gateway qualifications

Functional Skills

Mathematics

Level 2 – Sample Assessment

Fill in your name, date of birth, registration number and centre name in the boxes below.

Surname:	Other Names:
Gateway Qualifications registration number:	DOB:
Centre Name:	

My signature confirms that I will not discuss the content of this assessment with anyone.

Signature:

Paper Ref: FSML2AD/P	**Time:** 2 hours	**Marks Available:** 50	**Marks Awarded:** /50

You must have:
A pen with black or blue ink, calculator, HB pencil, eraser, ruler (graduated in cm and mm)

Instructions

- Answer **all** questions.
- Answer the questions in the spaces provided.

Information

- The total mark for this paper is **50**.
- The marks for **each** question are shown in brackets - use this as a guide as to how much time to spend on each question.
- You must show clearly how you get your answers because marks will be awarded for your working out.
- Check your working and your answers at each stage.
- Calculators may be used throughout the paper.

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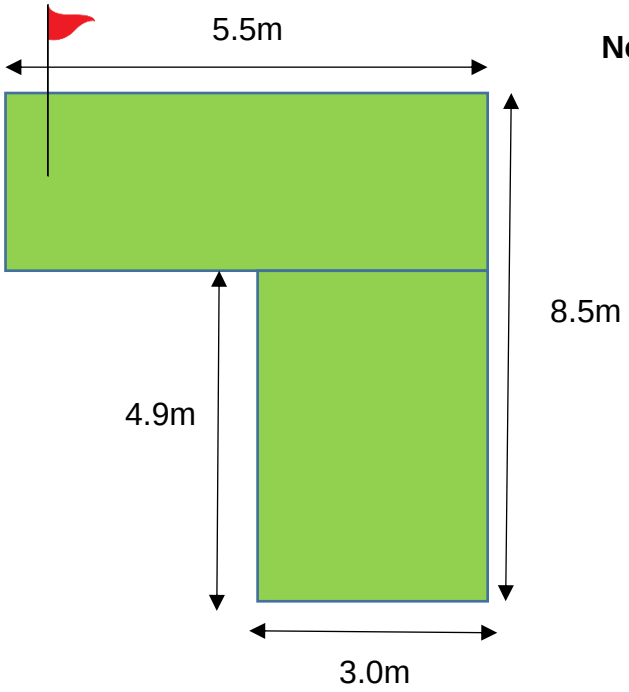
Task 1 – Mini Golf Course

Kim works at a mini golf course.

There are plans to add an extra hole to the course in a golf green.

This is Kim's design for the new golf green.



Not drawn to scale

The grass used for the golf greens is called **turf**.

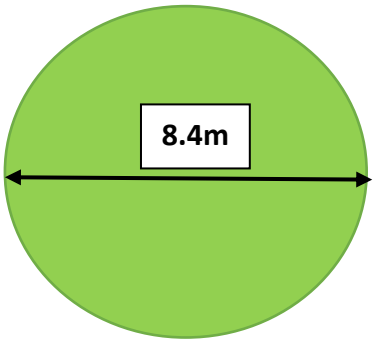
Kim thinks the area of **turf** needed to cover the whole of the golf green for her hole design is less than 30m².

1(a) Is Kim correct? Explain your reasoning.

*You **must** show your working.* *(4 marks)*

Kim needs to replace the edging around another green.

The green is a regular circular shape.



1(b) A local garden centre has a strip of the edging Kim has chosen, which measures 25m.

Will this be enough to go around the circular shaped green?

Use the formula πd to calculate the circumference of a circle.

d = diameter of circle

Use 3.14 as the value for π

*You **must** show your working and explain your answer.* *(3 marks)*

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Kim is often asked by customers how long the golf course will take for them to complete.

She thinks the time taken depends on the **number of people playing as a group**.

She records how long it takes for groups with different numbers of players to complete the course.

This table shows the data collected.

Number of players in a group	Time taken to complete the course
3	45 minutes
2	30 minutes
4	55 minutes
3	48 minutes
2	35 minutes
4	57 minutes
6	1 hour and 12 minutes
4	54 minutes

Kim thinks that if she plots this data in a **scatter graph**, she can use the graph to show customers how long it will probably take them to complete the course.

