

Functional Skills
Mathematics Assessment
Level 2

There are 2 sections in this assessment, Part A and Part B.

Learner name

Run ID

Learner signature

Centre

Assessment date



Part A - Non-calculator

**You have 30 minutes to
complete this section.**

**You must not use a
calculator.**

Instructions to learners

Part A: Non-calculator

You will need a pen, pencil and a ruler. You may need a protractor and compasses.

Use only blue or black ink. Pencil **must only** be used for drawing.

You can write or draw to show your answers.

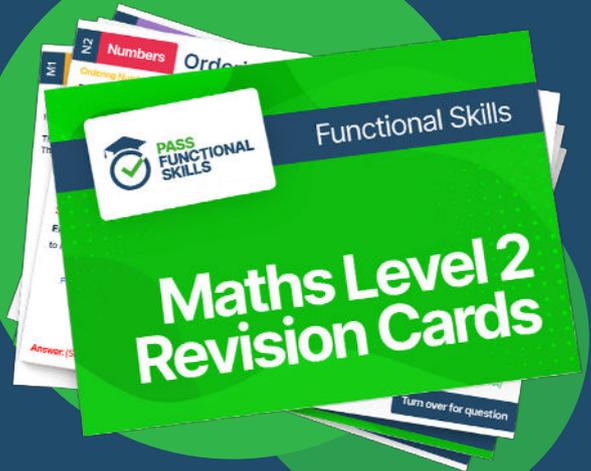
You have **30 minutes** to complete **Part A**.



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Question 1

$$2456 + (-563) =$$

Show your working out and write your answer in the box below.

(1 mark)

$\begin{array}{r} 2456 \\ - 563 \\ \hline 1893 \end{array}$
Answer <u>1893</u>

What are the coordinates of C? Tick ✓ the correct box.

(1 mark)

1) (-4, 3)

2) (5, -3)

3) (4, -3)

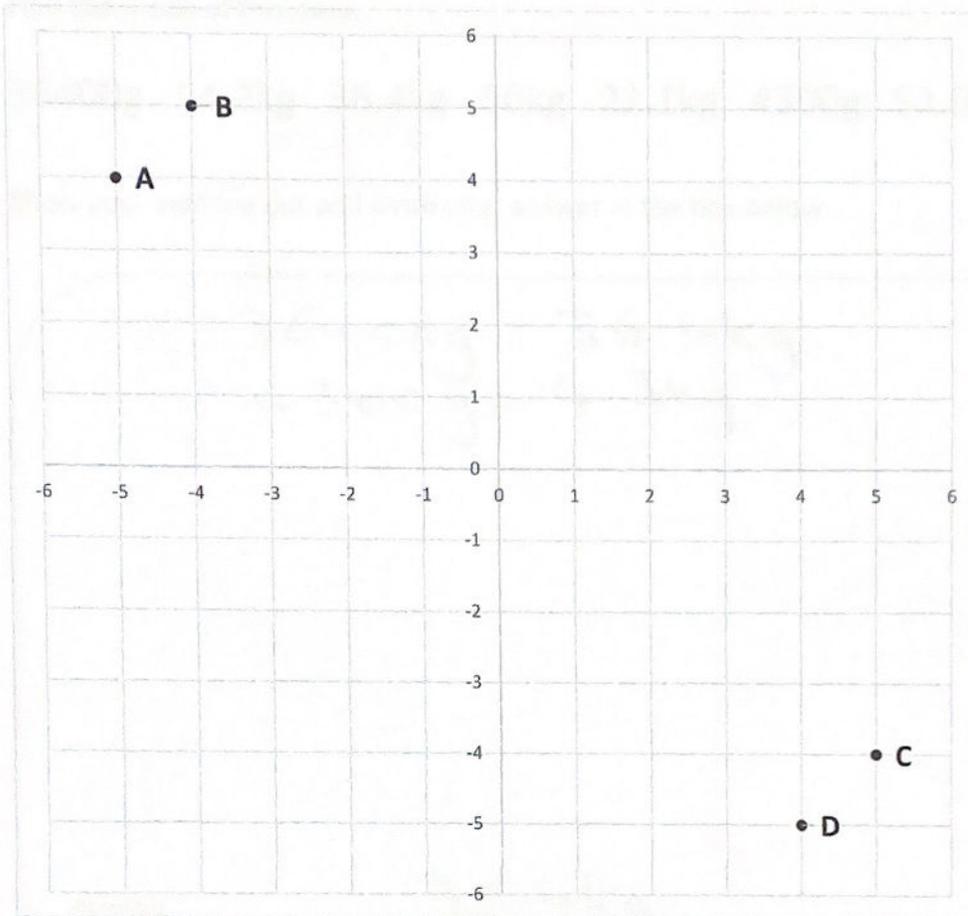
4) (-5, 3)

