Level 2 Functional Skills Mathematics
SAMPLE PAPER 2

City & Guilds
A City & Guilds Group Business
Version 1.1

Duration: 25 minutes
Total marks: 15 marks

SECTION 1 – CALCULATOR NOT PERMITTED

Candidate name (first, last)

First

Last

Candidate enrolment number

Date of birth (DDMMYYYY)

Assessment date (DDMMYYYY)

Centre number

Candidate signature and declaration*

***I declare that I had no prior knowledge of the questions in this assessment and that I will not share information about the questions.**

Please check that your name is correctly printed on the candidate barcode label. If not, please tell the invigilator before the start of the exam.

You should have the following for this assessment:

- a pen with black or blue ink
- a pencil (for diagrams, graphs and charts only)
- an eraser
- a 30cm ruler.

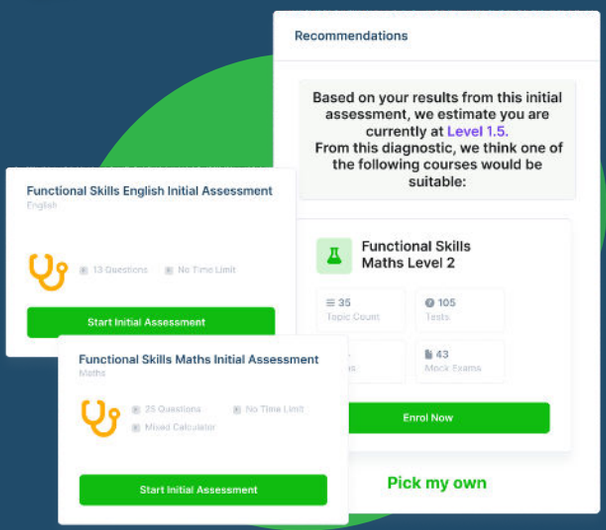
You must NOT use a protractor.
You must NOT use a calculator for Section 1.

General instructions

- Read through each question carefully.
- Write all your answers in this booklet.
- Check your calculations and check that your answers make sense.

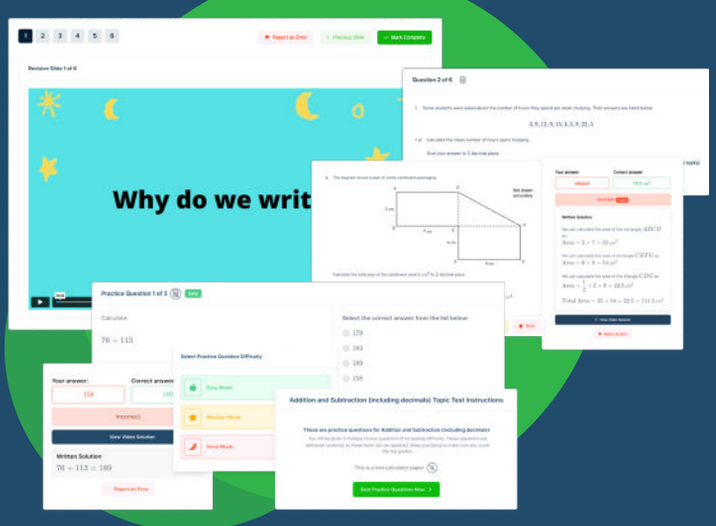
PASS FUNCTIONAL SKILLS

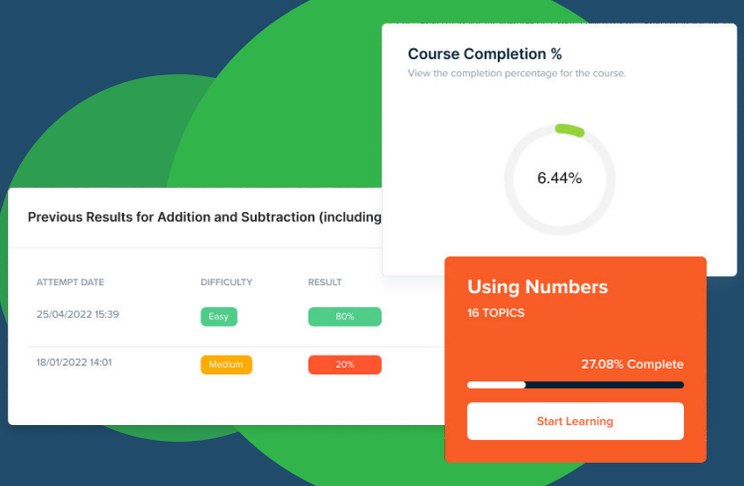
FUNCTIONAL SKILLS ONLINE COURSES



- 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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SECTION 1 – CALCULATOR NOT PERMITTED

There are **15** marks available in this section.

