

# ***Maths Emporium Recipe Booklet***



## **Introduction**

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Past papers aren't just for practising your mathematics skills – they also include a number of delicious recipes for you to try in your own homes. You can calculate the correct proportions to be used for any size of gathering, and they're all suitable for vegetarians. For those with an electronic version of this booklet, chef's comments can be found [here](#).

Thanks are due to our examiners for coming up with all these mouth-watering confections which both Foundation tier and Higher tier students will enjoy while enhancing their understanding of ratio and proportion.

## **Information**

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The marks for individual recipes are shown in round brackets: e.g. (2).

There are 17 recipes in this booklet. The total mark is **64**.

Recipes marked with a \* sign will require some explanation before serving.

**Calculators must not be used for questions marked with a # sign, though Kenwood mixers can be used as and when they are required.**

## **Advice**

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Show all stages in any calculations.

Work steadily through the paper. Do not spend too long on one recipe.

If you cannot answer a question, leave it and attempt the next one.

Return at the end to those you have left out.

1. Here are the ingredients needed to make 10 pancakes.

<p style="text-align: center;"><b>Pancakes</b></p> <p style="text-align: center;">Ingredients to make <b>10</b> pancakes</p> <p style="text-align: center;">300 ml of milk</p> <p style="text-align: center;">120 g of flour</p> <p style="text-align: center;">2 eggs</p>
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Matthew makes 30 pancakes.

- (a) Work out how much flour he uses.

$$\begin{array}{ccc} & 120\text{g} = 10 \text{ pancakes} & \\ \times 3 \downarrow & & \downarrow \times 3 \\ & 360\text{g} & 30 \end{array}$$

$$\begin{array}{r} 360 \\ \hline \text{g} \\ (2) \end{array}$$

Tara makes some pancakes.  
She uses 750 ml of milk.

- (b) Work out how many pancakes she makes.

$$\begin{array}{l} 300\text{ml} = 10 \text{ pancakes} \\ 150\text{ml} = 5 \\ 600\text{ml} = 20 \\ 750\text{ml} = 20 + 5 \end{array}$$

$$\begin{array}{r} 25 \text{ pancakes} \\ \hline (2) \end{array}$$

(Total for recipe 1 is 4 marks)

#2. This is a list of ingredients for making macaroni cheese for 4 people.

2 people	Ingredients for 4 people	8 people
50ml	100ml milk	200ml
100g	200g cheese	400g
87.5g	175g dried macaroni	350ml
20g	40g butter	80g
25g	50g plain flour	100g

Work out the amount of each ingredient needed to make macaroni cheese for **10** people.

$$\text{milk} = 50 + 200 = 250$$

$$\text{Cheese} = 100 + 400 = 500\text{g}$$

$$\text{Dried macaroni} = 87.5 + 350 = 437.5$$

$$\text{Butter} = 20 + 80 = 100\text{g}$$

$$\text{Flour} = 25 + 100 = 125$$

..... 250 ..... ml milk

..... 500 ..... g cheese

..... 437.5 ..... g dried macaroni

..... 100 ..... g butter

..... 125 ..... g plain flour

(Total for recipe 2 is 3 marks)

3. Here is a list of ingredients for making a trifle for 4 people.

2.  
60g  
4  
210  
90

**Trifle for 4 people**

120 g of raspberry jelly  
8 sponge fingers  
420 ml of custard  
180 g of tinned fruit

Rob is going to make a trifle for 6 people.  
Work out the amount of each ingredient he needs.

Raspberry Jelly =  $120 + 60 = 180$   
Sponge fingers =  $4 + 8 = 12$   
Custard =  $420 + 210 = 630$   
Tinned fruit =  $90 + 180 = 270$

180 ..... g of raspberry jelly

12 ..... sponge fingers

630 ..... ml of custard

270 ..... g of tinned fruit

**(Total for recipe 3 is 3 marks)**



4. Here are the ingredients for making cheese pie for 6 people.

Cheese pie for 6 people

180 g flour  
240 g cheese  
80 g butter  
4 eggs  
160 ml milk

Bill makes a cheese pie for 3 people.

(a) Work out how much flour he needs.

$$\begin{array}{l} \div 2 \downarrow \\ 180\text{g flour} = 6\text{ people} \\ \underline{90\text{g}} \quad \quad \quad 3 \quad \quad \quad \downarrow \div 2 \end{array}$$

..... 90 ..... g  
(2)

Jenny makes a cheese pie for 15 people.

