

Functional Skills Mathematics Level 2 - Sample

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

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Paper Ref: FSML2SAP	Time: 2 hours	Marks Available: 50	Marks Awarded: /50
<p>You must have: A pen with black or blue ink, calculator, HB pencil, eraser, ruler (graduated in cm and mm)</p>			
<p>Instructions</p> <ul style="list-style-type: none"> • Answer all questions. • Answer the questions in the spaces provided. <p>Information</p> <ul style="list-style-type: none"> • 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 - Festival!

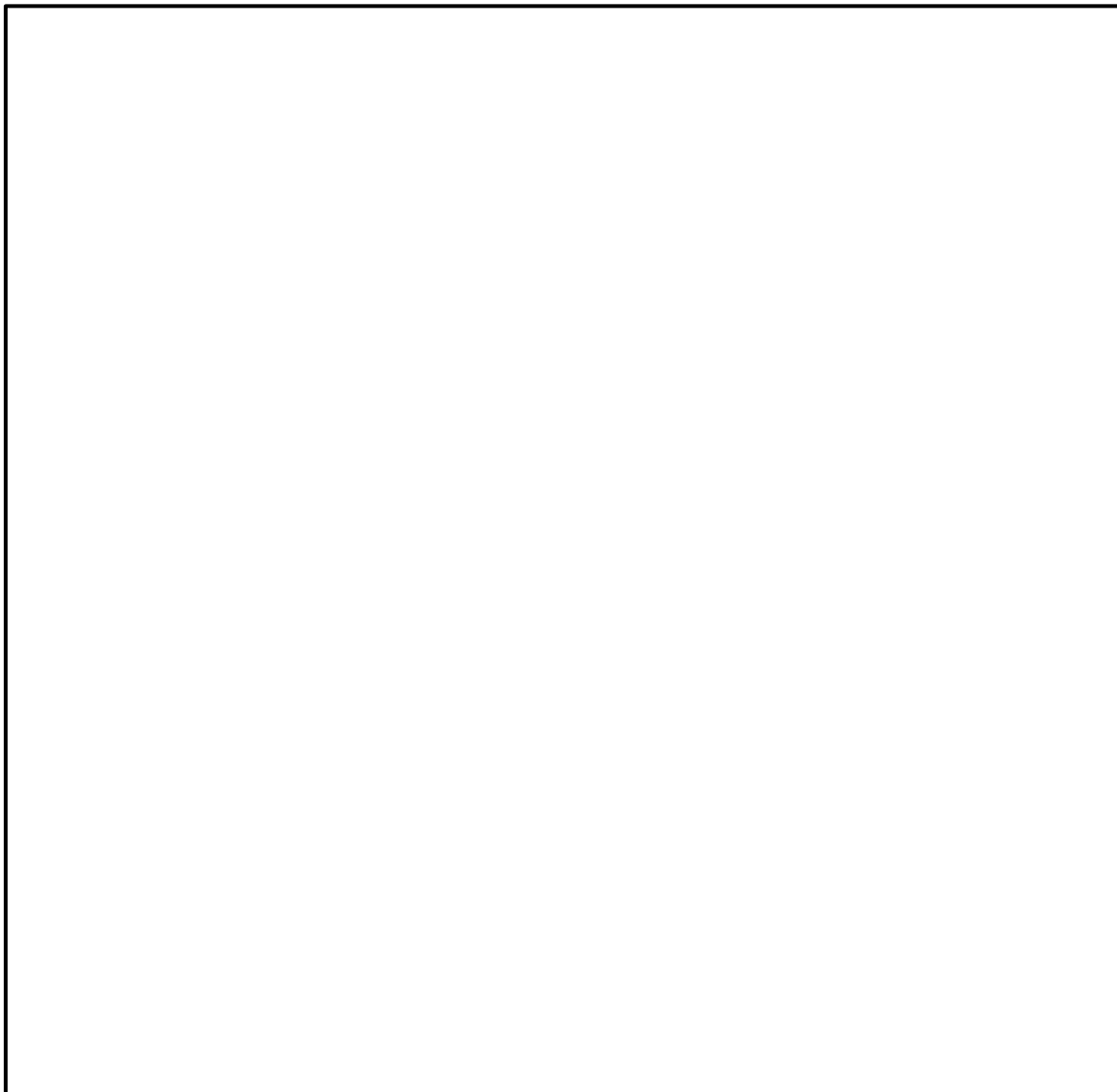
1. Jez is going to a festival. He needs to save £250 for his trip.

Jez has a part time job that pays £6.75 an hour. His boss tells Jez that if he works more than 9 hours in a week, he will be paid £1.85 **more** per hour for the extra hours.

How many weeks will it take Jez to save enough for his trip if he works 12 hours each week?

You **must** show your working.

(6 marks)



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2. Jez has saved his budget of £250 for his trip.

He looks at camp sites in the area. He wants to spend a maximum of $\frac{2}{5}$ ths of his budget on the camp site and no more than 25% of his budget on travel.

Which two camp sites should Jez consider? Explain why.