You should check all your work as you go along.

You must **not** use a calculator in this section.

Q1

What is 108 as a fraction of 648? Give your answer in its simplest form.

$\frac{1}{6}$

(1 mark)

Q2

Which one of the following lists is in decreasing order?

(tick one box)

A $\frac{1}{5}$ 0.05 $\frac{17}{50}$ 0.15 ☐

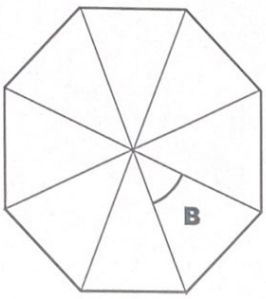
B 0.05 $\frac{17}{50}$ $\frac{1}{5}$ 0.15 ☐

C 0.15 $\frac{1}{5}$ 0.05 $\frac{17}{50}$ ☐

D $\frac{17}{50}$ $\frac{1}{5}$ 0.15 0.05 ☑

(1 mark)

Q3 The diagram shows a regular polygon.



What is the size of angle B.

$\frac{360^\circ}{8} = 45^\circ$

45 °

(1 mark)

Q4

Work out the value of y if 4y = 144

$y = \frac{144}{4} = 36$

36

(1 mark)

Q5

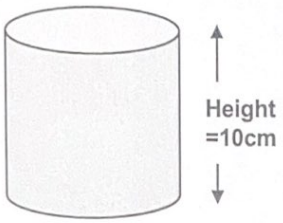
$\frac{3^2}{3} - 28 =$

$\frac{9}{3} - 28 = 3 - 28 = -25$

−25

(1 mark)

Q6 The radius of the top of this cylinder is **7cm**



Use $\pi = \frac{22}{7}$

What is the volume of the cylinder?

$V = \pi r^2 h = \frac{22}{7} \times 7^2 \times 10$

$= 154 \times 10 = 1540$

1540 cm^3

(1 mark)

Q7

$\frac{11}{8} - \frac{1}{16} =$

(tick one box)

A $\frac{5}{8}$ ☐

B $1\frac{5}{8}$ ☐

C $1\frac{5}{16}$ ☑

D $2\frac{5}{16}$ ☐

$\frac{11}{8} - \frac{1}{16} = \frac{22}{16} - \frac{1}{16}$

$= \frac{21}{16} = 1\frac{5}{16}$

(1 mark)

Q8

4.50 ÷ 0.05 =

$= 4.50 \times 20 = 90$

90

(1 mark)

Q9

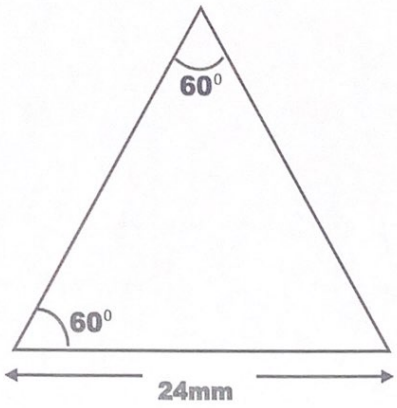


Diagram not to scale

What is the perimeter of this triangle?

24 + 24 + 24 = 72 mm

since it is an equilateral triangle

72 mm

(1 mark)

Q10 A call centre aims to deal with calls in less than 5 minutes.

Calls come in randomly.

The table shows data for the calls made to the centre.

Type of call	Proportion of all calls	Completed in less than 5 minutes
Customer complaints	1/4	1/2
New business	3/4	1/8

Work out the probability that the next call will be a customer complaint completed within under 5 minutes.
Give your answer as a fraction in its simplest form.

$\frac{1}{8}$

(1 mark)

Q11 The government announces that the minimum wage for people over 25 years old will increase from £8.21 to £8.72 per hour.