(b) Work out how much milk she needs.

$$\begin{array}{l} 160\text{ml milk} = 6\text{ people} \\ 80\text{ml milk} = 3\text{ people} \quad \downarrow \div 2 \end{array}$$

$$320\text{ml} = 12\text{ people}$$

$$15\text{ people} = 320\text{ml} + 80\text{ml}$$

..... 400 ..... ml  
(2)

(Total for recipe 4 is 4 marks)



#5. Here is a list of ingredients for making 10 Flapjacks.

5

**Ingredients for 10 Flapjacks**

40g

80 g rolled oats

30g

60 g butter

15ml

30 ml golden syrup

18g

36 g light brown sugar

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

$$\text{Oats} = 80 + 40 = 120$$

$$\text{Butter} = 60 + 30 = 90$$

$$\text{Golden Syrup} = 15 + 30 = 45$$

$$\text{light brown sugar} = 18 + 36 = 54$$

.....120..... g rolled oats

.....90..... g butter

.....45..... ml golden syrup

.....54..... g light brown sugar

**(Total for recipe 5 is 3 marks)**





6. Here is a list of ingredients to make melon sorbet for 6 people.

Melon Sorbet for 6 people	
800 g	melon
4	egg whites
$\frac{1}{2}$	lime
100 g	caster sugar

Terry makes melon sorbet for 18 people.

- (a) Work out how much caster sugar he uses.

$$\begin{array}{l} \times 3 \downarrow \\ 100\text{g} = 6 \text{ people} \\ \downarrow \\ 300\text{g} = 18 \end{array} \quad \begin{array}{l} \uparrow \\ \times 3 \end{array}$$

..... 300g ..... g  
(2)

Hedley makes melon sorbet.  
He uses 2 limes.

- (b) Work out how many people he makes melon sorbet for.

$$\begin{array}{l} \times 4 \downarrow \\ \frac{1}{2} \text{ lime} = 6 \text{ people} \\ \downarrow \\ 2 \text{ limes} = 24 \end{array} \quad \begin{array}{l} \uparrow \\ \times 4 \end{array}$$

..... 24 .....  
(2)

(Total for recipe 6 is 4 marks)

#7. This is a list of ingredients for making chicken soup for 4 people.

Ingredients for 4 people	
60 g	butter
300 g	chicken
150 ml	cream
1	onion
640 ml	chicken stock

2  
30g  
150g  
75ml  
1/2  
320ml

Bill is going to make chicken soup for 6 people.

Work out the amount of each ingredient he needs.

Butter  $\rightarrow 60g + 30g = 90g$   
Chicken  $\rightarrow 300g + 150g = 450g$   
Cream  $\rightarrow 150ml + 75ml = 225ml$   
Onion  $\rightarrow 1 + \frac{1}{2} = 1.5 \text{ onions}$   
Chickenstock  $\rightarrow 640 + 320ml = 960ml$

..... 90 ..... g butter  
..... 450 ..... g chicken  
..... 225 ..... ml cream  
..... 1.5 ..... onion  
..... 960 ..... ml chicken stock

(Total for recipe 7 is 3 marks)

#8. Here are the ingredients needed to make 8 pancakes.

<p style="text-align: center;"><b>Pancakes</b></p> <p style="text-align: center;">Ingredients to make <b>8</b> pancakes</p> <p style="text-align: center;">300 ml milk 1 egg 120 g flour 5 g butter</p>
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Jacob makes 24 pancakes.  $8 \times 3 = 24$

(a) Work out how much milk he needs.

$$\begin{array}{l} 300\text{ml} \rightarrow 8 \text{ pancakes} \\ \downarrow \times 3 \qquad \qquad \qquad \downarrow \times 3 \\ 900\text{ml} = 24 \text{ pancakes} \end{array}$$

..... 900 ..... ml  
(2)

Cathie makes 12 pancakes.

(b) Work out how much flour she needs.

$$\begin{array}{l} 120\text{g Flour} = 8 \text{ pancakes} \\ 60\text{g Flour} = 4 \text{ pancakes} \\ 180\text{g} = 12 \text{ pancakes} \end{array}$$

..... 180 ..... g  
(2)

(Total for recipe 8 is 4 marks)



9. Here is a list of ingredients for making small cakes.

<p style="text-align: center;"><b>Small cakes</b></p> <p>400 g flour 200 g butter 200 g sugar 2 eggs</p> <p style="text-align: center;"><b>Makes 15 small cakes</b></p>
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Rosie has

2 kg of flour *2000g*

800 g of butter

1.5 kg of sugar *1500g*

12 eggs

What is the greatest number of small cakes Rosie can make?

You must show all your working.

Flour.  $2000 \div 400 = 5$  batches

$5 \times 15 = 75$   
cakes

Butter.  $800 \div 200 = 4$  batches

$4 \times 15 = 60$  cakes

Sugar  $1500 \div 200 = 7.5$  batches

$7.5 \times 15 = 112.5$  cakes  
or 112 cakes

Eggs  $12 \div 2 = 6$  batches     $6 \times 15 = 90$  cakes.

