

# 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:	
<b>My signature confirms that I will not discuss the content of this assessment with anyone.</b>	
Signature:	

<b>Paper Ref:</b> FSML2AC/P	<b>Time:</b> 2 hours	<b>Marks Available:</b> 50	<b>Marks Awarded:</b> /50
<b>You must have:</b> A pen with black or blue ink, calculator, HB pencil, eraser, ruler (graduated in cm and mm)			
<b>Instructions</b> <ul style="list-style-type: none"> <li>• Answer <b>all</b> questions.</li> <li>• Answer the questions in the spaces provided.</li> </ul> <b>Information</b> <ul style="list-style-type: none"> <li>• The total mark for this paper is <b>50</b>.</li> <li>• The marks for <b>each</b> question are shown in brackets - use this as a guide as to how much time to spend on each question.</li> <li>• You must show clearly how you get your answers because marks will be awarded for your working out.</li> <li>• Check your working and your answers at each stage.</li> <li>• Calculators may be used throughout the paper.</li> </ul>			

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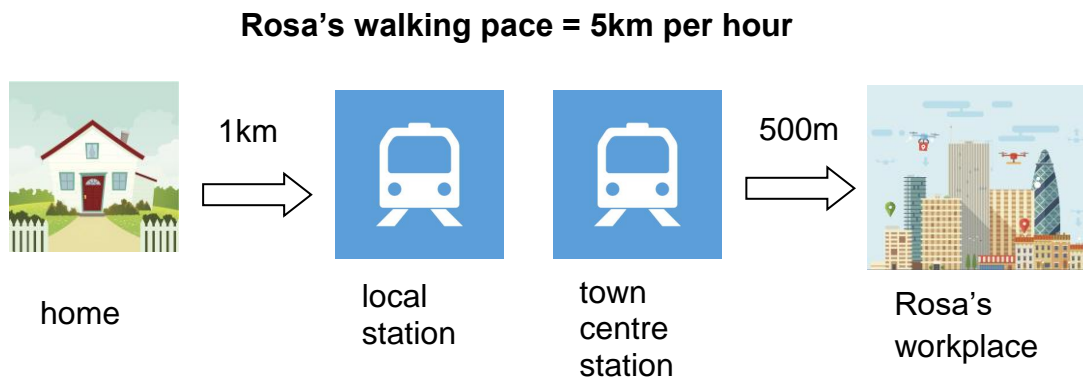
### Task 1 – Travelling to Work

Rosa has just started a new job. She wants to work out how long her journey to work will take by train.



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The diagram below shows details about each part of Rosa's journey to work.



1(a) Calculate how long Rosa will take to complete the parts of the journey she will be **walking**.

You **must** show your working.

(2 marks)

This timetable shows the times of trains that leave Rosa's local station, Woodley Park, between 8:00 am and 8:30 am.

Departure times			
Woodley Park	08:03	08:18	08:29

The train journey takes **17 minutes**. She needs to be at work by **8:55 am**.

1(b) What time would you advise Rosa to leave her home so that she arrives at her workplace on time?

You **must** show your working.

(4 marks)

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One of Rosa's work colleagues, Paul, offers her a lift in his car **to and from** work for 3 days of the week. Rosa accepts this as an alternative to the train on those days but would like to pay her share.

Rosa would like to pay half the cost of the car journey for the three days. She asks Paul to explain his car journey costs so that she can calculate this.

Paul tells her:

It is about **5 miles** from your house to work by car.  
My car will average about **7 miles per litre** of petrol for this journey.  
I pay **£1.10** per **litre** of petrol.  
I have to pay **£4.50** a day to park my car.

1(c) How much should Rosa offer to pay Paul each week as her share of the costs? Explain your answer

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

(5 marks)

Rosa has seen this deal on a bike:

Take advantage of our special offer



**Only £99!**

**1/5<sup>th</sup> off the price of any bike purchased  
before Friday of this week.**

Rosa's daily train fare is **£7.80**.

Rosa would like to buy a bike using this offer so she can cycle to work instead of taking the train on the two days she doesn't have a lift.

1(d) She thinks that the savings on train fares will cover the cost of buying the bike after 5 weeks.

Is she correct? Explain your answer.

You **must** show your working

(3 marks)

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

Show how you can check your answer to 1(d). Make sure you show a different method from the one you first used to get your answer to question 1(d).

(1 mark)

1 (e)(ii) How effective was your check? Why?

