

# *Maths for Catering*



## *Introductory Maths Course*



**gretb**  
Bord Oideachais agus Oiliúna  
na Gaillimhe agus Ros Comáin  
*Galway and Roscommon  
Education and Training Board*

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## Unit 1: Arithmetic & Basic Operations

### 1.1 Addition

Complete the following Questions. You can check your answers on you calculator after you have completed the exercise. Be careful to place the hundredths, tens and units correctly



1.  $29 + 17$

2.  $38 + 19$

3.  $59 + 126$

4.  $5706 + 6809$

5.  $65 + 28 + 112$

6.  $79 + 39 + 293$

### Practical Application



Q7.

A chef uses 35ml, 110 ml, 210 ml and 300 ml of milk to make a combination of recipes in a kitchen. How much milk has been used in total?

Q8.

In a restaurant, the bill for the food and drinks comes separate. The food bill amounts to €147 and the drinks bill amounts to €75. What is the total bill?

Q9.

To make a mixture for a banana bread, the recipe requires the following ingredients:

200 g flour, 3 g baking soda, 227g bananas, 15 g of sugar and 70 g of eggs. How much does the mixture for the banana bread weigh in total?

### **1.1 (2) Addition incorporating decimals**

Complete the following questions. You can check your answers on your calculator after you have completed the exercise. Be careful of the placement of the decimal.

1.  $37.2 + 22.4$

2.  $30.01 + 23.12$

3.  $785.82 + 108.5$

4.  $368.67 + 212.54$

**Practical Application**



Q5.

In a restaurant, the food bill comes to €127.30, in addition to this the bill for drinks amounts to €87.05. What is the total bill?

Q6.

A chef buys a frying pan for €45.20, a set of carving knives for €135.70, a set of chopping boards for €32.80 and a mixing bowl for €8.65. How much did the chef spend?

**1.2 Subtraction**



Complete the following Questions. You can check your answers on you calculator after you have completed the exercise. Be careful to place the hundredths, tens and units correctly

1.  $69 - 21$

2.  $87 - 29$

3.  $236 - 116$

**Practical Application**



Q4.

A chef has a 3000g bag of flour. He uses 500g for one recipe and 850g for another recipe. How much flour is left in the bag?

Q5.

A chef uses 68 oranges from a box that contains 150 oranges. How many are left in the box?

**1.2 (2) Subtraction incorporating decimals**

Complete the following questions. You can check your answers on your calculator after you have completed the exercise. Be careful of the placement of the decimal.

1.  $38.6 - 16.8$

2.  $50.4 - 23.7$

3.  $689.7 - 465.89$

4.  $1789.21 - 619.38$

**Practical Application**



Q5.

A deep fryer is filled with 25 litres of cooking oil in the morning. During breakfast 1.3 litres is used, 2.5 litres is used during lunch, a further 2.7 litres is used at dinner time. How much oil is left in the fryer by the end of the evening?

Q6.

A chef uses 2.5kg of sugar from a 6kg bag. How much sugar is left in the bag?

**1.3 Multiplication**

Complete the following questions, you may use your calculator:



1.  $16 \times 15$

2.  $286 \times 116$

3.  $268.6 \times 29$



4.  $89.9 \times 26.5$

**Practical Application**



Q5.

A chef lines 30 loaf tins per hour. How many loaf tins will the chef line in 3.5 hours?

Q6.

Your kitchen uses 20 bottles of washing up liquid in a month. Each bottle contains 1.5 litres. How many litres are used in a month?

Q7.

You are stock taking, there are 12 boxes of rice. Each box contains 10 portions. How many portions of rice is that?

Q8.

You need 225g of flour to make one banana bread. How much flour will you need to make 4 of them?

Q9.

If a delivery van travels at 80km/hr, how far will it travel in 5 hours?

## 1.4 Division



Complete the following questions, you may use your calculator

1.  $65 \div 5$

2.  $78 \div 6$

3.  $5165.95 \div 29$

4.  $350 \div 14$

### Practical Application



Q5.