You **must** show your working.

(6 marks)

Camp site	Travel costs (£)	Proximity to festival (m)	Camp site rating (stars)	Camp site cost (£)
Ever green	64.45	100	5	101
Happy campers	59.50	300	3	98
Silent world	67.90	1 000	5	99
Tents r Us	61.50	600	3	98
Trees and tents	62.30	500	4	99

3. Jez looks at a camp site ratings website to read some customer comments before making his decision.

Customers are asked to fill in a questionnaire. The questionnaire starts by asking:

Tick your age group	10-20	20-30	30-40	40-50	50-60	Over 60

Jez thinks errors have been made in designing the questionnaire.

Re-design this part of the questionnaire so that it is correct.

(2 marks)

4. Jez is planning a day at the festival. There are several stages at the festival showing different bands at different times. Jez wants to see Harlow, Fist, Sevens, The Besties and Jenny. He is meeting with a friend in a local café at 8:30pm for half an hour.

Look at the timetable for the festival.

Times	15:00 to 15:50	16:00 to 16:45	17:10 to 18:15	20:00 to 21:10	21:30 to 22:30	22:55 to 00:00
Stage 1	Harlow	Jonah	Fist	Jenny	The Besties	Wicked
Stage 2	The Besties	Flicks	Sam	Harlow	Sonny	Jenny
Stage 3	Wicked	Sam	Jenny	The Besties	Sevens	Jonah
Stage 4	Jenny	The Besties	Sonny	Fist	Jenny	Flicks

Design a plan for Jez so he does everything he wants to do.

Show Jez's plan and explain any decisions you have made. (3 marks)

5. Jez decides to draw himself a scaled plan of the festival layout as he can't find a map to buy. The festival takes up a rectangular area of 1.5 miles by 3.4 miles. His piece of paper is 20cm x 15cm.

Which scale should Jez use to fill as large an area of his paper as possible?

A: 1 mile = 6cm

B: 1 mile = 4cm

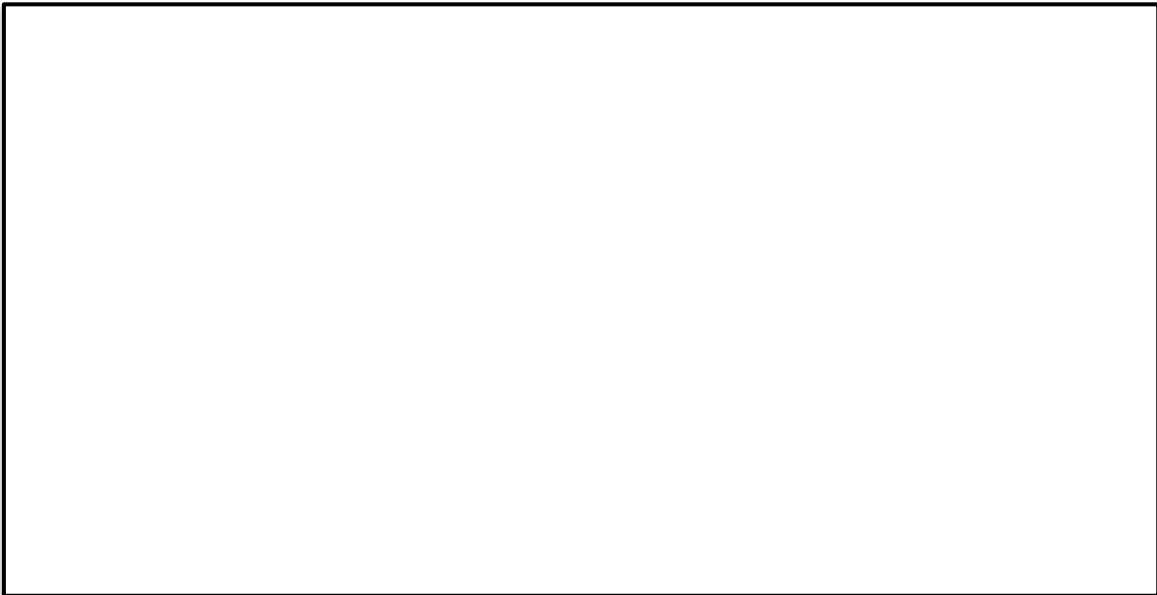
C: 1 mile = 7cm

D: 1 mile = 5cm

E: 1 mile = 3cm

You **must** show your working.

(2 marks)



Section B - Collecting rain

1. Ben has just had his water bill.

Last year he paid £14.55 a month. This year his water bill is £261.00.

If he chooses to pay monthly again, how much more will he pay each month than he did last year?

You **must** show your working.

(4 marks)

2. Ben fits a rainwater collection barrel in the garden to try to save money on his water bills.

The rainwater barrel is 86.5cm high and 50cm wide. As the barrel is almost a cylinder, Ben decides he can estimate its volume using the formula:

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

Ben wants to find out how much rainwater the barrel can hold.

Work out the maximum volume it can hold. Give your answer in m³ and to two decimal places.