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Question 2



What are the coordinates of C? Tick ✓ the correct box.

(1 mark)

1) (-4, 5)

2) (5, -4)

3) (4, -5)

4) (-5, 4)

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Question 3

Find the mode of this data.

36400g 54.2kg 36.4kg 56kg 22.1kg 4300g 51.5kg 75kg

Show your working out and write your answer in the box below.

(2 marks)

$$36400g = 36.4kg.$$
$$4300g = 4.3kg.$$

Answer _____

36.4kg.

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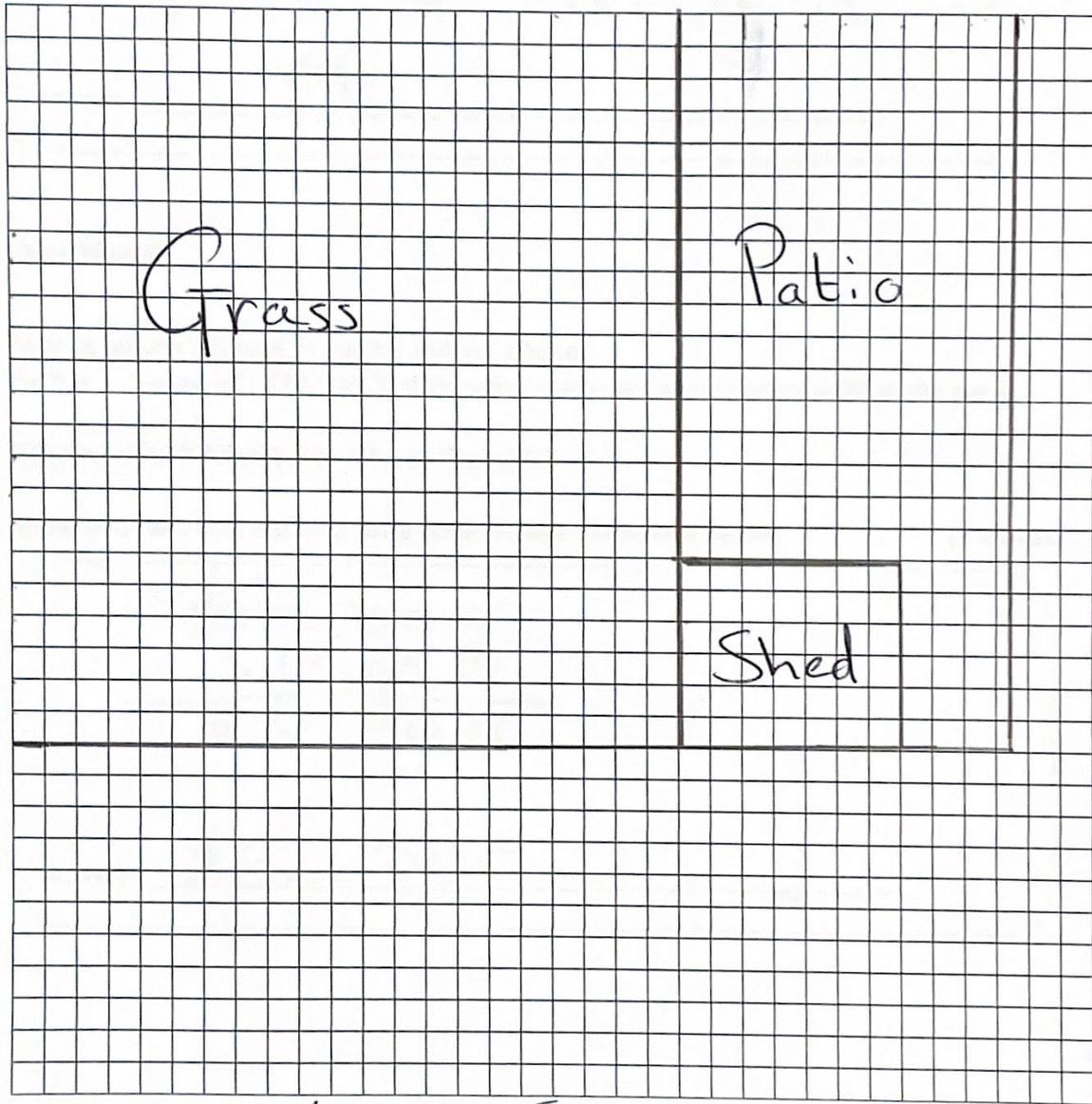
Question 4