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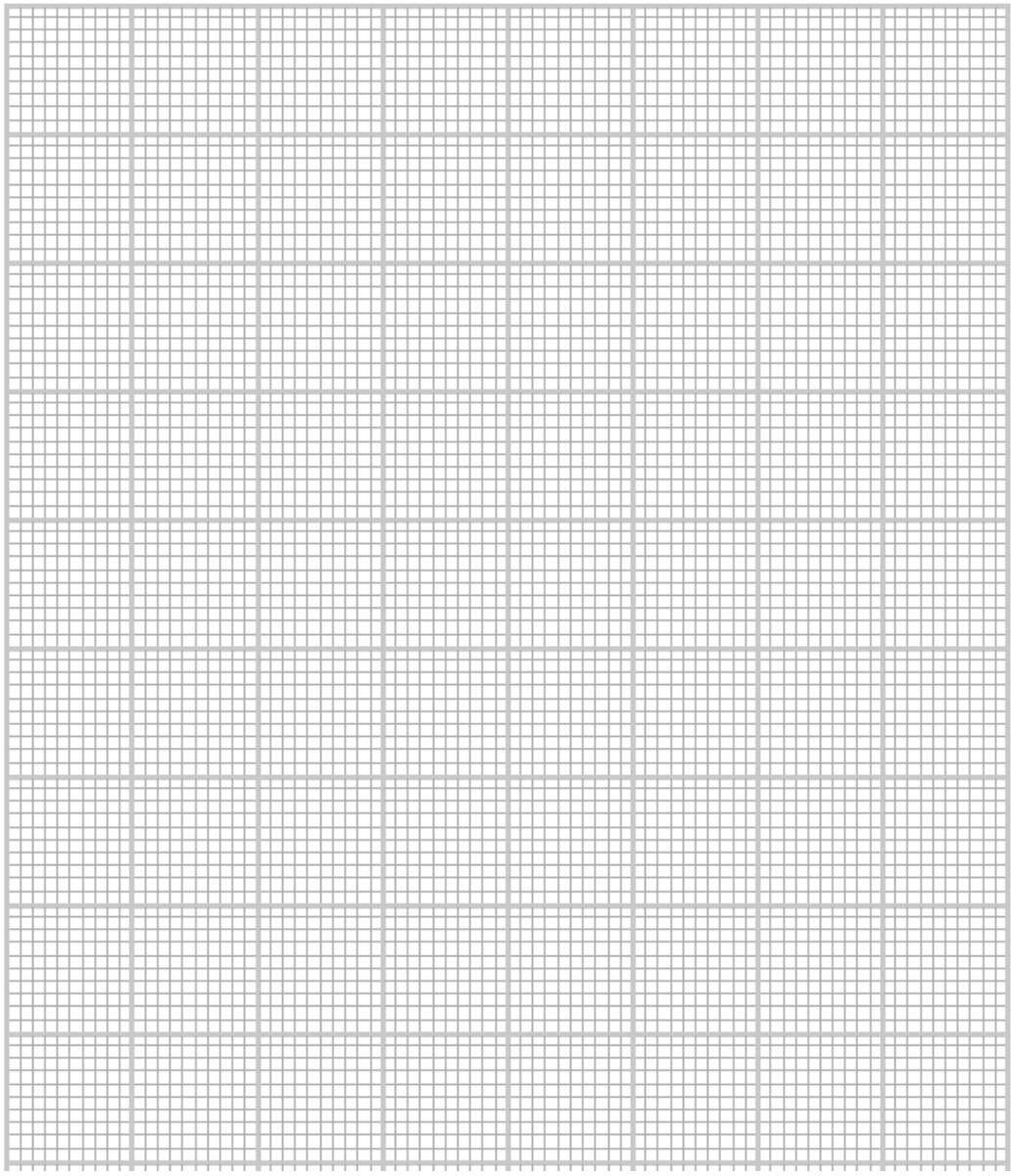
1(c) Draw a scatter graph for Kim to use based on the data in the table.

(5 marks)



1(d) Use the graph to state the advice Kim should give to a group of **5** people who want to know how long they will probably take to complete the course.

(1 mark)

Task 2 - Cycle Challenge

Kurt has taken up a challenge to cycle:
160 miles in **3 days**.
His friend Matt did the same route last year and gives him some advice:

You should cover $\frac{2}{5}$ of the total distance on **day 1** and do **60%** of the remaining distance on **day 3** because it is mainly downhill.

2(a) Based on this advice, complete this table to suggest the distance Kurt should aim to cover on each day of his cycle.