A 26 year old woman works 30 hours a week and is paid the minimum wage.

She thinks that the extra money she will earn will cover a rent increase of £20 per week.

Is the woman correct? Show your calculation.

Decision *(tick one)* **yes** ☐ **no** ☑

Calculation

8·72 − 8·21 = £0·51

0·51 × 30 = £15·30 < £20

(1 mark)

Q12 A driver sees this speed limit sign in France. The speed is in kilometres per hour.

He is driving at 80 miles per hour.

He thinks this is below the speed limit.

1 kilometre = $\frac{5}{8}$ mile

Is he correct? Explain your answer showing your calculation.

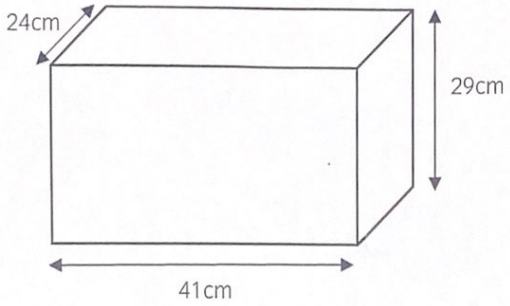
Decision *(tick one box)* **yes** ☑ **no** ☐

Explanation

130 × $\frac{5}{8}$ = 81·25 mph > 80

(2 marks)

Q13 A man has a fish tank with the following dimensions:



He needs to know approximate volume of the tank.

What is its approximate volume?

Volume = 24 x 41 x 29

≈ 25 x 40 x 30 = 30000

30000 cm³

(2 marks)

End of Section 1

Level 2 Functional Skills Mathematics
SAMPLE PAPER 2

City & Guilds
A City & Guilds Group Business
Version 1.1

Duration: 1 hour 20 minutes
Total marks: 45 marks

SECTION 2 – CALCULATOR PERMITTED

Candidate name (first, last)

First

Last

Candidate enrolment number

Date of birth (DDMMYYYY)

Assessment date (DDMMYYYY)

Centre number

Candidate signature and declaration*

- If you have used any additional answer sheets write the number of additional sheets in this box.
- Please ensure that you **staple** additional answer sheets to the **back** of this booklet, clearly labelling them with your full name, enrolment number, centre number and date in BLOCK CAPITALS.
- You must use a black or blue pen. You may use a pencil for charts and diagrams.

***I declare that I had no prior knowledge of the questions in this assessment and that I will not share information about the questions.**

Please check that your name is correctly printed on the candidate barcode label. If not, please tell the invigilator before the start of the exam.

You should have the following for this assessment

- a calculator
- a pen with black or blue ink
- a pencil (for diagrams, graphs and charts only)
- an eraser
- a 30cm ruler.

You must NOT use a protractor.

General instructions

- Read through each question carefully.
- Show your working out (where required).
- Write all your working out and answers in this booklet.
- Check your calculations and check that your answers make sense.
- There are additional pages **including graph paper** at the back of this booklet if you run out of space or ask the invigilator if you need additional sheets of paper.

SECTION 2 – CALCULATOR PERMITTED

There are **45** marks in this section.

You should check all your work as you go along.

You may use a calculator.

Q1

0.06 million ÷ 6.2 thousand =

Give your answer to two decimal places

60000 ÷ 6200 = 9·68

9·68

(1 mark)

Q2

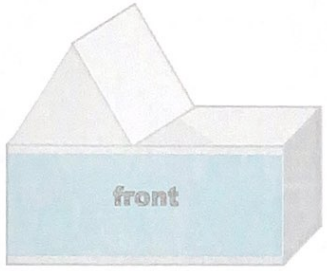
What is $\frac{3}{87}$ as a decimal correct to **three decimal places**?

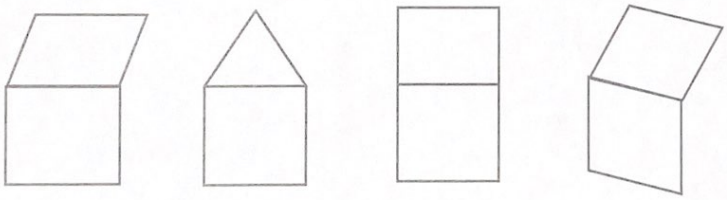
3 ÷ 87 = 0.034

0·034

(1 mark)

Q3 The diagram shows the outline of a building.