A chef has a 20kg bag of flour to make bread. How many batches of bread can the chef make if each batch takes 4kg of flour?

Q6.

A chef produces 86 litres of vegetable stock to make soup. Each pot of soup requires 2 litres of stock. How many pots of soup will the chef get from his stock?

Q7. You have been asked to set the dining room up for dinner. You have 7 round tables and 49 chairs. How many chairs will you fit at each table?

Q8.

You have 72 sausages delivered. In each pack, there are 9 sausages. How many packs do you have?

Q9.

5.5 litres of oil is used over 5 days. How much is used each day?

Q10.

130 people are coming to a function at our restaurant. Each table can seat 6 people. How many tables will you need?

Q11.

The total weight of 4 sacks of sugar is 88 kilograms. How much does each sack weigh?

## 1.5 Rounding off Numbers/Decimals

### Rule

Here's the general rule for rounding:

1. If the number you are rounding is followed by 5, 6, 7, 8, or 9, round the number up. Example: 38 rounded to the nearest ten is 40. ...
2. If the number you are rounding is followed by 0, 1, 2, 3, or 4, round the number down. Example: 33 rounded to the nearest ten is 30

(same rule applies rounding to nearest hundredth, thousandth..)

Round off the following numbers to the nearest 10

- |       |        |
|-------|--------|
| 1. 98 | 6. 96  |
| 2. 19 | 7. 36  |
| 3. 29 | 8. 49  |
| 4. 81 | 9. 39  |
| 5. 26 | 10. 89 |

Round off the following numbers to the nearest 100

- |          |          |
|----------|----------|
| 1. 7,722 | 5. 8,383 |
| 2. 7,935 | 6. 6,864 |
| 3. 7,561 | 7. 1,326 |
| 4. 3,467 | 8. 3,448 |

9. 6,417

### Rounding off decimals

10. 6,698

Rule:

- Count the digits after the decimal to the required number of decimal places
- Look at the number to the right of the number  
 If this number is 5 or more increase the previous digit by 1  
 If it is less than 5, leave the previous digit as it is
- Remove all the digits to the right



	1 Decimal Place	2 Decimal Places
5.3742		
3.3787		
0.9834		
0.0768		
7.4367		
0.0813		
6.4874		
0.6677		
3.2473		
0.5368		
0.3466		
7.2364		

**Practical Application**



Q1.

A chef earns €682.63 for 5 days work. How much is earned per day. How much is earned per day. Round your answer to the nearest cent

Q2.

It takes 1800g of flour to make 14 ciabatta rolls. How many grams of flour does it take to make each roll. Round your answer to the nearest gram

Q3.

It costs €13.75 for a 3 litre bottle of Extra Virgin Olive Oil. How much is the oil per litre? Round your answer to the nearest cent

## Unit 2: Fractions


### 2.1 What is a Fraction

A **fraction** simply tells us how many parts of a whole we have. You can recognize a fraction by the slash that is written between the two numbers. We have a top number, the **numerator**, and a bottom number, the **denominator**. For example,  $\frac{3}{5}$  is a fraction.

$$\begin{array}{l} 3 \leftarrow \text{numerator} \\ \hline 5 \leftarrow \text{denominator} \end{array}$$

The Numerator tell us how many parts we have and the denominator tell us how many parts there were altogether.

E.g.: If a bar of chocolate has 4 pieces and we eat one. There are 3 pieces left. We ate  $\frac{1}{4}$  and there are  $\frac{3}{4}$  left



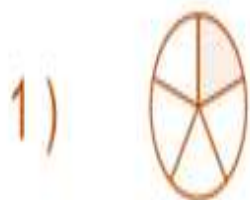
**3** ← There are three pieces left.

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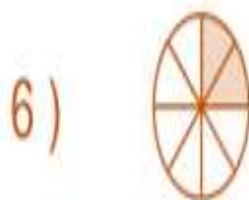
**4** ← There were four pieces.



