NCFE Level 2 Functional Skills Qualification in Mathematics (603/5060/X)

Paper number:	P001372
Section B:	Calculator Test

Assessment window: Monday 7 September 2020 – Friday 11 September 2020
Time allowed: 1 hour 30 minutes

Learner instructions

- Answer **all** questions.
- Read each question carefully.
- Write your answers in the spaces provided.
- Show your working, as marks may be awarded for working.
- State units in your answers, where appropriate.
- Check your work.
- Use $\pi = 3.14$

Learner information

- Section B contains **Activities 2, 3** and **4**.
- The maximum mark for this section is **45**.
- The marks available for **each** question are shown in brackets.

Resources

You will need a:

- pen, with black or blue ink
- pencil and eraser
- 30 cm ruler
- protractor
- calculator.

If extra pages are used, please make sure your name and centre name are on them and they are securely fastened to this booklet.

Please complete the details below clearly and in BLOCK CAPITALS.

Learner name _____

Centre name _____

Learner number _____ Centre number _____

Do not turn over until the invigilator tells you to do so.

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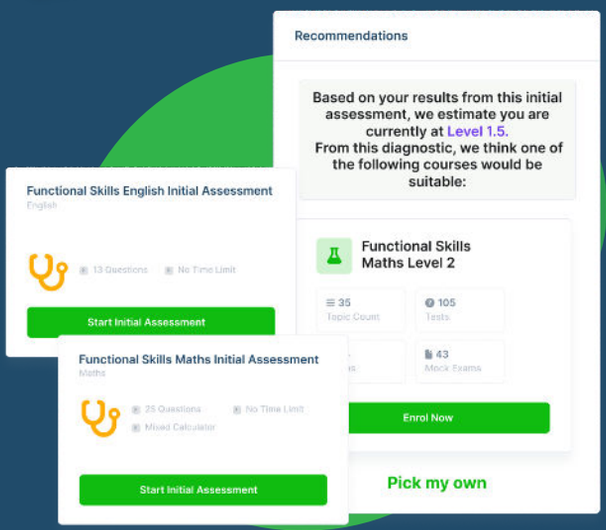
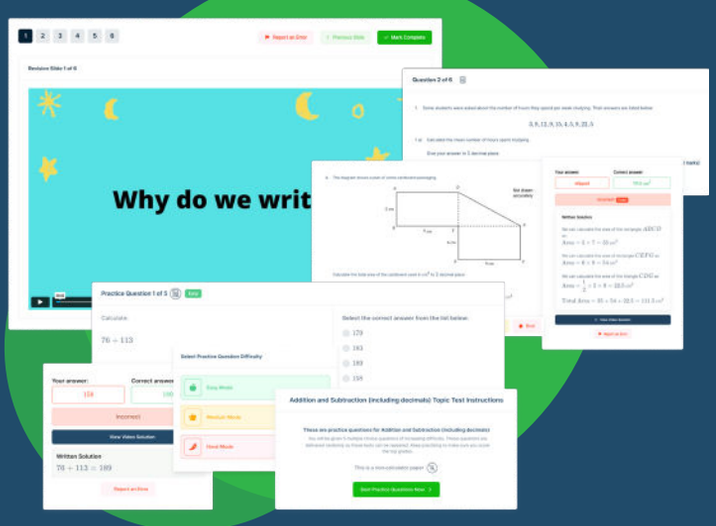
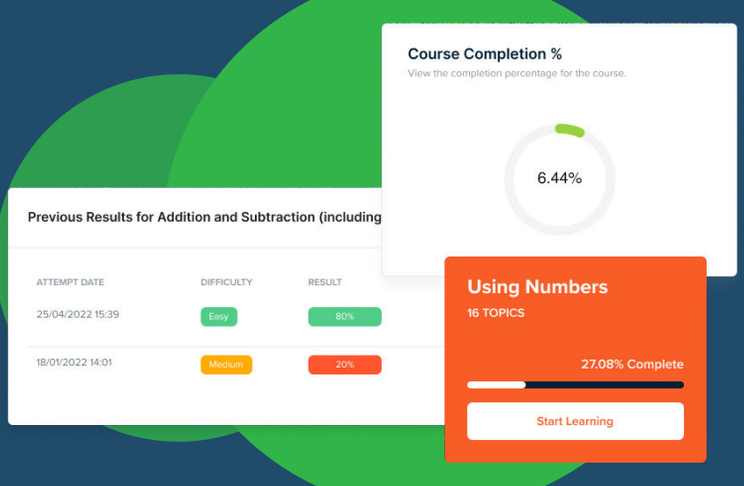
FUNCTIONAL SKILLS ONLINE COURSES