Tim has decided to landscape his garden. His garden is a rectangle 11.5m by 15.75m.

He wants to have two thirds grass and the rest as a patio. He also wants a shed 3.5m x 2.25m to be placed in any corner of the patio.

Draw a scale drawing on the graph paper below, label the drawing clearly.

(4 marks)



1 square = 50 cm
length

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Question 5

$$\frac{5}{6} + \frac{13}{4} =$$

Show your working out and write your answer in the box below.

(2 marks)

$$\frac{5}{6} = \frac{10}{12}, \quad \frac{13}{4} = \frac{39}{12}, \quad \frac{10}{12} + \frac{39}{12} = \frac{49}{12}$$

Answer

$$\frac{49}{12}$$

Question 6

Allen is buying a house, it costs 1 million pounds.

He has a deposit of £378,500. The remaining amount he will borrow from the bank.

How much will Allen borrow from the bank?

Show your working out and write your answer in the box below.

(2 marks)

$$\begin{array}{r} \overset{0}{1}, \overset{0}{0}, \overset{0}{0}, \overset{0}{0}, \overset{0}{0}, \overset{0}{0} \\ - \quad 378,500 \\ \hline 621,500 \end{array}$$

Answer

$$£621,500$$

Question 7

Calculate the area of a triangle where height = 15cm and base = 7cm.

Show your working out and write your answer in the box below.

(2 marks)

$$\frac{1}{2} \times 15 \times 7 = \frac{1}{2} \times 105 \\ = 52.5 \text{ cm}^2$$

Answer

52.5 cm²

Question 8

What is the probability of picking a blue ball from a box with 16 green, 4 purple and 5 blue? Write your answer as a percentage to 2dp.

Show your working out and write your answer in the box below.

(2 marks)

$$16 + 4 + 5 = 25 \\ \frac{5}{25} = \frac{1}{5} = 20\%$$

Answer

20%

Functional Skills
Mathematics Assessment
Level 2

Learner name

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Part B - Calculator

**You have 1 hour
45 minutes to complete
this section.**

You may use a calculator.

Instructions to learners

Part B: Calculator

You will need a pen, pencil and a ruler. You may need a protractor and compasses.

Use only blue or black ink. Pencil **must only** be used for drawing.

You can write or draw to show your answers.

You have **1 hour 45 minutes** to complete **Part B**.

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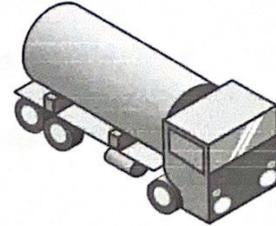


Question 9

Trevor wants to buy a new lorry for work.
 Trevor has to transport milk from the farms.

He will need a lorry that is suitable to carry liquid.

The liquid will be carried in a cylinder.



He has seen two lorries for sale:

Lorry 1 has a capacity of 536ft^3

Lorry 2 has the following dimensions: length 19.35ft and diameter 7.6ft

$$\pi = 3.14$$

Trevor wants to buy the larger lorry. Which should he buy? Show clearly how you decided.

Show your working out and write your answer in the box below.

