cylinder

A 3D shape in which two of the flat parts are circles. A cylinder has no corners.

## D

## Data

Another word for information.

## **Decimal Number**

A number with a decimal point (.) in it. For example, 0.75.

## Digit

One of these: 0 | 2 3 4 5 6 7 8 9. All numbers are made by putting these digits together. For example: 22, 359.

## Ε

## Estimate

A close guess at what an answer will be.

## F

## Fraction

A way of showing parts of a whole. For example:  $\frac{1}{4}$  (one quarter).

## L

## Length

How long something is. Length can be measured in different units, for example, millimetres (mm), centimetres (cm), or metres (m).

## Line Graph

A graph which shows data using a line.

## Line of Symmetry

A shape with a line of symmetry has two halves that are mirror images of each other. If the shape is folded along this line, the two sides will fold exactly together.

## List

A simple way of showing information. For example, a shopping list shows what you need to buy from the shops.

## Ν

## Number Pattern

A list of numbers that follow a pattern.



## Perimeter

The distance around the outside of a shape.

#### Plan

A diagram to show the layout of an area. For example, the layout of objects in a room.



## Rectangle

A 2D shape with 4 sides. Sides that are opposite each other are the same length. The angles at the corners are all right angles.

## **Right angle**

Square corners.



#### Scale

Something you use to measure things. For example, you can use the scale on a ruler to measure length.

## Square

A 2D shape with 4 sides. All the sides are the same length. The angles at the corners are all right angles.

## **Symmetry**

See line of symmetry.



#### Table

A way of showing data. In a table, data is arranged into columns and rows.

## **Tally Chart**

A chart used for putting data into different categories. You use tally marks (lines) to record each piece of data in the chart.

## Temperature

A number that shows how hot or cold something is. Degrees Celsius (°C) are common units for temperature.

## Timetable

A table with information about when things will happen.

## Triangle

A 2D shape with 3 straight sides and 3 corners.

## U

#### Unit

A way of showing what type of number you've got. For example, metres (m) or grams (g).



## Volume

The amount of space something takes up.



## Weight

How heavy something is. Grams (g) and kilograms (kg) are common units for weight.

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**M3SRA2** 



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