- Your answers are analysed to determine your Current Level
- Suggested courses for you to enrol on based on your calculated level
- Always know the level you are currently working at
- Determine when you are ready to sit your exam

- Explainer videos on every topic
- Quick-fire style mutiple choice questions
- Test your knowledge with exam-style questions
- Written solutions for all questions





- See your progress through as you progress through each topic area
- Get your average scores for practice questions, topic tests and mock exams
- View all practice question, topic test and mock exam attempts over time
- View historical attempts to analyse your progress over time

Or visit
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Activity 2: Police workshop

2 (a) Alice lives in Oldcastle.

She is on a Community Policing course.

The ratio of solved to unsolved crimes in Oldcastle is 2 : 9

$\frac{1}{8}$ of crimes are solved in the whole of the UK.

Alice thinks that a greater proportion of crimes are solved in Oldcastle than in the rest of the UK.

Is she correct?

Show how you decide.

[3 marks]

Old castle : solved $\frac{2}{11} \times 8 = \frac{16}{88}$

UK : solved $\frac{1}{8} \times 11 = \frac{11}{88}$

Yes she is correct

Your answer: Yes

Please turn over

Examiner use only

2 (b) The value of items stolen in Oldcastle has increased by 8% each year.

The value of stolen items in 2017 was £1.7 million.

What was the value of items stolen in 2019?

[2 marks]

2018: 1.7 x (1.08) = 1.836

2019: 1.836 x (1.08) = 1.98

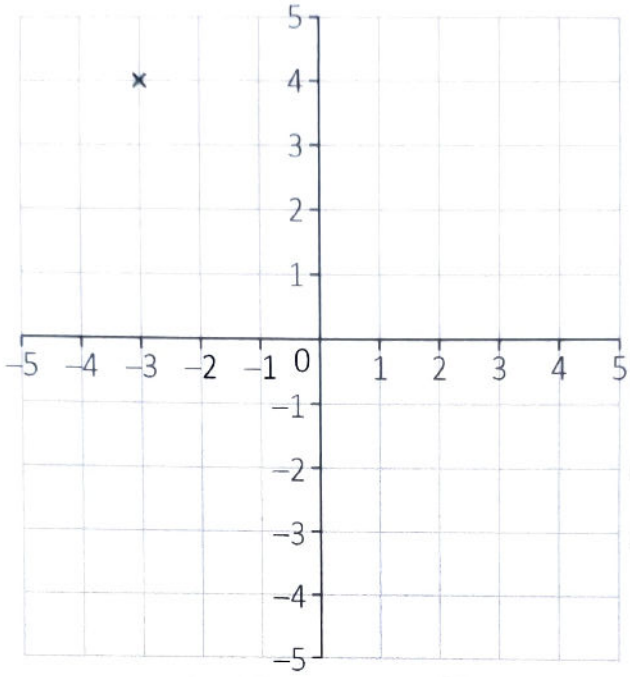
Your answer: £ 1.98

2 (c) Alice attends a workshop about home security.

The tutor tells the group about a house burglary.

The police found a footprint in the garden.

They used a coordinate grid to record where it was:



What are the coordinates of the point marked by ×?

[1 mark]

Your answer: (−3, 4)

Please turn over

2 (d) A witness said the suspect is under 5 feet 10 inches tall, and has blonde hair.