A B C D

Which one of the above shows the elevation of the left side of the building?

(tick one box)

A ☐

B ☐

C ☑

D ☐

(1 mark)

Q4

$1m^3$ is the same as

(tick one box)

A	$100\ cm^3$	☐
B	$1000\ cm^3$	☐
C	$100\,000\ cm^3$	☐
D	$1\,000\,000\ cm^3$	☑

(1 mark)

Q5 A social club sells 50 pink raffle tickets and 75 yellow raffle tickets.

Tickets are drawn randomly.

What is the probability that the first ticket drawn will be a pink ticket?

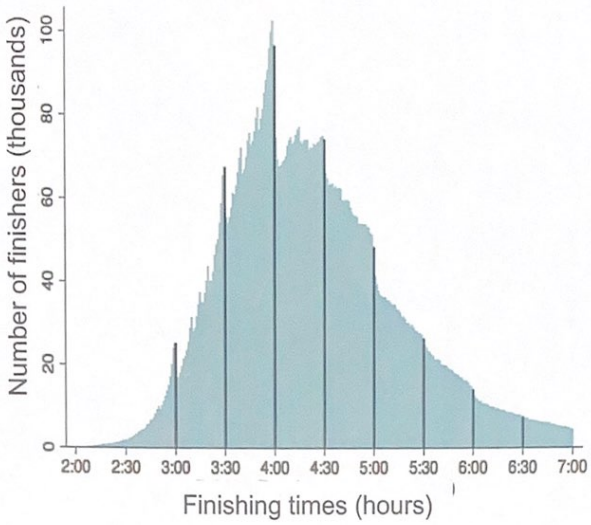
Give your answer as a decimal.

$\frac{50}{50+75} = 0.4$

0.4

(1 mark)

Q6 The chart shows finishing times of marathon runners.



A report states that most of the runners finished in under 4 hours.

Is the report correct?

Explain your decision.

Decision *(tick one box)* **Yes** ☐ **No** ☑

Explanation

The right hand side is bigger than the left - data skewed to the left

(1 mark)

Q7 A shop has a sale.
There is 30% off all black tag items.

One day this notice appears in the shop.

One day only
BLACK TAG
An extra 25% off marked reduced price
BETTER THAN HALF PRICE!

A customer complains that the notice is misleading because it is not true.

Is the customer correct?

Explain your decision. Include calculations to support your decision.

Decision *(tick one box)* **Yes** ☑ **No** ☐

Show all your working

New price is $21 \times 0.75 = £15.75$

Half price from original price is £15

(original $= 21 \div 0.7 = £30$)

Explanation and supporting calculations.

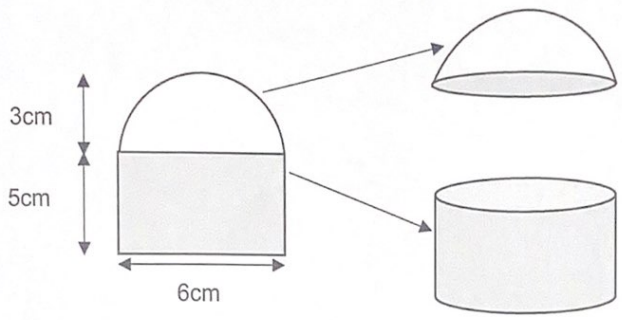
The new price is greater than half price, so the notice is not true and the customer is correct.

(3 marks)

Q8 A craftsman uses resin to make a paperweight.

He makes the paper weight from two parts, a hemisphere **and** a cylinder.

He uses this plan.



$$V = \frac{2}{3}\pi r^3$$

V = volume of **hemisphere** in cm^3

r = radius of **hemisphere** in cm

π = 3.14

How much resin does he need for **both** parts?