You **must** show your working.

(5 marks)



3. Ben plans to use the rainwater he collects to water the garden instead of using water from the tap. Water from the tap costs £1.98 per m^3 .

Using your answer from Q2, how much money will Ben save for each full rainwater barrel?

Give your answer to the nearest penny.

*You **must** show your working.*

(2 marks)

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

Show how you can check your answer to **Q3**. Make sure you use a **different method** from the one you first used to get your answer to question **Q3**.

Show your check.

(1 mark)

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

(1 mark)

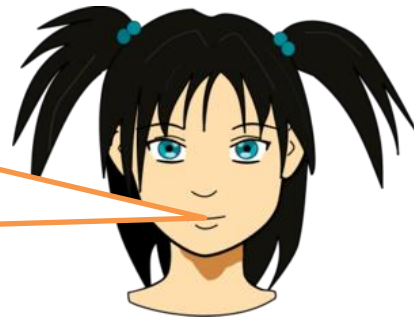
5. Ben's friend Ruby looks at a table of information about rainfall in Ben's area.

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Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Number of rainy days	19	16	16	17	15	13	14	15	15	15	17	17

She tells him:

The probability it rains on a day in the year is 4%.



Is Ruby's probability calculation correct?

You **must** show your working and give reasons for your answer. (4 marks)

Section C - Fitness Drive

Rose wants to be fitter and healthier. She decides to find out how much energy she takes in from food and drink and how much energy she uses.

1. Rose uses a pedometer to count the number of steps she takes when walking each day. Here are her results.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Number of steps	5 000	5 600	4 980	5 900	6 250	6 340	5 680

Rose measures the mean length of her step as 80cm. She finds out that for each kilometre she walks she uses about 72.5 calories of energy.

How much energy does Rose use just walking in this week?

You **must** show your working.

(7 marks)

2. Rose completes her data collection by noting the energy in all her food and drink. She wants to work out her 'energy balance' to see how close it is to zero.

Having an energy balance of zero would mean she is eating and exercising exactly the right amount so she won't gain or lose weight.

$$\text{Energy balance} = \text{energy intake} - \text{energy used}$$

Complete the table and calculate Rose's energy balance for the month.

You **must** show your working.

(2 marks)

	Week			
	1	2	3	4
Energy intake (calories)	14 495	14 029	14 245	14 054
Energy used (calories)	14 268	14 098	14 029	14 221
Energy balance (calories)	227			

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

Show how you can check your answer to **Q2**. Make sure you use a different method from the one you first used to get your answer to question **Q2**.

Show your check.

(1 mark)

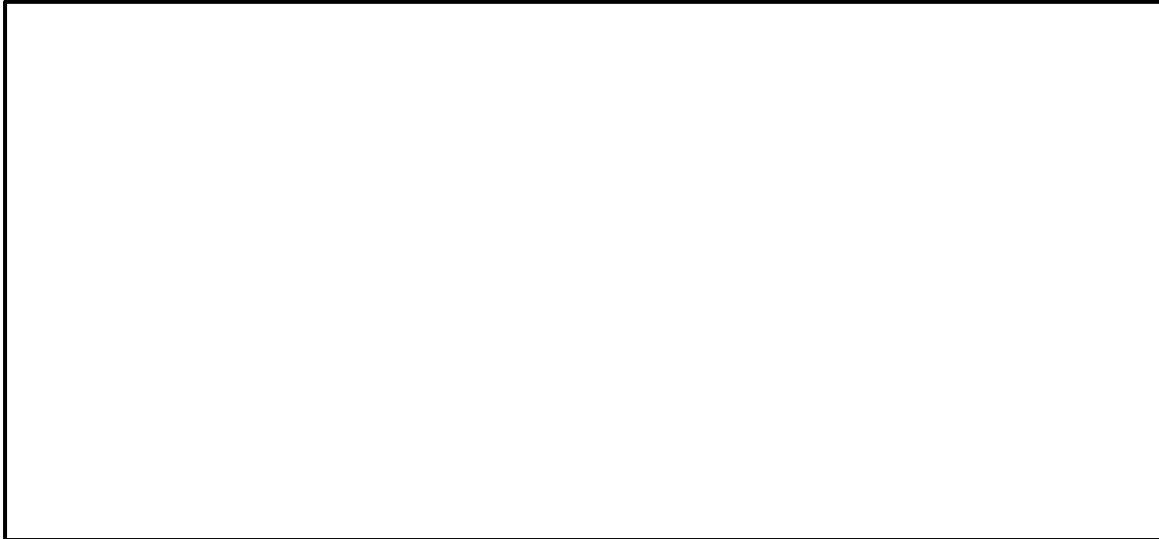
3(b) How effective was your check? Why?

(1 mark)

4. Review **all** the information you have about Rose's energy intake and usage.

What specific advice could you give Rose about her walking over a month to ensure her energy balance is zero?

*You **must** show your working, explain your reasoning and give justifications by using calculations.* (3 marks)



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END OF ASSESSMENT

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