Alice is shown 15 photographs:

		Hair colour	
		Blonde	**Not blonde**
Height	**Under 5 feet 10 inches**	3	6
	Over 5 feet 10 inches	4	2

Alice picks one of the photographs at random.

What is the probability that it is of a person who has blonde hair and is under 5 feet 10 inches tall?

Give your answer as:

- a fraction
- a decimal.

[2 marks]

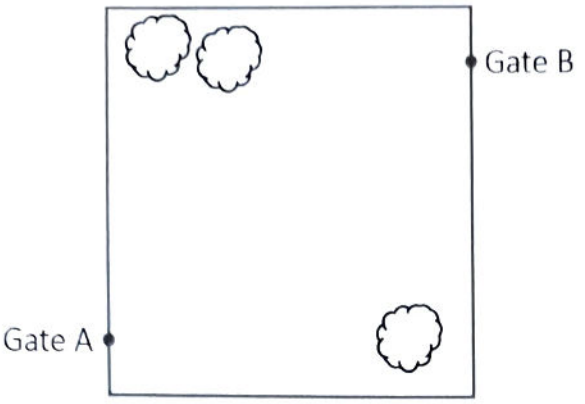
Your answer:

Fraction:	$\frac{3}{15}$ or $\frac{1}{5}$
Decimal:	0.2

2 (e) At 20:40 a witness saw the suspect entering the park at Gate A.

Another witness saw the same person leaving the park through Gate B exactly 12 minutes later.

The group are given this map of the park:



Not drawn accurately

The map has a scale of 1 : 25 000

The distance between Gates A and B on the map is 9 cm

What was the average speed of the person seen entering and leaving the park?

Give your answer in metres per second (m/s).

[3 marks]

1 : 25000
9 : 225000

in metres: 225000 ÷ 100 = 2250m

2250 ÷ 12mins = 187.5m per min

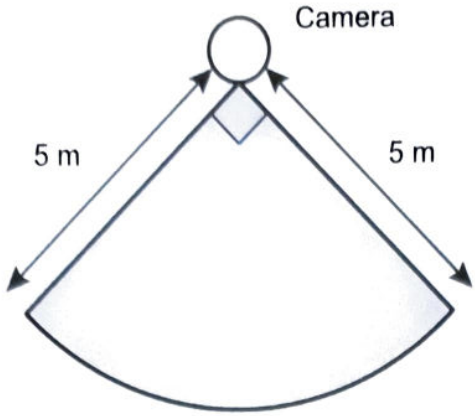
187.5 ÷ 60 seconds = 3.13m per second

Your answer: 3.13 **m/s**

Please turn over

2 (f) The house had a CCTV camera.

The shaded section of the diagram shows the area covered by the camera:



Not drawn accurately

Calculate the area covered by the camera.

Use $\pi = 3.14$

[2 marks]

full circle area $= \pi r^2$

$= 3.14 \times 5^2$

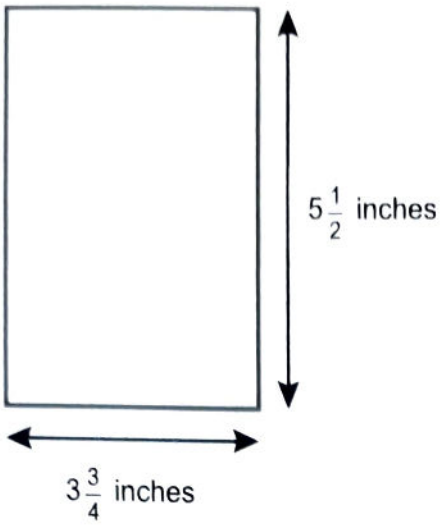
$= 78.5$

$\frac{1}{4}$ circle $= 78.5 \div 4 = 19.6 \text{ m}^2$

Your answer: 19.6 **m²**

2 (g) Alice has a digital picture of the burglar from the CCTV camera.

The size of the print is $5\frac{1}{2}$ inches by $3\frac{3}{4}$ inches.