Use the space below the table to show your calculations *(4 marks)*

Day	Distance (miles)
1	
2	
3	

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Kurt wants to check that his bike is the correct size for him.

He finds this table on a website. The table shows the recommended frame sizes for different inside leg measurements.

Inside leg (to nearest inch)	Frame size (to nearest cm)
28	48
29	50
30	52
31	54
32	56
33	58
34	60

Kurt measures his inside leg as **83cm**.

The frame size of his bike is **54cm**.

Use the following imperial to metric measure conversion:

1 inch = 2.54cm

2(b) Using the information in the table, decide whether the frame size is suitable for him.

*You **must** show your working and explain your answer.* *(3 marks)*

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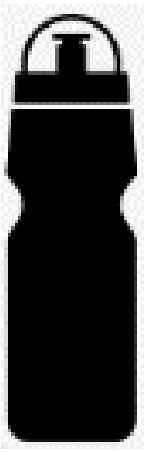
Kurt looks at a website for advice about drinking fluids when he is cycling.



He finds a recipe for a homemade drink. He decides to use the drink for the first part of his cycle. Once he has drunk this, he will drink water.

The recipe for making **1 000ml** of the drink:

- 800ml water
- 200ml orange juice
- ½ tablespoon of salt.

Kurt has **2** bottles, each with a capacity of **0.75 litres**.

2(c) What quantities of water, orange juice and salt should he use to fill **two** of his bottles with the homemade drink?

*You **must** show your working.* *(3 marks)*

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The website advises that:

- to keep fully hydrated on the cycle, he should drink **250ml every 15 minutes** in normal conditions.
- this quantity should be increased by **10% for every 3ºC** above 15ºC.

The weather forecast for the first day of Kurt's cycle predicts that the temperature will be **22.5ºC**.

2(d) After how many minutes of his journey will Kurt have finished **both** bottles of his homemade drink?

*You **must** show your working and explain your answer.* *(7 marks)*

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2(e) You should check your calculations throughout the task.

(i) Show how you can check your answer to **2(a)**. Make sure you show a different method from the one you first used to get your answer to question **2(a)**.

(1 mark)

(ii) How effective was your check? Why?

(1 mark)

Task 3 – A Trip to the Lake District

Sam and Ellie are planning a weekend away in the Lake District.

They compare prices of holiday cottages.

Cottage	Cost (£)	Number of nights	Offers
Thatched	390	3	+ 4 nights at £95 per night
Homely	825	5	+ 2 free nights
Stables	188	1	+ 6 nights each at half price
Rose	520	4	+ 3 nights each with a discount of 25%

3(a) Sam and Ellie want to stay for 7 nights. Which is the cheapest cottage?

*You **must** show your working.* *(6 marks)*

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Sam checks information about the journey on a travel website.

She notes:

- total distance of journey – 240 miles
- distance on motorway – 160 miles
- distance on other roads – 80 miles.

The site states the average speeds for these roads as:

- motorways - 60 mph (miles per hour)
- other roads - 40 mph

3(b) They want to arrive at their destination before 8pm. They plan to stop for a meal for 45 minutes during the journey.

Sam thinks the **latest** they can set off is **4:30pm**. Is she correct?

*You **must** show your working and explain your answer.* *(5 marks)*

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Sam and Ellie want to climb Skiddaw mountain in the Lake District.

This is a list of facts that Ellie notes:

- Temperatures drop by 7°C for every 1 000 metres climbed.
- The mountain of Skiddaw is 3 051 feet above sea level.
- Their holiday cottage is 200 metres above sea level.
- The temperature on the day of the climb is predicted to be 4.5°C.

3(c) Ellie thinks the air temperature will be below freezing at the top of the mountain. Based on her notes, is she correct?

Use the following approximate conversion rate: 1 foot = 30cm

*You **must** show your working and explain your answer.* *(5 marks)*

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3(d) You should check your calculations throughout the task.

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(i) Show how you can check your answer to **3(c)**. Make sure you show a different method from the one you first used to get your answer to question **3(c)**.

(1 mark)

(ii) How effective was your check? Why?

(1 mark)

END OF ASSESSMENT

Gateway Qualifications
Gateway House
3 Tollgate Business Park
Colchester, CO3 8AB

01206 911211
enquiries@gatewayqualifications.org.uk
@GatewayQuals