(4 marks)

$$\text{Lorry 2 radius} = 7.6 \div 2 = 3.8 \text{ ft.}$$

$$\begin{aligned} \text{Lorry 2 volume} &= 3.14 \times 3.8^2 \times 19.35 \\ &= 877.36 \text{ ft}^3 \text{ (2 decimal place).} \end{aligned}$$

So Lorry 2 is larger

Answer _____ Lorry 2.

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Question 10

Dahlia works 21 hours a week.

Her employer says she will be able to increase her hours by 3 in a month's time.

What will be the percentage increase in Dahlia's hours? Round to the nearest whole number.

Show your working out and write your answer in the box below.

(3 marks)

$$\frac{3}{21} \times 100 = 14.285$$
$$= 14\% \text{ (nearest whole number)}$$

Answer 14%

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Question 11

Terri has read that the span of a person's arm is correlated with their height.

He decides to do an investigation to prove this theory.

He measures the arm span and height of 10 people and records the information in a table.

Person	Arm span cm	Height cm
1	121	125
2	140	136
3	132	140
4	150	150
5	156	164
6	168	162
7	163	170
8	180	175
9	142	140
10	162	159

Draw a diagram on the next page to show the data supplied.

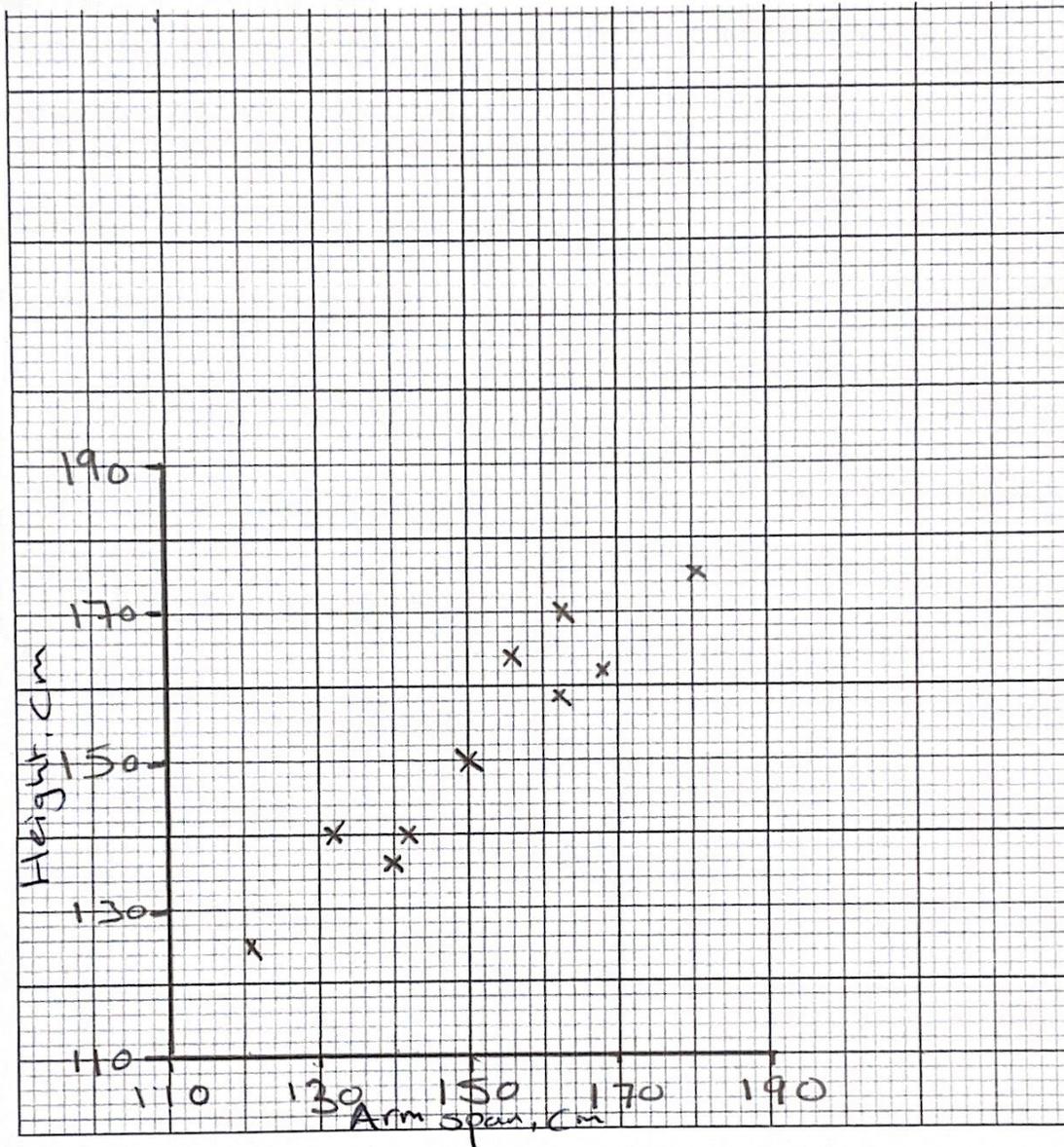
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Use this graph paper to draw your diagram.