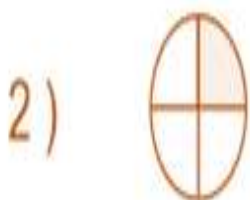
What fractions of the shapes below are shaded



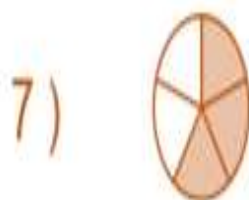
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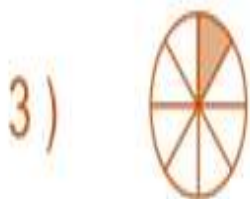
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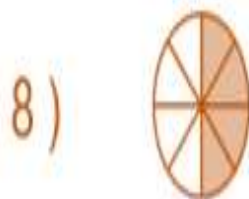
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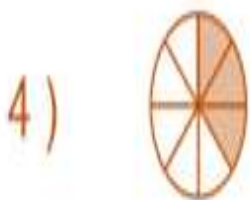
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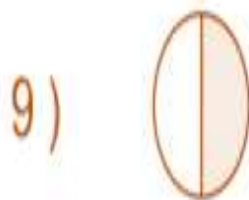
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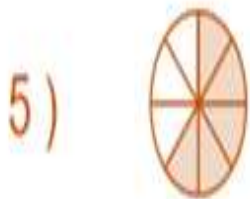
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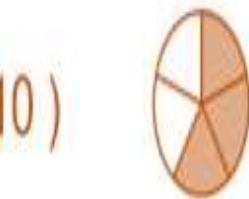
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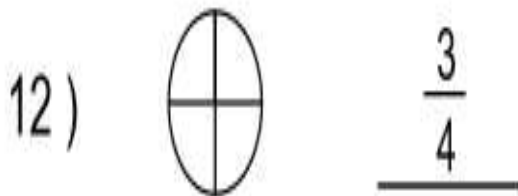
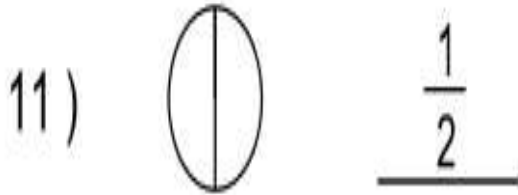
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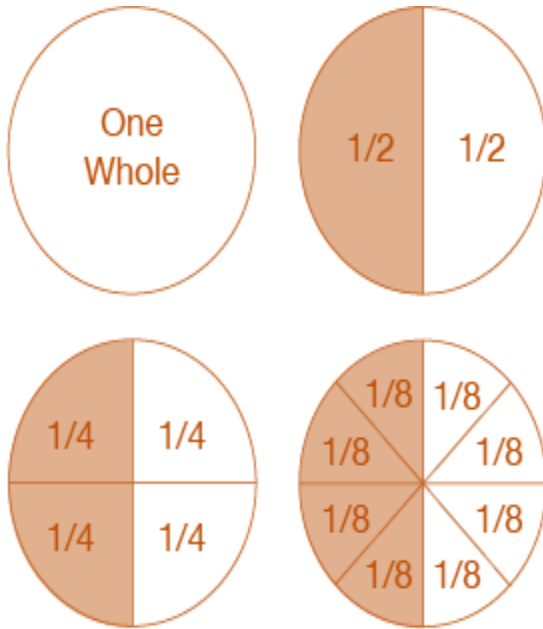
(www.mathaids.com)

Shade in the fractions below



(www.mathaids.com)

## 2.2 Equivalent fractions represent the same part of a whole



The best way to think about equivalent fractions is that they are fractions that have the **same overall value**.

For example, if we cut a pie exactly down the middle, into two equally sized pieces, one piece is the same as one half of the pie.