Show all your working r = 3 cm

Hemisphere

$V = \frac{2}{3}\pi \times 3^3 = 18\pi = 56.548...$

Cylinder

$V = \pi \times 3^2 \times 5 = 45\pi = 141.371...$

Total

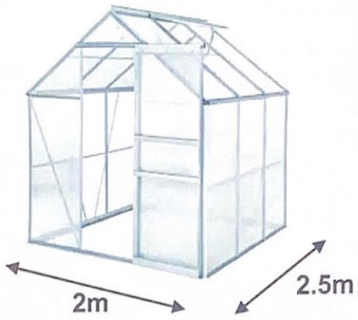
$56.548... + 141.371...$

$= 197.92$ (2dp)

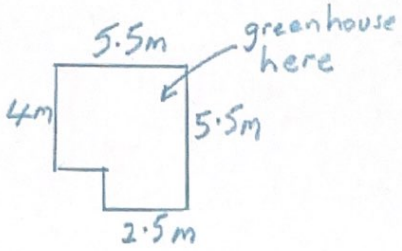
Amount of resin 197.92 **cm^3**

(4 marks)

Q9 A gardener wants to build this greenhouse in the top right hand corner of her garden.



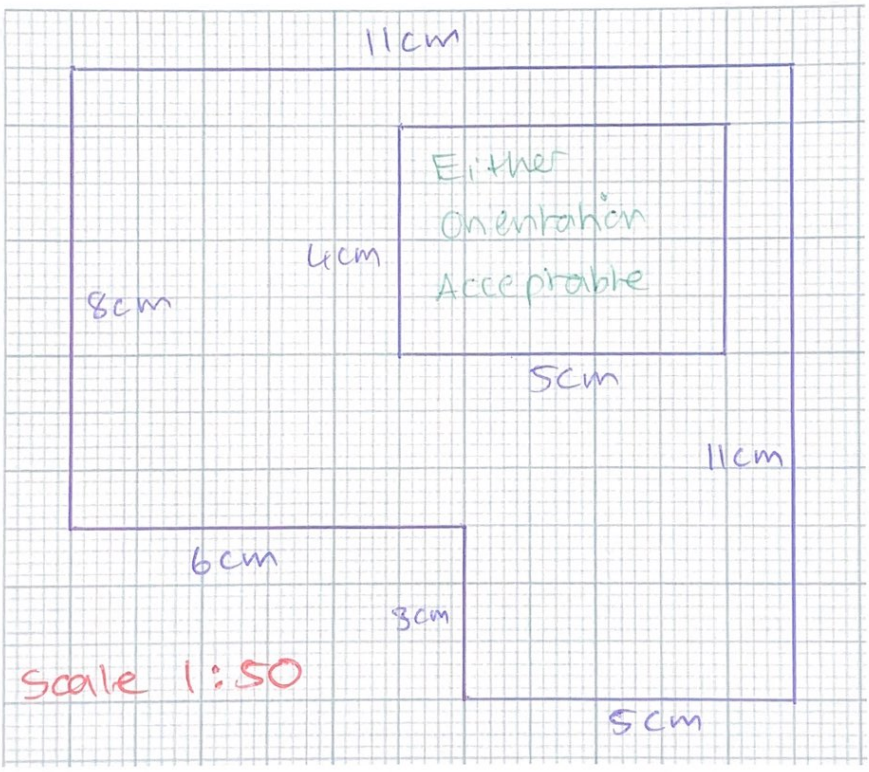
This is a sketch plan of her garden.



She will leave a 50cm space between the greenhouse and the edge of the garden.

She wants a scaled plan of the garden showing the position of the greenhouse.

Draw a scale plan. Put the scale you use on the plan.



(4 marks)

There is spare graph paper on page 23

Q10 A student wants to raise £100 for charity.

He will sell hot dogs at a disco.

He will make 150 hot dogs.

He buys ingredients at *The Supermarket*

The Supermarket	
Hot dog sausages tin of 8	50p
Hot dog buns packet of 6	90p

If he sells all the hot dogs, what is the minimum price he must charge to make a profit of £100?

Show all your working

~~Cost per hot dog = $\frac{50}{8} + \frac{90}{6}$ = 21.25p~~

150 ÷ 8 = 18.75 = 19 tins needed

150 ÷ 6 = 25 packets needed

19 x 0.50 = £9.50

25 x 0.90 = £22.50

Cost to make hot dogs = 9.50 + 22.50 = £32

Cost + charity money = £132

132 ÷ 150 = £0.88 = 88p per hot dog to sell at

Minimum price per hot dog 88p

(4 marks)

Q11 A supermarket buyer compares large eggs from two suppliers.