(3 marks)



Describe the correlation the data displays.

Write your answer in the box below.

(1 mark)

Answer _____

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Question 12

Harry cycles on an indoor track.

The record for distance travelled on an indoor track in an hour is 53.731km.

Harry cycled 41.829km in 47.75 minutes.

Harry thinks if he continued at the same speed he could beat the record.

Could Harry beat the record? Show why you think this.

Show your working out and write your answer in the box below.

(3 marks)

$$41.829 \text{ km} \div 47.75 = 0.876 \text{ km per minute.}$$

$$0.876 \times 60 = 52.56 \text{ km per hour.}$$

In one hour Harry will only cycle 52.56km.

Answer No, his speed was slower

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Question 13

Dave is organising a charity event for his company. The company will increase the total raised by staff by 23.2%.

Dave has collected £321.45, which is $\frac{3}{5}$ of the money promised by staff.

How much will be raised in total?

Show your working out and write your answer in the box below.

(4 marks)

$$\begin{aligned} \text{Total promised by staff} &= 321.45 \times \frac{5}{3} = \underline{\pounds 535.75} \\ 23.2\% &: 535.75 \times \frac{23.2}{100} = \underline{\pounds 124.294} \\ 535.75 + 124.294 &= \underline{\pounds 660.04} \\ & \text{(to the nearest penny).} \end{aligned}$$

Answer $\pounds 660.04$

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Question 14

An Ice Hockey League records the scores for the top two teams after 10 matches.

Team A Goals Scored per match	Team B Goals Scored per match
41	29
42	51
55	32
61	43
27	32
19	57
30	59
44	41
49	33
55	40
Range: 42	Range: 30
Mean: 42.3	Mean: 41.7

The coach of Team A says Team A scored more goals on average and were the most consistent goal scorers.

Is the coach correct? Show how you know this.

Show your working out and write your answer in the box below.

(4 marks)

Sum of goals for Team B = 417.

mean = $417 \div 10 = 41.7$.

Range for team B: $59 - 29 = 30$.

The coach is incorrect, team B scored ~~more~~ less on average but was more consistent

Answer _____

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Question 15

Sonia works in a call centre. She wants to calculate the average length of a call.

She records the following information:

Length of call (mins)	Frequency
0 - 2	40
3 - 5	32
6 - 8	30
9 - 11	25
12 - 14	20

Estimate the mean length of a call.

Show your working out and write your answer in the box below.

(5 marks)

Mid points of call ranges	Mid point x frequency
1	$1 \times 40 = 40$
4	$4 \times 32 = 128$
7	$7 \times 30 = 210$
10	$10 \times 25 = 250$
13	$13 \times 20 = 260$
Total = 888.	
frequency total = 147.	
Estimated mean = $888 \div 147 = 6.04$ (2 decimal place).	
Answer _____	

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Question 16

Tyler is driving from London to Plymouth.

Tyler travels at an average speed of 40mph covering 32.1 miles to the gallon.

Petrol at his local petrol station is currently 128.5p per litre.