(1 mark)

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### Task 2 – The Election

The local college is holding an election. Students are voting for a new Student Union President. This is the ballot box the Student Union will use for the election.

Students will place their ballot papers in this box.

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2(a)(i) Calculate the volume of the ballot box.

You **must** show your working.

(4 marks)

2(a)(ii) There are **1 100** students in the college who could vote this year.

The person responsible for counting the votes has worked out that **100** ballot papers take up a volume of **300cm<sup>3</sup>**.

Based on this information, how much volume would be taken up for **1 100** ballot papers?

You **must** show your working.

(2 marks)

2(a)(iii) If all the students at the college vote, is the ballot box, the Student Union intend to use big enough?

Explain your answer.

(1 mark)

These were the results of the votes in this year's election:

<b>Candidate name</b>	<b>Number of votes</b>
Darius	380
Jo	160
Stefan	88
Milly	92
<b>Total number of votes</b>	
<b>Total number of students</b>	<b>1 100</b>

The Student Union wants to show this year's election results so that the share of votes between the candidates is made clearer.

2(b) Complete the table above to show the total number of student votes.

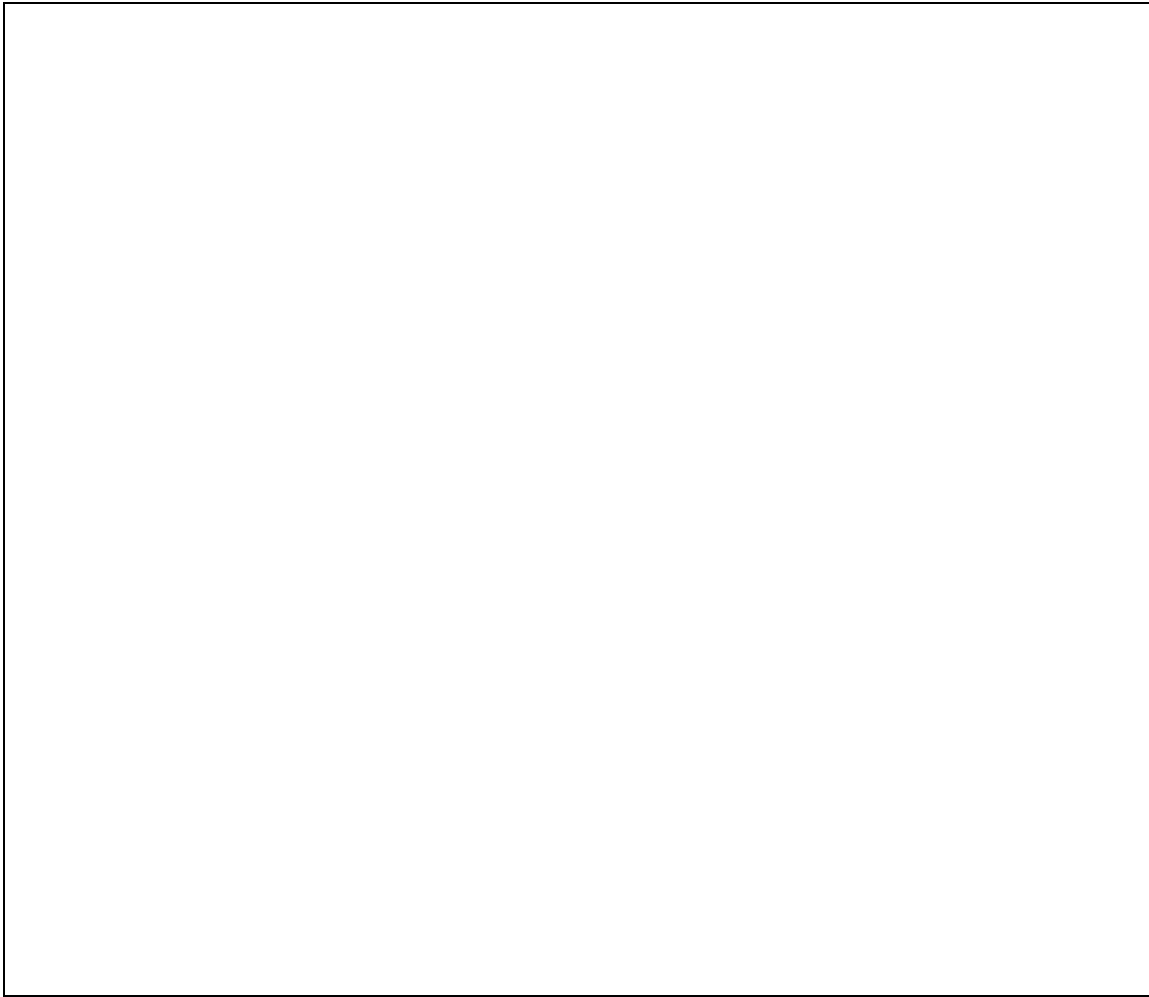
Present the results using a pie chart to show the share of votes each candidate gained from the total number of votes cast.