She wants to buy the largest eggs.

The table shows the masses of a sample of large eggs from Supplier A.

Weights of large eggs (Supplier A)	
Weight in grams	**Number of eggs**
$63 < g \leq 65$	22
$65 < g \leq 67$	27
$67 < g \leq 69$	26
$69 < g \leq 71$	15
$71 < g \leq 73$	10
	100

midpoint	m × f
64	1408
66	1782
68	1768
70	1050
72	720
	6728

A similar sample taken from supplier B gives a mean value of 66.5g

Which supplier should the buyer use?
Explain your decision.

Decision *(tick one box)* **Supplier A** ☑ **Supplier B** ☐

Show all your working

Supplier A mean $= \frac{6728}{100} = 67.28\,g$

Explanation and supporting calculations.

67.28 > 66.5

supplier B is 0.78g less (on average)

so the buyer should use supplier A

(4 marks)

Q12 A man has £5000.

He will put his money into a savings account at a bank.

He wants to save it for one year.

Bank A pays 2% compound interest. It adds interest every 6 months.

Bank B pays 3.15% annual interest rate.

Which bank should the man choose?
Explain your decision. Include calculations to support your decision.

Decision *(tick one box)* **Bank A** ☑ **Bank B** ☐

Show all your working

Bank A: $5000 \times 1.02^2 = £5202$

Bank B: $5000 \times 1.0315 = £5157.50$

Explanation and supporting calculations.

£5202 > £5157.50

Bank B interest is £44.50 less than Bank A

So the man should choose Bank A

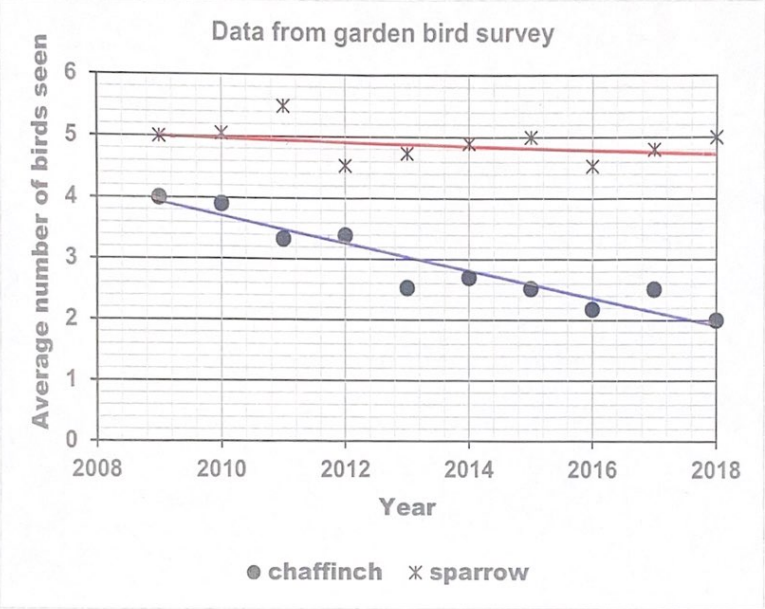
(4 marks)

Q13 A magazine article has this headline.

> **Garden birds in decline**
>
> **Fewer birds seen in our gardens**

An environmental organisation records information about bird populations.

The graph shows some data about two types of garden birds.



Is the magazine headline correct?

Show suitable calculations of percentage changes for the last ten years and draw trend lines on the graph to support your answer.

Explain your answer and make **two** comments.

Show all your working

chaffinch: $\frac{4-2}{4} \times 100 = 50\%$ decrease

sparrow: $\approx 0\%$ decrease

Comment 1

The magazine headline is correct

The [redacted] number of sparrows has not really changed

Comment 2

The number of chaffinches has decreased

On average, there is a decrease in birds.

(5 marks)

Q14 A team manager wants to pick four people for a bowling competition.

She decides to pick players with consistently good average **(median)** scoring performances.

She picks the following three people.

Player	Average score (median) over last eight matches	Range of scores over last eight matches
Archie	105	26
Baz	101	37
Cathy	99	32

She needs one more player to make up the team.
She look at the scores of two more players.