Mileage chart (miles)

3.785 litre to 1 gallon

	Liverpool	London	Manchester	Newcastle	Norwich	Nottingham	Oxford	Penzance	Plymouth	Sheffield	Southend
Liverpool		216	34	167	222	107	168	353	299	74	255
London	216		200	278	114	130	55	282	214	161	43
Manchester	34	200		136	177	68	157	324	281	40	225
Newcastle	167	278	136		252	159	253	481	412	133	299
Norwich	222	114	177	252		118	159	393	327	144	99
Nottingham	107	130	68	159	118		104	323	255	37	160
Oxford	168	55	157	253	159	104		261	193	137	105
Penzance	353	282	324	481	393	323	261		75	361	307
Plymouth	299	214	281	412	327	255	193	75		293	269
Sheffield	74	161	40	133	144	37	137	361	293		197
Southend	255	43	225	299	99	160	105	307	269	197	

How much will the petrol cost and how long will it take to get to Plymouth in hours and minutes?

Show your working out and write your answer in the box below.

(6 marks)

$$214 \div 32.1 = 6.6... \text{ gallons of fuel needed.}$$

$$6.66... \times 3.785 = 25.23... \text{ Litres. needed.}$$

$$25.233... \times 128.5 = 3242.4833... \\ = \pounds 32.42 \text{ petrol cost.}$$

$$214 \div 40 = 5.35 \text{ } 0.35 \times 60 = 21 \text{ minutes.}$$

Time taken is 5 hours and 21 minutes.

Answer _____

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Question 17

Alex wants to invest £14000 in a savings account for 2 years.

He finds information about two savings accounts. Both accounts pay interest at the end of each year.

<p>Saver 1 3% each year</p>
--

<p>Saver 2 5.3% for the first year 0.9% for each extra year</p>
--

Alex thinks he will earn more interest at the end of 2 years with Saver 1.

Is Alex correct? Explain your answer.

Show your working out and write your answer in the box below.

(5 marks)

Saver 1: After 2 years: $14\,000 \times 1.03^2$
 $= \pounds 14,852.60.$

Saver 2: After 1 year: $14\,000 \times 1.053 = \pounds 14\,742$
 After 2 years: $14\,742 \times 1.009 = \pounds 14,872.68.$

Answer Alex is wrong, saver 2 will pay more.

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Question 18

Zeb received a student loan of £12780 last year. Her student accommodation cost £142 per week for 30 weeks.

What fraction of her student loan was used to pay for student accommodation?
Write the fraction in its simplest form.

Show your working out and write your answer in the box below.

(2 marks)

$$\text{Total accommodation cost: } 142 \times 30 \\ = \pounds 4260$$

$$\text{Fraction } \frac{4260}{12780} = \frac{1}{3}$$

Answer $\frac{1}{3}$

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Question 19

Markus hires a car for 8 days for a work trip. He travels 378 miles.

The car hire company use the following formula to calculate the total hire cost:

$$\text{Hire Cost} = 27d + 0.2m$$

d = Number of Days
 m = Miles Travelled

Markus can claim £300 in expenses for car hire.

Will this cover the cost of the car hire? Explain your answer.

Show your working out and write your answer in the box below.

(3 marks)

$$d=8, \quad m=378.$$

$$\begin{aligned} \text{Hire cost} &= 27 \times 8 + 0.2 \times 378 \\ &= \pounds 291.60 \end{aligned}$$

Yes, $\pounds 300$ will cover the cost of
 $\pounds 291.60$

Answer _____

Question 20

$$92(45 \div 5 \times 3) + 32 =$$

Write your answer in the box below.

(1 mark)

$$\begin{aligned} 45 \div 5 &= 9, \quad 45 \div 5 \times 3 = 27. \\ 92 \times 27 &= 2484 \\ 92(45 \div 5 \times 3) + 32 &= 2516. \end{aligned}$$

Answer _____

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Question 21

Rona is a member of a fishing club. She records the weights of the fish she catches in one day.

Fish	Weight(g)
1	4356 ✓
2	4851
3	4985 ✓
4	4913 ✓
5	4803 ✓

The heaviest fish caught by a club member was 10.8lbs.