And if another pie (the same size) is cut into 4 equal pieces, then two pieces of that pie represent the same amount of pie that 1/2 did,  $2/4 = 1/2$

([www.helpwithfractions.com](http://www.helpwithfractions.com))

Complete the following exercise

$$\frac{1}{2} = \frac{2}{\square}$$

$$\frac{1}{3} = \frac{3}{\square}$$

$$\frac{1}{4} = \frac{4}{\square}$$

$$\frac{1}{5} = \frac{5}{\square}$$

$$\frac{1}{2} = \frac{5}{\square}$$

$$\frac{1}{3} = \frac{4}{\square}$$

$$\frac{1}{4} = \frac{2}{\square}$$

$$\frac{1}{5} = \frac{3}{\square}$$

$$\frac{1}{2} = \frac{\square}{20}$$

$$\frac{1}{3} = \frac{\square}{15}$$

$$\frac{1}{4} = \frac{\square}{12}$$

$$\frac{1}{5} = \frac{\square}{20}$$

$$\frac{1}{2} = \frac{\square}{8}$$

$$\frac{1}{3} = \frac{\square}{6}$$

$$\frac{1}{4} = \frac{\square}{20}$$

$$\frac{1}{5} = \frac{\square}{25}$$

([www.mathaids.com](http://www.mathaids.com))

### 2.3 Simplifying Fractions

Simplifying (or *reducing*) fractions means to make the fraction as simple as possible.

**Example 1: Simplify the fraction  $\frac{8}{12}$**

The largest number that goes exactly into both 8 and 12 is 4, so the Highest Common Factor (HCF) is 4.

Divide both top and bottom by 4:

$$\begin{array}{ccc} & \div 4 & \\ \curvearrowright & & \curvearrowleft \\ \frac{8}{12} & = & \frac{2}{3} \\ \curvearrowleft & & \curvearrowright \\ & \div 4 & \end{array}$$

That is as far as we can go. The fraction simplifies to  $\frac{2}{3}$

**Example 2: Simplify the fraction  $\frac{10}{35}$**

The largest number that goes exactly into both 10 and 35 is 5, so the Highest Common Factor (HCF) is 5.

Divide both top and bottom by 5

$$\begin{array}{ccc} & \div 5 & \\ \curvearrowright & & \curvearrowleft \\ \frac{10}{35} & = & \frac{2}{7} \\ \curvearrowleft & & \curvearrowright \\ & \div 5 & \end{array}$$

Simplify the following fractions

$$\frac{7}{42} = \quad \frac{36}{60} = \quad \frac{12}{20} = \quad \frac{15}{55} =$$

$$\frac{9}{72} = \quad \frac{9}{12} = \quad \frac{20}{30} = \quad \frac{2}{16} =$$

## 2.4 Addition & Subtraction of Fractions

- Make sure the bottom numbers (the denominators) are the same.
- Add the top numbers (the numerators), put the answer over the denominator.
- Simplify the fraction (if needed)

Example 1

$$\frac{1}{4} + \frac{1}{4}$$

$$1+1 = 2$$

$$\frac{2}{4} = \frac{1}{2}$$

Example 2

$$\frac{1}{3} + \frac{1}{6} \longrightarrow$$

We need a common denominator (6)

$$6 \div 3 = 2 \quad 6 \div 6 = 1$$

$$\frac{1 \times 2}{6} + \frac{1 \times 1}{6} = \frac{2+1}{6} = \frac{3}{6} = \frac{1}{2}$$

(Note: The same rules as above apply to subtracting fractions)

Add the following fractions with like denominators

1  $\frac{11}{12} + \frac{1}{12}$

2  $\frac{1}{12} + \frac{5}{12}$

3  $\frac{2}{15} + \frac{7}{15}$

4  $\frac{1}{6} + \frac{1}{6}$

5  $\frac{11}{14} + \frac{1}{14}$

6  $\frac{1}{2} + \frac{1}{2}$

(www.mathaids.com)