*60 cakes.*

(Total for recipe 9 is 4 marks)

\*10. Here are the ingredients to make 12 cupcakes.

For 12 cupcakes  
200 g butter  
200 g caster sugar  
4 eggs  
240 g flour

Martin is making cupcakes to sell at his school play.  
Martin wants to make 1 cupcake for each adult and 2 cupcakes for each child.

There will be 90 children and 120 adults at the school play.

Martin can get these ingredients from the school kitchen.

- 5 kg butter
- 5 kg caster sugar
- 90 eggs
- 5 kg flour

Make a shopping list of any ingredients Martin still needs, showing the amount of each ingredient.  
You must show all your working.

Number of cakes      120 adults      90 children  
                                    × 1                      × 2  
                                    120      + 180  
                                    300 cakes

Number of batches of cakes       $300 \div 12 = 25$  batches

Ingredients  
Butter  $25 \times 200g = 5000g = 5kg$   
Caster sugar  $25 \times 200 = 5000g = 5kg$   
Eggs  $4 \times 25 = 100$  eggs  
BUT THERE ARE ONLY 90 eggs so Martin needs 10 eggs.  
Flour  $25 \times 240 = 6000g = 6kg$   
BUT THERE IS ONLY 5kg so Martin  
also needs 1kg flour  
10 eggs and 1kg flour

(Total for recipe 10 is 5 marks)

one

#11. Here is a list of ingredients for making a Cheese Soufflé.

Cheese Soufflé	
3	eggs
1	oz butter
$\frac{1}{2}$	oz flour
$\frac{1}{4}$	pint milk
3	oz grated cheese

Imperial Units		Metric Units
1 oz	=	28 g
1 pint	=	568 ml

(a) Complete the list of ingredients using metric units.

$\div 2 \downarrow$   $1 \text{ oz} = 28 \text{ g}$   $\downarrow \div 2$   
 $\frac{1}{2} \text{ oz} = 14 \text{ g}$   
 $\div 4 \downarrow$   $1 \text{ pint} = 568 \text{ ml}$   $\downarrow \div 4$   
 $\frac{1}{4} \text{ pint} = 142$   
 $\times 3 \downarrow$   $1 \text{ oz} = 28 \text{ g}$   $\downarrow \times 3$   
 $3 \text{ oz} = 84$

Cheese Soufflé

..... 3 ..... eggs

..... 28 ..... g butter

..... 14 ..... g flour

..... 142 ..... ml milk

..... 84 ..... g grated cheese

(2)

Jemma wants to make 12 Cheese Soufflés.

(b) Work out how much milk she will need.

Give your answer in litres.

$\frac{1}{4} \text{ pint} = 1 \text{ soufflé}$   
 $3 \text{ pints} = 12$   $\times 12$   
 $\times 3 \downarrow$   $1 \text{ pint} = 568 \text{ ml}$   $\downarrow \times 3$   
 $3 \text{ pints} = 1704 \text{ ml}$

..... 1.704 ..... litres

(2)

(Total for recipe 11 is 4 marks)



#12. Here are the ingredients needed to make 16 gingerbread men.

8  
90g  
20g  
55g  
15g

Ingredients to make 16 gingerbread men	
180 g	flour
40 g	ginger
110 g	butter
30 g	sugar

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

Flour  $\rightarrow 180 + 90 = 270g$   
Ginger  $\rightarrow 20 + 40 = 60g$   
Butter  $\rightarrow 55 + 110 = 165g$   
Sugar  $\rightarrow 15 + 30 = 45g$

..... 270 .....g flour  
..... 60 .....g ginger  
..... 165 .....g butter  
..... 45 .....g sugar

(Total for recipe 12 is 3 marks)

13. Here is a list of ingredients for making fruit buns.

<p style="text-align: center;"><b>Fruit buns</b></p> <p>Flour 300 g Butter 150 g Sugar 150 g Mixed fruit 100 g Eggs 1</p> <p style="text-align: center;"><b>Makes 12 fruit buns</b></p>
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Rosie has

3 kg of flour 3000g

900 g of butter

1 kg of sugar 1000g

800 g of mixed fruit

12 eggs

What is the greatest number of fruit buns Rosie can make?

You must show your working.

