gateway qualifications

Functional Skills

Mathematics

Level 2 – Sample

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: FSML2AB/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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Section A – Prizes and probability

Jen has been asked to develop a game she can use at the college fete to raise money for charity.

She has a budget of £100. Jen decides to buy **20 prizes**. She looks in a local shop and finds these ideas for prizes:

Box of chocolates £4.99	Bottle of bubble bath 99p
Mobile phone cover £1.29	Earphones £4.56
Men's gift sets 4 for £24.50	DVDs 3 for £25.99
Nail set £4.89 each	Scarf £3.98
Photo frames 3 for £15.99	Dog coats 2 for £9.99

1. Jen decides to buy **all** of these items.

What is the least amount of money she can spend to buy 20 prizes?

*You **must** show your working and your reasoning in full.* (5 marks)

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2. Jen starts to develop her game. She makes a set of consecutively numbered tickets, starting with 1.

She wants the chances of winning to be **1 in 5**. Winning tickets will be ones that end in **0 or 5**.

How many tickets does she need so that people have a 1 in 5 chance of winning one of the 20 prizes?

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

3. At the fete, Jen starts to sell tickets. The first 20 tickets she sells do not win a prize.

Look at your answer for **Q2**.

What is the probability that the next person who buys a ticket will win a prize?

*You **must** show your working.* (2 marks)

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4. Jen sold all her tickets at 4 tickets for £5.

Look at your answers for **Q1** and **Q2**.

How much profit did she make?

*You **must** show your working.* (2 marks)

5(a) You should have checked your calculations throughout the task.

Show how you can check your answer to **Q4**.

You must use a **different method** from the one you first used to get your answer to **Q4**.

Show your check. (1 mark)

5(b) How effective was your check? Why? (1 mark)

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6. Jen's friend, Sam, had his own stall.

He asked people to guess whether a coin would fall as heads or tails. They paid £1 a guess and if they were right they won £2.

He didn't make a profit. Why not?

*You **must** show your working and your reasoning* (2 marks)

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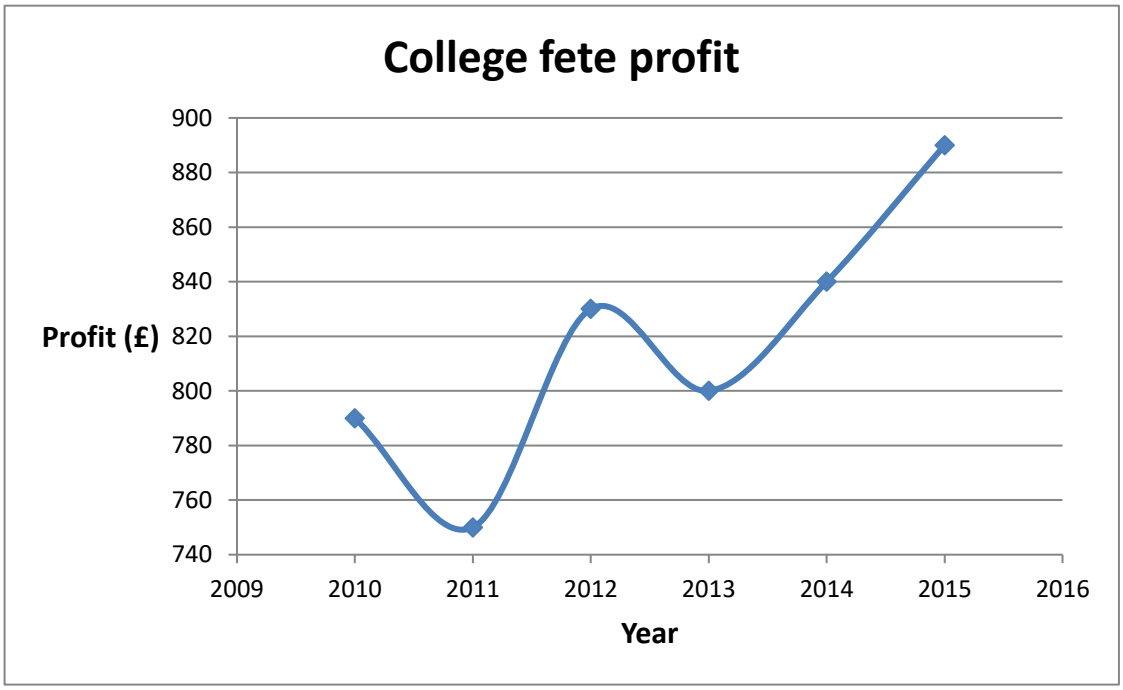
7. The college produces this data about the fete.