*Use the space below to show your working.*

(4 marks)

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Use the space below to draw your pie chart.



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Last year there were **1 246 students** at the college, and of these, **748** voted in the election.

2 (c) The election organisers think the proportion of students who took part in the election this year is higher than last year.

Using the table in 2(b), show how they are correct in their thinking.

You **must** show your working.

(3 marks)

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As the new President of the Student Union, Darius wants to find out what issues students think are most important.

He designs this survey questionnaire to collect responses:

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## It's your Union – tell us what you think!

Decide on a scale of 1 – 10 how important these issues are to you.

- a. A crèche at the college for students with young children.
- b. Cheaper prices at the college canteen.
- c. Extended opening hours at the college library.
- d. More disabled car parking spaces in the college car park.

Issue	Not at all important		Fairly unimportant			Quite important			Very important	
	1	2	3	4	5	6	7	8	9	10

**275 students** respond to this survey.

Darius adds all the scores for each issue together.

These are the results:

Issue	Total scores
a. A crèche at the college for students with young children	612
b. Cheaper prices at the college canteen	1 801
c. Extended opening hours at the college library	1 590
d. More disabled car parking spaces in the college car park	740

Darius' friend, Germaine, decides to find the result mode for each issue.



I will look through the responses to see which number is chosen by most people on each of the issues.

Here are her results:

Issue	Number chosen by most people (mode)
a. A crèche at the college for students with young children	10
b. Cheaper prices in the college canteen	6
c. Extended opening hours at the college library	7
d. More disabled car parking spaces in the college car park	9

2(d) Darius can't understand why **Issue a** has the lowest total score, but the highest modal score, while **Issue b** has the highest total score and the lowest modal score.

Explain how this is possible.

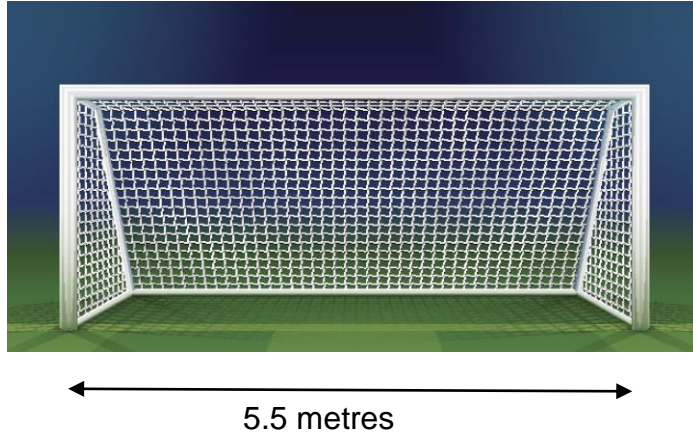
(3 marks)