<u>Flour</u>	$3000 \div 300 = 10 \text{ batches}$	$10 \times 12 = 120 \text{ buns}$
<u>Butter</u>	$900 \div 150 = 6 \text{ batches}$	$6 \times 12 = 72 \text{ buns}$
<u>Sugar</u>	$1000 \div 150 = 6.\dot{6} \text{ batches}$	$6.\dot{6} \times 12 = 80 \text{ buns}$
<u>Fruit</u>	$800 \div 100 = 8 \text{ batches}$	$8 \times 12 = 96 \text{ buns}$
<u>Eggs</u>	$12 \div 1 = 12 \text{ batches}$	$12 \times 12 = 144 \text{ buns}$

72 buns

(Total for recipe 13 is 4 marks)



\*14. Here are the ingredients needed to make 20 cookies.

Cookies	
Ingredients to make <b>20</b> cookies	
225 g of butter	
120 g of caster sugar	
275 g of flour	

Liz is going to make some cookies for a party.

There will be 4 adults and 14 children at the party.

Liz wants to make 2 cookies for each adult and 3 cookies for each child.

adults	children	
4	14	
$\times 2$	$\times 3$	
<hr/>	<hr/>	
8	42	= 50 cookies

Liz has

500 g of butter

300 g of caster sugar

1 kg of flour 1000g

Does Liz have enough butter, enough caster sugar and enough flour to make all the cookies for the party?

You must show all your working.

Butter  $500 \div 225 = 2.2$  batches     $2.2 \times 20 = 44.4$  cookies ~~OR 44 cookies~~ X

Sugar  $300 \div 120 = 2.5$  batches     $2.5 \times 20 = 50$  cookies ✓

Flour  $1000 \div 275 = 3.63$  batches     $3.63 \times 20 = 72.72$  cookies ✓

No Liz does not have enough butter make enough cookies

(Total for recipe 14 is 5 marks)

15. Here are the ingredients needed to make 12 shortcakes.

<b>Shortcakes</b>	
Makes <b>12</b> 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?

$$\begin{array}{l} \times 2.5 \quad 10 \text{ ml} = 12 \text{ cakes} \\ \quad \quad \quad \downarrow \\ \quad \quad \quad 25 \text{ ml} = 30 \end{array} \quad \begin{array}{l} \quad \quad \quad \downarrow \\ \quad \quad \quad \times 2.5 \end{array}$$

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.

<u>Sugar</u>	$500 \div 50 = 10 \text{ batches}$	$10 \times 12 = 120 \text{ cakes}$	
<u>Butter</u>	$1000 \div 200 = 5 \text{ batches}$	$5 \times 12 = 60$	← the most he can make
<u>Flour</u>	$1000 \div 200 = 5 \text{ batches}$	$5 \times 12 = 60$	
<u>Milk</u>	$500 \div 10 = 50 \text{ batches}$	$50 \times 12 = 600$	

60

(2)

(Total for recipe 15 is 4 marks)

\*16. Here is a list of ingredients for making 18 mince pies.

**Ingredients for 18 mince pies**

225 g of butter  
350 g of flour  
100 g of sugar  
280 g of mincemeat  
1 egg

Elaine wants to make 45 mince pies.  $45 \div 18 = 2.5$

Elaine has

1 kg of butter 1000g

1 kg of flour 1000g

500 g of sugar

600 g of mincemeat

6 eggs

Does Elaine have enough of each ingredient to make 45 mince pies?  
You must show clearly how you got your answer.

	<u>NEEDS</u>	<u>HAS</u>
<u>Butter</u> $225 \times 2.5 =$	562.5g	1000g ✓
<u>Flour</u> $350 \times 2.5 =$	875g	1000g ✓
<u>Sugar</u> $100 \times 2.5 =$	250g	500g ✓
<u>Mincemeat</u> $280 \times 2.5 =$	700g	600g X
<u>Eggs</u> $1 \times 2.5 =$	2.5eggs	6 ✓

Elaine does not have enough mincemeat

(Total for recipe 16 is 4 marks)

#17. Here are the ingredients needed to make 8 shortbread biscuits.

Shortbread biscuits  
makes 8 biscuits  
120 g butter  
60 g caster sugar  
180 g flour

Tariq is going to make some shortbread biscuits.  
He has the following ingredients

330 g butter

200 g caster sugar

450 g flour

Work out the greatest number of shortbread biscuits that Tariq can make with his ingredients.  
You must show all your working.

Butter  $330 \div 120 = 2.75$  batches       $2.75 \times 8 = 22$  biscuits

Caster Sugar  $200 \div 60 = 3.\bar{3}$  batches       $3.\bar{3} \times 8 = 26.\bar{6}$  biscuits  
(26 biscuits)

Flour  $450 \div 180 = 2.5$        $2.5 \times 8 = 20$  biscuits

The greatest number he can make is  
20

.....20..... biscuits

(Total for recipe 17 is 3 marks)

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TOTAL = 64 MARKS