Add the following fractions with unlike denominators

1  $\frac{3}{4} + \frac{1}{16}$

2  $\frac{2}{5} + \frac{1}{10}$

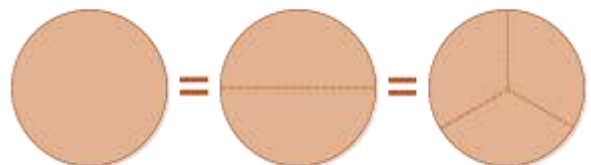
3  $\frac{1}{4} + \frac{1}{2}$

4  $\frac{3}{14} + \frac{1}{3}$

5  $\frac{1}{19} + \frac{1}{2}$

6  $\frac{1}{2} + \frac{3}{16}$

(www.mathaids.com)



## 2.5 Multiplications & Division of Fractions

### Multiplying Fractions

- Multiply the numerators of the fractions to get the new numerator
- Multiply the denominators of the fractions to get the new denominator.
- Simplify the resulting fraction if possible.

1  $\frac{5}{6} \times \frac{1}{2}$

2  $\frac{7}{9} \times \frac{1}{2}$

3  $\frac{1}{2} \times \frac{1}{3}$

4  $\frac{4}{9} \times \frac{2}{3}$

5  $\frac{5}{11} \times \frac{1}{3}$

6  $\frac{1}{8} \times \frac{1}{4}$

### Dividing Fractions

- You turn the second fraction upside down (reciprocal)
- Multiply as in previous questions

1  $\frac{1}{5} \div \frac{2}{3}$

2  $\frac{1}{3} \div \frac{3}{4}$

3  $\frac{4}{9} \div \frac{1}{2}$

4  $\frac{1}{3} \div \frac{7}{10}$

5  $\frac{2}{9} \div \frac{3}{4}$

6  $\frac{1}{4} \div \frac{7}{9}$

**Practical Application**



Q1.

One jug of coffee is  $\frac{1}{4}$  full. Another is  $\frac{1}{2}$  full. How much coffee is there in total. Express your answer as a fraction (Addition of Fractions)

Q2.

A chef uses  $\frac{1}{3}$  of one packet of rice, he later uses  $\frac{1}{2}$  the packet. How much has he used in total? (Addition of Fractions)

Q3.

A chef prepares a cake mixture. If there is  $\frac{1}{2}$  a carton of milk and  $\frac{1}{4}$  of the carton is used during the preparation, how much milk is left in the carton? Express your answer as a fraction (Subtraction of Fractions)

Q4.

A kitchen has 4 spice jars that are all  $\frac{3}{4}$  full of coriander. How much oregano is there in total (Multiplication of Fractions)



Q5.

A recipe to make 1 dozen cupcakes requires  $\frac{3}{4}$  of a cup of milk. If we want to make 3 dozen cupcakes, how much milk will we need? (Multiplication of Fractions)

Q6.

You have a recipe for muffins that requires 2 cups of chocolate chips. However, you want to try something different and decide to add  $\frac{1}{3}$  of a cup of almonds and  $\frac{1}{6}$  of a cup of walnuts. How much chocolate chips do you still have to add? (Subtraction of Fractions)

## Unit 3: Percentages

- Percent means parts per 100
- The symbol is %
- Example: 25% means 25 per 100
- Example: 10% means 10 out of every 100, so when 10% of people have ice cream that means that 10 out of every 100 people have ice cream

### 3.1 The relationship between Fractions, Decimals and percentages

- To convert fractions to decimal

Rule  
Top ÷ Bottom  
 $1/5 = 1 \div 5 = 0.2$

- To Convert a decimal to a percentage

Rule  
Decimal × 100  
 $0.2 \times 100 = 20\%$

- To convert a percentage to a fraction

Rule  
Put the percentage over 100 and simplify  
 $20\% = \frac{20}{100} = \frac{1}{5}$

Complete the following table

	Fraction	Decimal	%
Half	$\frac{1}{2}$	0.5	50%
Quarter			
3 Quarters			
1 Eighth			
2 Eights			
3 Eights			
4 Eights			
5 Eights			
7 Eights			
1 Fifth			
2 Fifths			
3 Fifths			
1 Tenth			
1 Third			
2 Thirds			
1 Sixth			