### Task 3 – The Penalty Shootout

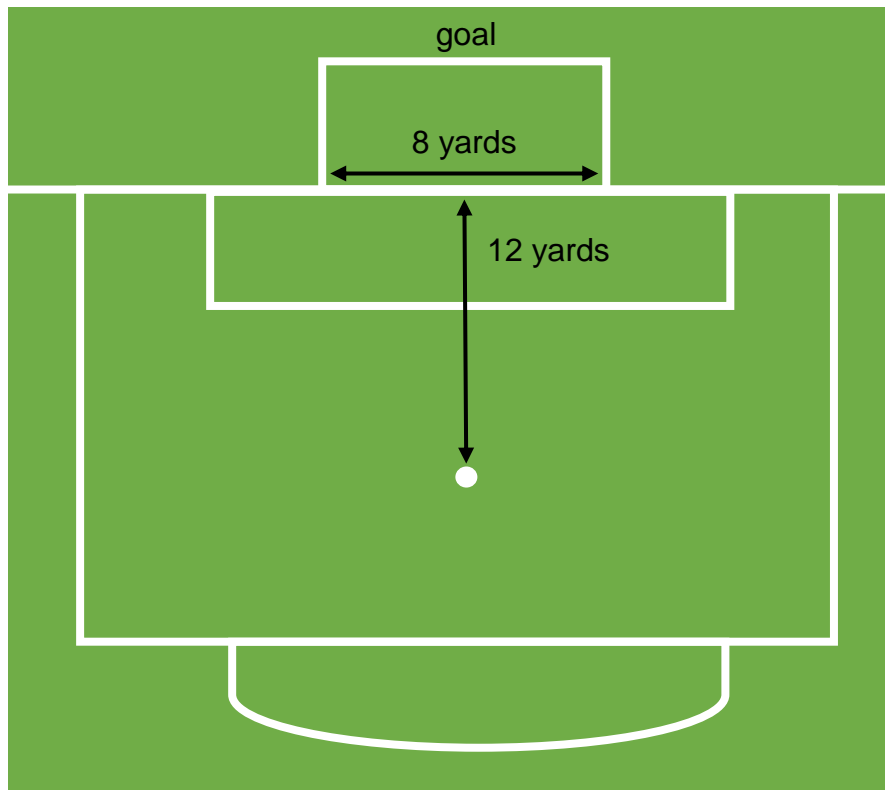
As part of the local primary school Gala, Emma has been asked to organise a penalty shootout event to raise money towards school funds.

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Actual  
goal  
to  
be  
used



Full-sized  
pitch  
diagram

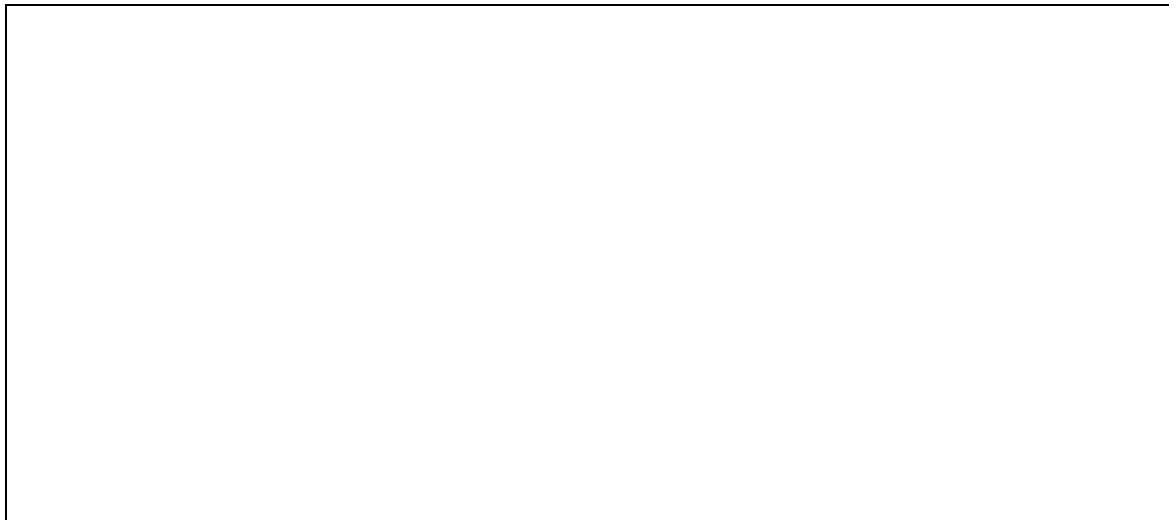


Emma wants the ratio between the width of the goal and the distance from the goal to the penalty spot to be the same as it is on a full-sized pitch.

3(a) By comparing the dimensions on each of the above images, suggest what distance, in metres, the penalty spot should be from the goal for her shootout.