Scores in last eight matches	
Dave	Elaine
78	87
48	98
102	101
98	84
86	93
101	79
67	87
96	97

Make suitable calculations for Dave and Elaine.
Decide which player best fits the requirements. Explain your decision using figures.

Player picked *(tick one box)* **Dave** ☐ **Elaine** ☑

Explanation and supporting calculations

Dave
Median = $\frac{86+96}{2}$ = 91

Range = 102 − 48 = 54

Elaine
Median = $\frac{87+93}{2}$ = 90

Range = 101 − 79 = 22

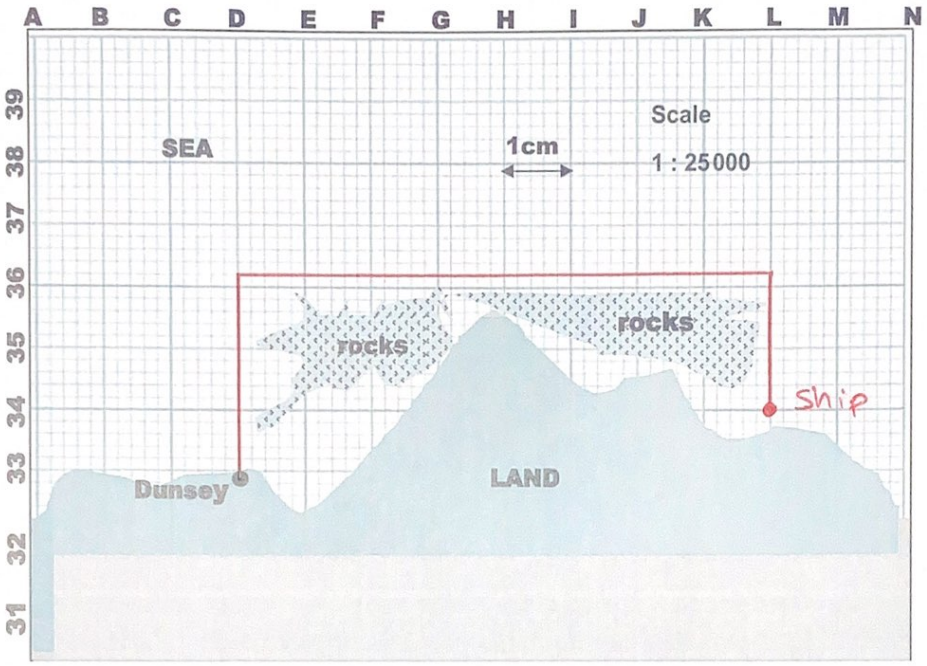
Elaine is the better choice since she is more consistent (22 < 54) and her median score is similar to Dave

(5 marks)

Q15 A fisherman sets off from Dunsey in a boat.

His boat will travel at an average speed of 5 kilometres per hour.

He has this map so that he can avoid the rocks.



He needs to meet up with a ship at coordinate L34 at 5pm

He needs to know at what time he must leave Dunsey.

At what time must he leave Dunsey?

Show all your working.