1lb = 0.454kg

What is the percentage difference between the median weight of fish Rona caught and the heaviest fish caught by a fishing club member?

Show your working out and write your answer in the box below.

(4 marks)

Median = 4851g.
 Heaviest fish = 10.8×0.454
 $= 4.9032 = 4903.2g.$

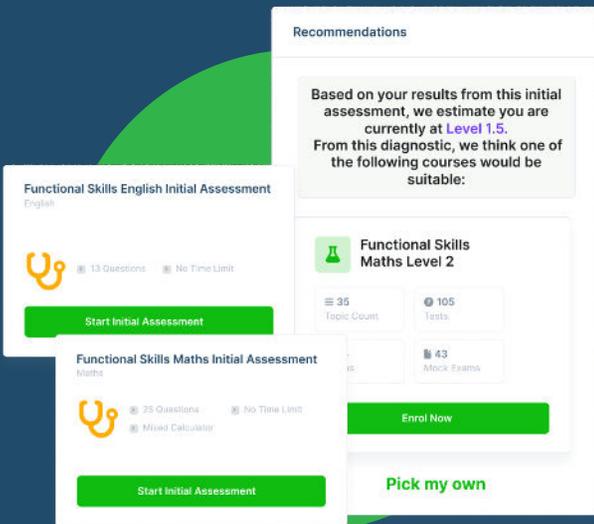
$\frac{4851}{4903.2} \times 100 = 98.935\%$

Percentage difference = $100 - \frac{4851}{4903.2} \times 100$
 $= 1.0646... \%$

Answer 1.0646% (4 decimal place).

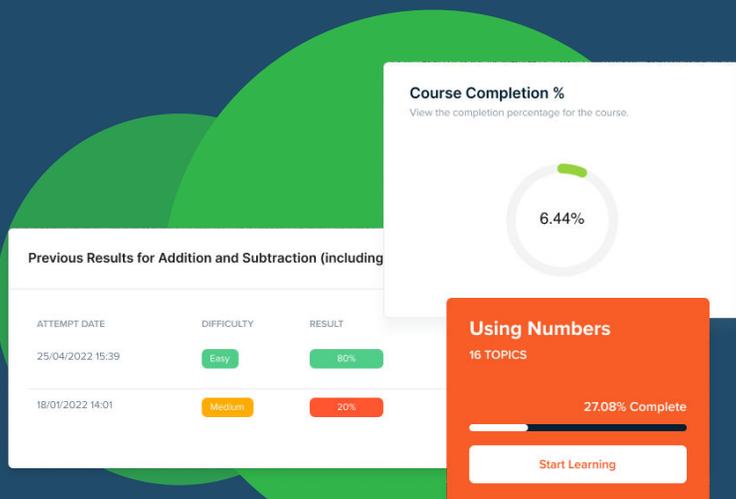
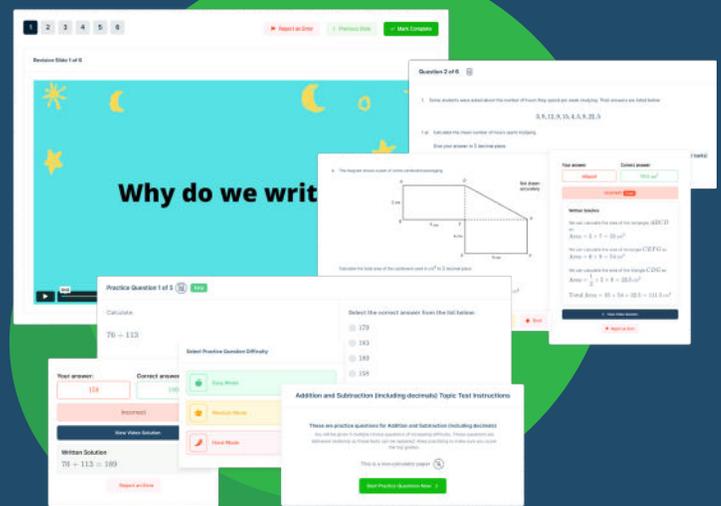


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