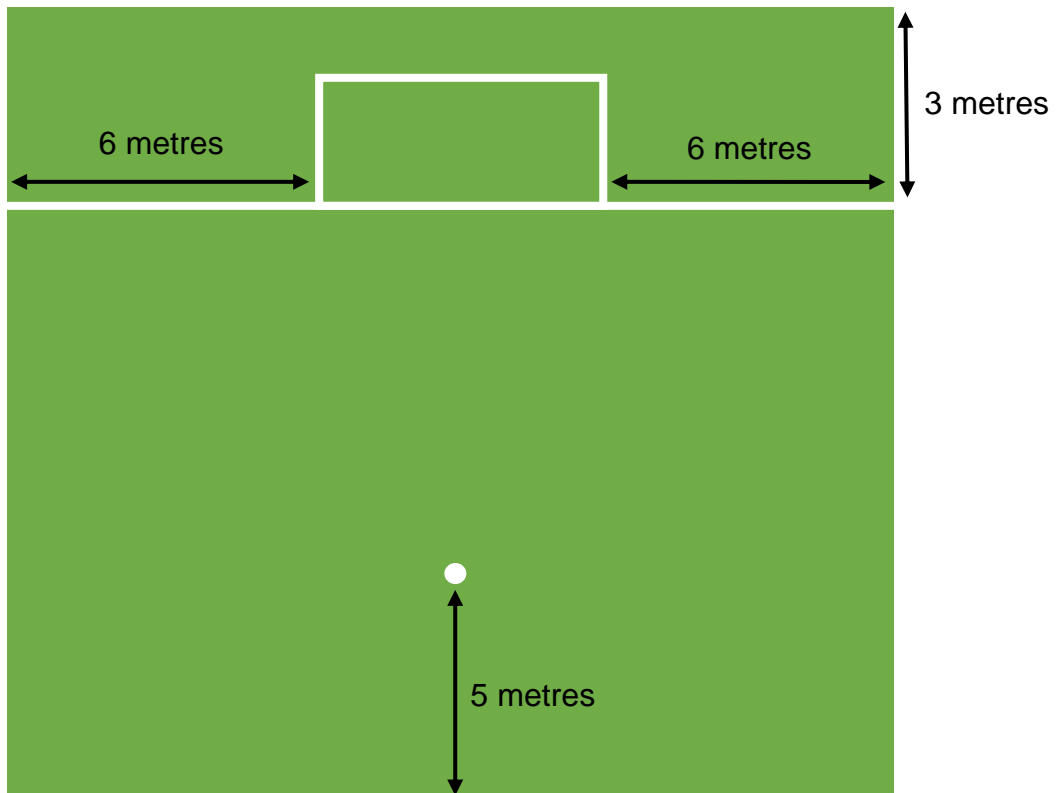
You **must** show your working

(2 marks)



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Diagram to show the dimensions of Emma's plan for the penalty shootout activity area (not drawn to scale).



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3(b) The organisers tell Emma that the area which is allowed for the penalty shootout must be no bigger than **300m<sup>2</sup>**. Use your answer from 3(a) to show that the area Emma plans to use is no bigger than 300m<sup>2</sup>.

You **must** show your working.

(3 marks)

Emma needs to draw a plan, to scale, of the penalty shootout area for the school's grounds staff.

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Use  
Only

The plan needs to show the following:

- The perimeter lines of the penalty shootout area.
- Where the goal should be placed
- Where the penalty spot should be placed in line with the centre of the goal

3(c) Draw a scaled plan that Emma could use for this. Indicate the scale you have chosen and clearly label the plan (or use a key). (5 marks)

Emma wants to make sure that the footballs for use by children under 11 years old are a suitable weight.

She finds this guidance on a website:

Multiply a standard size 5 football by 0.75 to find an approximate weight for a ball to be used by ages 7 to 11.

She discovers that a standard size 5 football weighs about 15 ounces.

Her weighing scales use grams instead of ounces. She applies the following conversion:

**1 ounce = 28.35 grams**

The reading on the scales for the first ball she wants to use is:

**320.23g**

3(d) Decide whether this ball is suitable for use by children under 11 years of age? Explain your answer.

You **must** show your working.

(3 marks)

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On the day of the Gala, each child takes **3 penalties**.

Emma asks her friend, Ryan, to keep a record of all penalties.

This is Ryan's record at the halfway point of the Gala:

<b>Total number of penalties scored</b>	<b>Total number of penalties saved</b>	<b>Total number of penalties that missed the goal</b>
90	48	42

3(e) Based on data that indicates there is an even chance of scoring a penalty, calculate the probability of someone scoring from all 3 penalties.

(2 marks)

This is Ryan's record for the whole Gala:

Total number of penalties scored	Total number of penalties saved	Total number of penalties that missed the goal
131	69	64

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Use  
Only

Last year the event was held on a very windy day and approximately 40% of shots missed the goal. Emma thinks that calmer weather at this year's event has resulted in a lower percentage of penalties missing the goal.

3(f) Is Emma right in thinking this?

You **must** show your working.

(2 marks)

## END OF ASSESSMENT

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

**01206 911211**

**[enquiries@gatewayqualifications.org](mailto:enquiries@gatewayqualifications.org)**

**[.uk](http://www.gatewayqualifications.org)**

**@GatewayQuals**