Not drawn accurately

Alice enlarges the picture by doubling both the width and the length.

She wants to print the enlarged picture onto one side of A4 paper.

A4 paper is 21 cm wide and 29.7 cm long.

Will the enlarged picture fit onto one side of A4 paper?

Show how you decide.

Use the conversion: 1 inch = 2.54 cm

[2 marks]

convert inches to cm: 5.5 inches x 2.54
= 13.97cm

3.75 inches x 2.54
= 9.525cm

now enlarge by doubling the length and width
13.97 x 2 = 27.94cm
9.525 x 2 = 19.05cm

Your answer: Yes

[Total marks: 15]

Activity 3: Volunteering

3 (a) Sam is a volunteer for CHAD, a charity that supports children.

Charities are put into categories according to the amount of money they raise each year.

Last year, CHAD raised five hundred and sixty-nine thousand, eight hundred and one pounds.

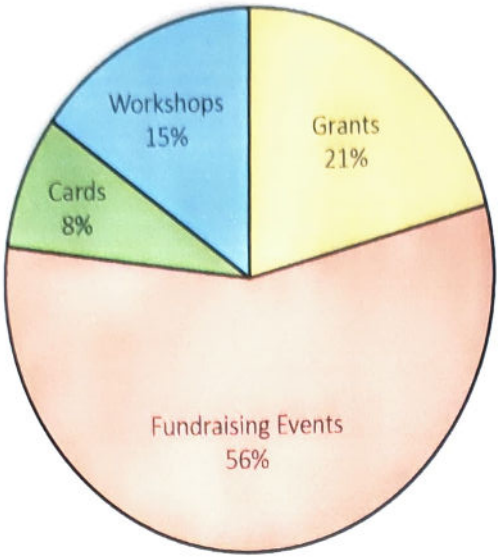
Tick the box next to the category that CHAD is in.

[1 mark]

	Category	Money raised each year (£)	
		Minimum	**Maximum**
☐	Micro	0	9 999
☐	Small	10 000	99 999
☑	Medium	100 000	999 999
☐	Large	1 000 000	9 999 999
☐	Major	10 000 000	99 999 999
☐	Super-major	100 000 000	no maximum

3 (b) This year, CHAD aim to raise £626 000

The pie chart shows where the funds will come from:



So far, CHAD have raised £95 280 from grants.

How much more money do they aim to raise from grants this year?

[3 marks]

aim = £626000

21% = ~~£95280~~ 626000 x 0.21
= £131460

want to raise!

131460 - 95280 = £36180 more

Your answer: £ 36180

Please turn over

Examiner use only

3 (c) Sam asks friends and family to sponsor him for a 10 km run.

A local business offers to donate 25p for every £10 that Sam raises.

In total, Sam raised £2634.25

This included the money that the business donated.

How much did the business donate to Sam?

[3 marks]

$2634.25 \div 10.25 = 257$

$257 \times 0.25 = £64.25$

Your answer: £ 64.25

3 (d) CHAD are sending a letter to supporters.

They have asked for volunteers to put the letters into envelopes.

Eight people volunteer to help.

Each person works at the same rate.

It takes them 480 minutes to complete the task.

How many minutes would the task have taken 12 people, if each person worked at the same rate?

[2 marks]

rate of one person 480 x 8 =

8 x 480 = 3840

3840 ÷ 12 = 320 minutes

Your answer: 320 **minutes**

Please turn over

Examiner use only

3 (e) Some people donate to CHAD by giving a one-off donation.

The table below shows the one-off donations made last year:

Size of one-off donation (£d)	Number of donors
$0 < d \leq 20$	48
$20 < d \leq 40$	146
$40 < d \leq 60$	74
$60 < d \leq 80$	32
Total:	**300**

midpoint
10
30
50
70

Other people donate by paying regular amounts.

Last year, CHAD had 150 of these regular donors who donated £7500 in total.

Sam works out an estimate for the mean of the one-off donations last year.