Year	Profit (£)
2010	790
2011	750
2012	850
2013	800
2014	840
2015	900



The table of data is correct. There are **two** mistakes on the graph.

In which years are there mistakes on the graph?

(2 marks)

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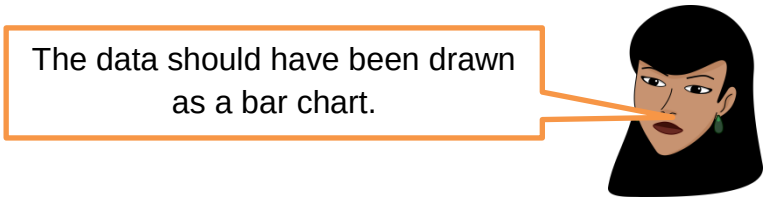
8. Jen's friend, Abi, looks at the table and graph. She says:



Is Abi correct? Explain your reasoning. (2 marks)

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Section B - Water!

Kim's mum is going to have a water meter fitted because she wants to reduce her water bills.

This is the information on the Water Company's website:

1 m^3 of water is equivalent to:

20 baths

16 loads of washing

28 showers

110 toilet flushes

The water charge is £5.35 per m^3

1. Over a week, Kim notes how many times her mum uses large amounts of water.

	Number of times in week
baths	4
washing machine loads	4
showers	7
toilet flushes	55

How much water does Kim's mum use each week on average?

*You **must** show your working.* (5 marks)

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2. Kim thinks that her mum will save money when she has a water meter fitted. She assumes that her mum will use the same amount of water every week as in the table in **Q1**.
Currently, her mum pays £36.55 per month.

Look at the information from the Water Company's website and your answer from **Q1**.

Will Kim's mum save money each year when the water meter is fitted?

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

Marker Use Only

3. How certain are you that your answer in **Q2** is **exactly** what the difference in bills will be after having a water meter fitted?

What else might you want to know to increase your certainty?

(2 marks)

4. Kim persuades her mum to buy a water tank to collect rainwater.

The tank is a cylinder. The rainwater tank has these dimensions; height 1.20m, diameter 60cm. The volume of a cylinder is calculated by:

$$V = \pi r^2 h$$

What is the maximum capacity of rainwater that the tank could hold?

Give your answer in litres and to two decimal places.

*You **must** show your working.* (5 marks)

Marker Use Only

Section C - Youth Club

Mel helps in a Youth Club. The Youth Club wants to get the teenagers interested in gardening.

They have an area to plant seedlings surrounded by a fence. The area is 3.5m by 3.5m.

1. The seedlings must be planted 50cm apart and 50cm from the fence.

What's the maximum number of seedlings that Mel could plant in the area?

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

Marker Use Only

2. The fence needs to be repainted before they plant the seedlings. It is 1.25m high. The area the fence surrounds is 3.5m by 3.5m.

What is the total area of the fence?

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

3. A tin of paint costs £14.99. The information on the paint tin states that 1 tin covers $5m^2$ of fence.
Look at your answer to **Q2**.

How much will it cost to paint all the fence?

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

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4(a) You should have checked your calculations throughout the task.

Show how you can check your answer to **Q3**.

You must use a **different method** from the one you first used to get your answer to **Q3**.

Show your check. (1 mark)

4(b) How effective was your check? Why? (1 mark)

END OF ASSESSMENT

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