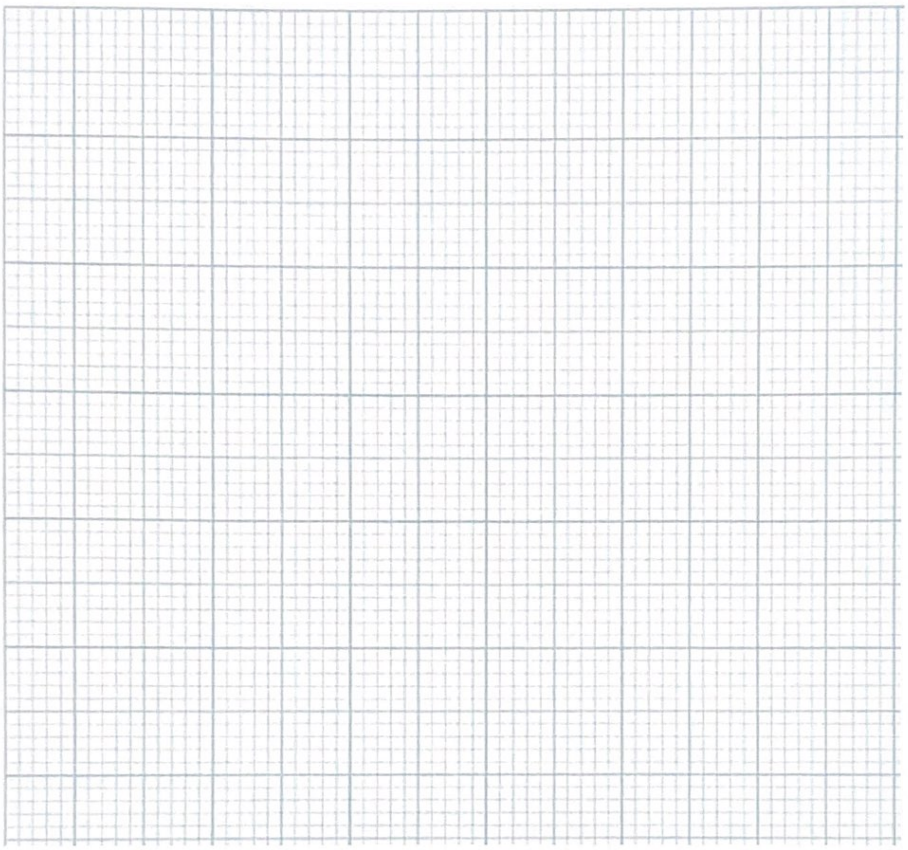
Total distance = 3·2 + 8 + 2·2
= 13·4 squares (cm)
= 13·4 × 25000 = 335000 cm
= 335000 ÷ 100000
= 3·35 km

Time = distance ÷ speed = 3·35 ÷ 5 = 0·67 hours
0·67 hours = 40·2 mins **Time to leave Dunsey** 4:19

He therefore needs to leave at 4:19

(6 marks)

Spare graph paper for Question 9



Extra space for working out and answers

End of section 2

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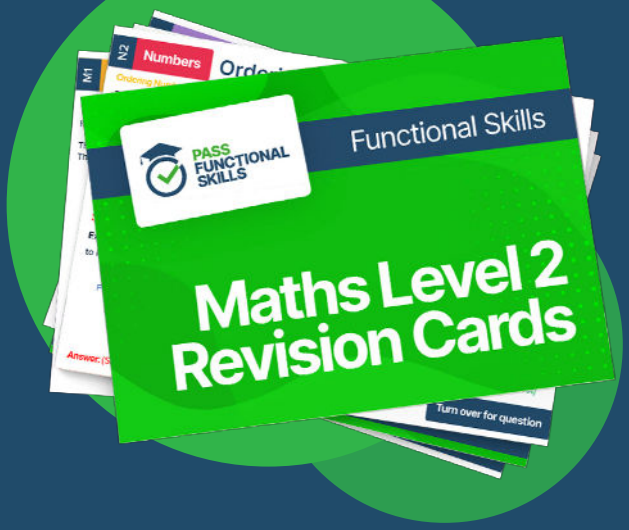
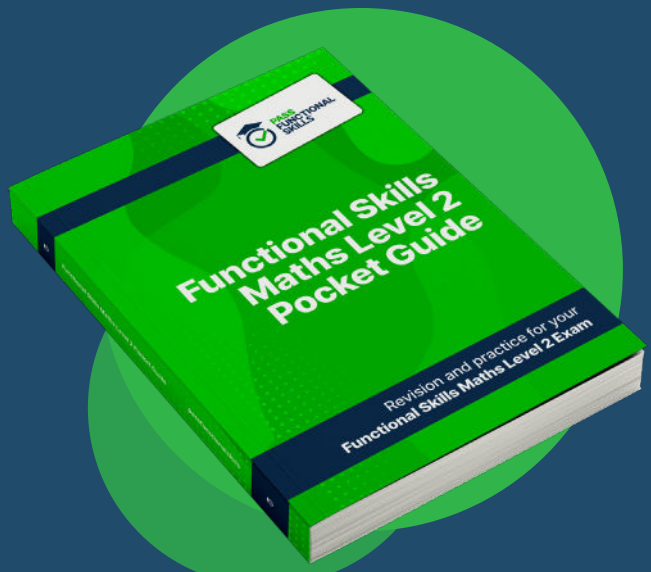
Functional Skills Maths
Level 2 Practice Papers



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

Or visit
passfunctionalskills.co.uk