He compares this with the mean for regular donors last year.

Sam says,

"The mean amount donated last year was higher for the one-off donors than for the regular donors".

Is Sam correct?

Show how you decide.

[4 marks]

midpoint x frequency

10 x 48 = 480
30 x 146 = 4380
50 x 74 = 3700
70 x 32 = 2240
10800

mean = 10800 ÷ 300 = (36) one-off.

Regular = 7500 ÷ 150 = (£50)

Your answer: NO

Please turn over

3 (f) Kay and Mo are employed by CHAD as fundraisers.

They are given targets:

- Kay must raise funds of at least $3\frac{2}{5}$ times her salary.
- Mo must raise funds of at least $\frac{10}{3}$ times his salary.

Which is larger, $3\frac{2}{5}$ or $\frac{10}{3}$?

Show how you decide.

[2 marks]

$3 + \frac{2}{5} = \frac{15}{5} + \frac{2}{5} = \frac{17}{5} \times 3 = \frac{51}{15}$

$\frac{10}{3} \times 5 = \frac{50}{15}$

Your answer: $3\frac{2}{5}$ is larger

[Total marks: 15]

Activity 4: Selling cars

4 (a) Emma sells cars.

The original price of a car was £15 400

Its sale price is £13 500

Calculate the percentage discount.

Give your answer to one decimal place.

[2 marks]

$15400 - 13500 = 1900$

$\frac{1900}{15400} \times 100\% = 12.3\%$

Your answer: 12.3 %

4 (b) Emma also buys cars.

Bill wants to sell his old car.

The car is 3 years old and in good condition.

Emma uses a formula to work out the price that she will pay for Bill's car:

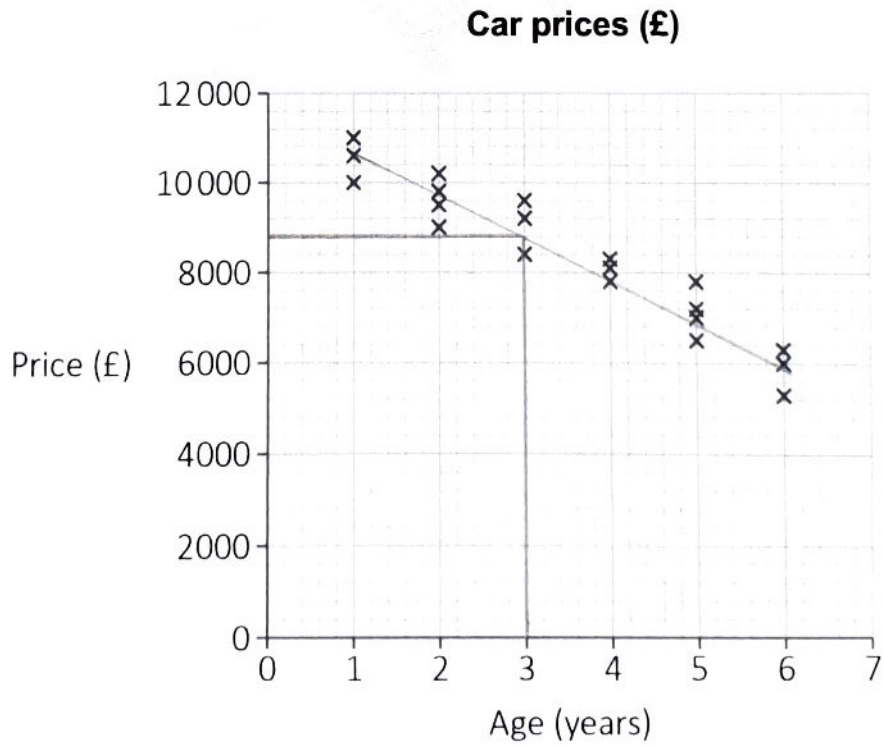
$$P = 12\,000 \times C \times (0.75)^T$$

Where:

P is the price the she will pay (in £)
T is the age of the car (in years)
C is the condition of the used car, according to this table:

Condition	**C**
Good	0.9
Average	0.7
Poor	0.5

The scatter diagram below shows the prices paid online for the same model of car in good condition:



How much more would Bill expect to get if he sells his car online instead of selling to Emma?

