Edexcel GCSE
Mathematics (Linear) – 1MA0

PROPORTION

Materials required for examination
Ruler graduated in centimetres and
millimetres, protractor, compasses,
pen, HB pencil, eraser.
Tracing paper may be used.

Items included with question papers
Nil

Instructions
Use black ink or ball-point pen.
Fill in the boxes at the top of this page with your name, centre number and candidate number.
Answer all questions.
Answer the questions in the spaces provided – there may be more space than you need.
Calculators may be used.

Information
The marks for each question are shown in brackets – use this as a guide as to how much time to
spend on each question.
Questions labelled with an asterisk (*) are ones where the quality of your written communication
will be assessed – you should take particular care on these questions with your spelling, punctuation
and grammar, as well as the clarity of expression.

Advice
Read each question carefully before you start to answer it.
Keep an eye on the time.
Try to answer every question.
Check your answers if you have time at the end.
1. Here is a list of ingredients for making 10 Flapjacks.

<table>
<thead>
<tr>
<th>Ingredients for 10 Flapjacks</th>
<th>5 Flapjacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 g rolled oats</td>
<td>40 g</td>
</tr>
<tr>
<td>60 g butter</td>
<td>30 g</td>
</tr>
<tr>
<td>30 ml golden syrup</td>
<td>15 ml</td>
</tr>
<tr>
<td>36 g light brown sugar</td>
<td>18 g</td>
</tr>
</tbody>
</table>

Work out the amount of each ingredient needed to make 15 Flapjacks.

\[ \times 1.5 \]

...120 g rolled oats
...90 g butter
...45 ml golden syrup
...54 g light brown sugar

(Total 3 marks)
2. Fred has a recipe for 30 biscuits.

Here is a list of ingredients for 30 biscuits.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-raising flour</td>
<td>230g</td>
</tr>
<tr>
<td>Butter</td>
<td>150g</td>
</tr>
<tr>
<td>Caster sugar</td>
<td>100g</td>
</tr>
<tr>
<td>Eggs</td>
<td>2</td>
</tr>
</tbody>
</table>

Fred wants to make 45 biscuits.

(a) Complete his new list of ingredients for 45 biscuits.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-raising flour</td>
<td>345g</td>
</tr>
<tr>
<td>Butter</td>
<td>225g</td>
</tr>
<tr>
<td>Caster sugar</td>
<td>150g</td>
</tr>
<tr>
<td>Eggs</td>
<td>3</td>
</tr>
</tbody>
</table>

(b) Work out the maximum number of biscuits that Gill could bake.

\[
\begin{align*}
230 \text{ g} &= 30 \text{ biscuits} \\
\frac{230}{30} \text{ g} &= 1 \text{ biscuit} \\
7 \frac{2}{3} \text{ g} &= 1 \text{ biscuit} \\
\end{align*}
\]

\[
\begin{align*}
\frac{230}{23} \text{ g} &= 30 \text{ biscuits} \\
\frac{100}{23} \text{ g} &= \frac{30}{23} \text{ biscuits} \\
1000 \text{ g} &= \frac{3000}{23} \text{ biscuits} \\
\end{align*}
\]

\[1.20\text{ biscuits}\]

Gill has only 1 kilogram of self-raising flour. She has plenty of the other ingredients.

(3 marks)

(6 marks)
3. Here are the ingredients needed to make 16 gingerbread men.

<table>
<thead>
<tr>
<th>Ingredients to make 16 gingerbread men</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>flour</td>
<td>180 g</td>
</tr>
<tr>
<td>ginger</td>
<td>40 g</td>
</tr>
<tr>
<td>butter</td>
<td>110 g</td>
</tr>
<tr>
<td>sugar</td>
<td>30 g</td>
</tr>
</tbody>
</table>

Hamish wants to make 24 gingerbread men.
Work out how much of each of the ingredients he needs.

- 27.0 g flour
- 6.0 g ginger
- 16.5 g butter
- 4.5 g sugar

(3 marks)
4. Here are the ingredients needed to make 12 shortcakes.

\[ \text{Shortcakes} \]
Makes 12 shortcakes
50 g of sugar
200 g of butter
200 g of flour
10 ml of milk

Liz makes some shortcakes.
She uses 25 ml of milk.

(a) How many shortcakes does Liz make?
\[ \frac{25}{10} = 2.5 \quad 12 \times 2.5 \quad 30 \]

(2)

Robert has
500 g of sugar
1000 g of butter
1000 g of flour
500 ml of milk

(b) Work out the greatest number of shortcakes Robert can make.

\[ \text{Sugar:} \quad \frac{10}{500} \times 12 = 120 \]
\[ \text{Butter:} \quad \frac{5}{1000} \times 12 = 60 \]
\[ \text{Flour:} \quad \quad \quad \quad \quad \quad = 60 \]
\[ \text{Milk:} \quad \frac{5}{10} \times 12 = 60 \]

\[ 60 \]
(2)

(4 marks)
5. Here is a list of ingredients for making 12 small cakes.

<table>
<thead>
<tr>
<th>Ingredients for 12 small cakes</th>
</tr>
</thead>
<tbody>
<tr>
<td>180 g margarine</td>
</tr>
<tr>
<td>180 g sugar</td>
</tr>
<tr>
<td>200 g plain flour</td>
</tr>
<tr>
<td>1 teaspoon baking powder</td>
</tr>
<tr>
<td>2 eggs</td>
</tr>
</tbody>
</table>

Joe is going to make 24 of the small cakes.

(a) Work out how much margarine he needs.

\[
x \times 2
\]

\[
\frac{360}{g}
\]

Sharon is going to make 18 of the small cakes.

(b) Work out how much flour she needs.

\[
200 \quad + \quad 100
\]

\[
\frac{300}{g}
\]

(Total for Question 4 = 4 marks)
6. This is a list of ingredients for making a pear & almond crumble for 4 people.

<table>
<thead>
<tr>
<th>Ingredients for 4 people:</th>
<th>4 people</th>
<th>2 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 g plain flour</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>60 g ground almonds</td>
<td>36 60</td>
<td>30</td>
</tr>
<tr>
<td>90 g soft brown sugar</td>
<td>4 90</td>
<td>45</td>
</tr>
<tr>
<td>50 g butter</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>4 ripe pears</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Jessica wants to make a pear & almond crumble for 10 people.

Here is a list of the amount of each ingredient Jessica has in her cupboard.

- 250 g plain flour
- 100 g ground almonds
- 200 g soft brown sugar
- 150 g butter
- 8 ripe pears

Work out which ingredients Jessica needs to buy more of.
You must show all of your working.

She needs
- Flour: 200 g ✓
- Almonds: 150 g (50 g)
- Sugar: 225 g (25 g)
- Butter: 150 g ✓
- Pears: 10 (2)

She needs to buy: 50 g Almonds
: 25 g Sugar
: 2 pears.

(4 marks)
7. 225 grams of flour are needed to make 9 cakes.

Marian wants to make 20 of these cakes.
She has 475 grams of flour.

Does Marian have enough flour to make 20 cakes?
You must show all your working.

\[
\begin{align*}
225 \text{ g} & \quad = \quad 9 \text{ cakes} \\
25 \text{ g} & \quad = \quad 1 \text{ cake} \\
500 \text{ g} & \quad = \quad 20 \text{ cakes}
\end{align*}
\]

Marian does not have enough flour. She needs 25 g.