[4 marks]

From Emma → $P = 12000 \times 0.9 \times 0.75^3$

$= 4556.25$

Online (from graph → 8900

$8900 - 4556.25 = 4343.75$

Your answer:	£ 4343.75

Examiner use only

4 (c) Bill sees a new car he likes.

The car's fuel consumption is 16 **km** per litre.

Bill drives a total of 45 **miles** each day.

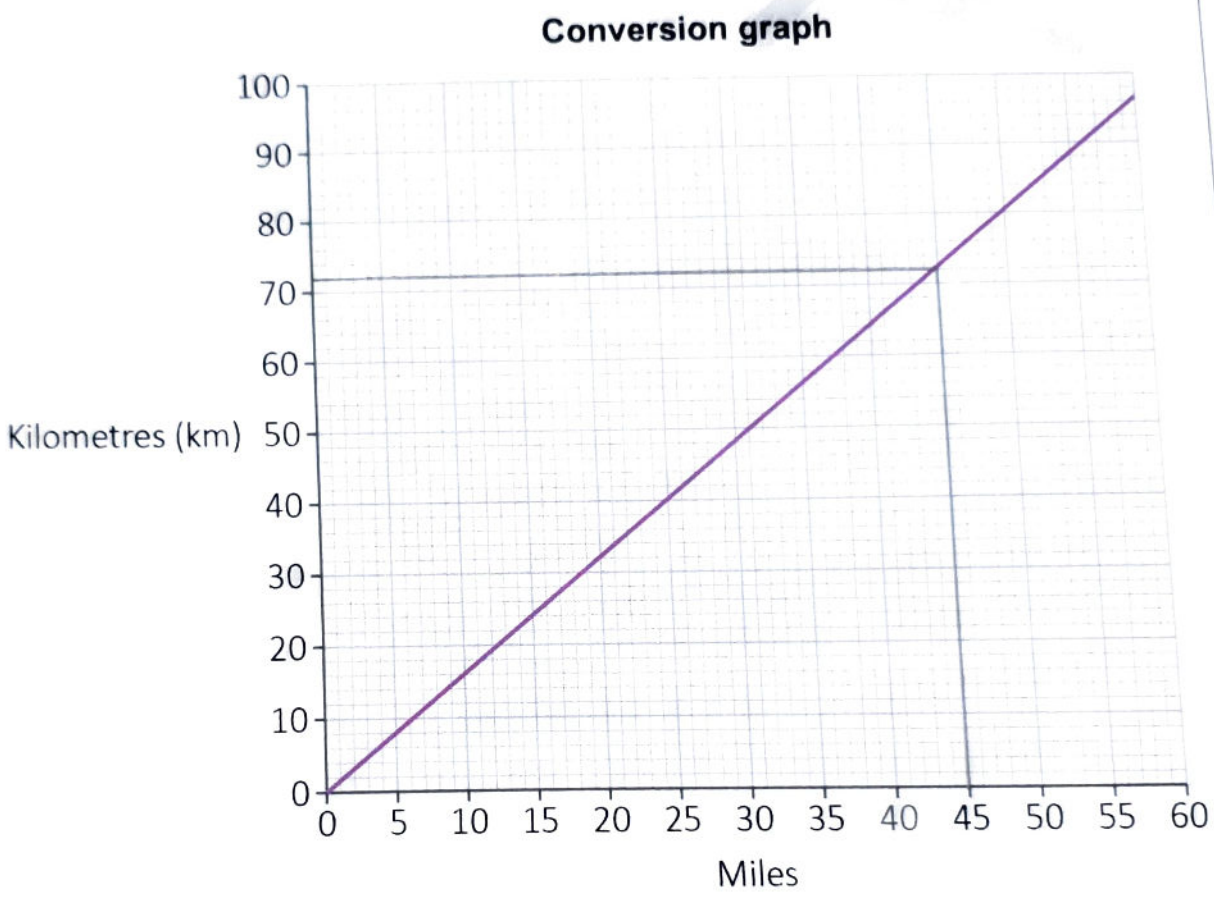
Fuel costs 136.9 pence per litre.

Work out the total cost of fuel Bill would use each day in this car.

Give your answer in pounds and to the nearest penny.

[4 marks]

Use this conversion graph to help you:



45 miles = 72km

72 ÷ 16 = 4.5 litres of fuel a day

Spend per day:

4.5 × 136.9p = 616.05p

= £6.16.

Your answer: £ 6.16.

Please turn over

4 (d) Emma employs Hans.

She pays Hans a bonus when he sells a car.

The bonus is 1.5% of the price of the car.

The available makes of cars are:

Make of cars	Price
A	£14 750
B	£15 800
C	£16 000
D	£15 800
E	£19 800
F	£15 800
G	£30 500
H	£23 650

How many cars would Hans have to sell at the modal price to get a bonus of at least £7500?

You must show your working.

[5 marks]

modal price = £15800

1.5% of 15800 =

15800 x 0.015 = £237.

£237 per car sold at £15800

To get £7500 need to sell:

£7500 ÷ 237 = 31.6

= 32 cars

Your answer: 32 **cars**

[Total marks: 15]

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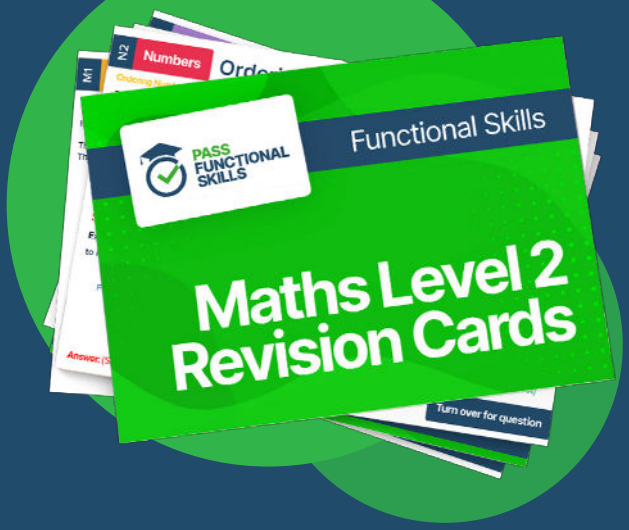
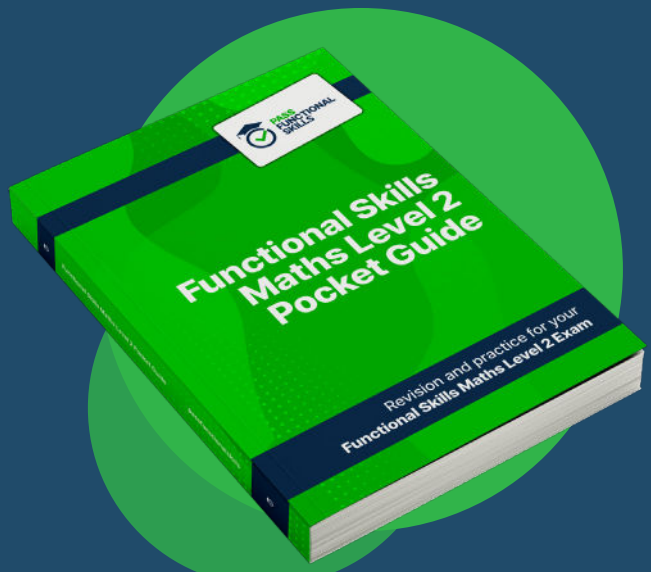


Functional Skills Maths
Level 2 Revision Cards

Functional Skills English Level 2
Practice Papers & Revision Cards



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Level 2 Pocket Revision Guide

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