### 3.2 Expressing one quantity as a percentage of another

- Write both quantities in the same units and remove the units
- Put the first number over the second number to form a fraction
- Multiply the fraction by 100

Example:

Express 80c as a percentage of €2.40

$$\frac{80}{240} \times 100$$

$$= 33 \frac{1}{3} \%$$

In each of the following, express the first quantity as a percentage of the second:

1. 15,20

9. 15ml, 60ml

2. 20,50

10. 300m, 1km

3. 3,5

11. 400g, 1kg

4. 60,300

12. 900g, 2kg

5. 12,15

13. 80cm, 2m

6. 36,300

7. 20,8

8. 18,12

### 3.3 Finding a given percentage of a Quantity

Divide by 100

Multiply by the percentage asked for

Example

25% of 200

$$200 \div 100 = 2$$

$$2 \times 25 = 50 \text{ Ans}$$

or



You can also use the % button on your calculator.

All calculators are different so it is important to be familiar with the functions of **your** calculator

Complete the following exercise

1. Find 10% of €380
2. Find 20% of €150
3. Find 25% of €3.36
4. Find 75% of 1000g
5. Find 50% of 184 litres

**Practical Application**



Q1.

You will come across these common fractions in catering. Write each fraction as a percentage:

a)  $\frac{1}{2} =$

b)  $\frac{3}{4} =$

c)  $\frac{1}{4} =$

d)  $\frac{1}{8} =$

Q2.

A 10% service charge is added to a bill of €75.00. What will the final total be?

Q3.

100g of yoghurt contains 6.5grams of sugar. What % does this represent?

Q4.

The RDA of iron intake for an adult is roughly 20mg per day. A serving of Weetabix (2 biscuits) provides about 4.5mg of iron. What % of the RDA does this represent?

Q5.

A 40g portion of fruit and fiber breakfast cereal provides 152kcal. The average RDA calorie intake for a female adult is approximately 2000kcal. What percentage of RDA would you get from the 40g portion of breakfast cereal?

Q6.

There are 150 guests attending a wedding. 20% of those people have opted for the vegetarian option. How many people would that be?

Q7.

The total bill for a delivery of vegetables to a kitchen in a hotel comes to €120.00. A discount of 5% is given for cash on delivery. How much will the bill be if the hotel pays cash on delivery?

## Unit 4: Measurements & Conversions

In recipes, quantities of ingredients may be specified by mass (commonly called weight), by volume, or by count. Most countries use the Metric System, which uses the measuring **units** such as meters and grams and adds prefixes like kilo, milli and centi to count. In the United States, they use the older **Imperial** system, where things are measured in feet, inches and pounds

### Common Conversions in cooking

1 gram = 1000 milligrams(mg)

1Kg = 1000g

1L = 1000ml

The following conversion table may be useful:

These are approximate values, you can use an online converter for more accurate measurements

(<http://www.csgnetwork.com/cookmeasuretable2>)

Kitchen Measurement Conversion Tables			
Liquid or Volume Measures (approximate)			
1 teaspoon		1/3 tablespoon	5 ml
1 tablespoon	1/2 fluid ounce	3 teaspoons	15 ml 15 cc
2 tablespoons	1 fluid ounce	1/8 cup, 6 teaspoons	30 ml, 30 cc
1/4 cup	2 fluid ounces	4 tablespoons	59 ml
1/3 cup	2 2/3 fluid ounces	5 tablespoons & 1 teaspoon	79 ml
1/2 cup	4 fluid ounces	8 tablespoons	118 ml
2/3 cup	5 1/3 fluid ounces	10 tablespoons & 2 teaspoons	158 ml
3/4 cup	6 fluid ounces	12 tablespoons	177 ml
7/8 cup	7 fluid ounces	14 tablespoons	207 ml
1 cup	8 fluid ounces/ 1/2 pint	16 tablespoons	237 ml



2 cups	16 fluid ounces/ 1 pint	32 tablespoons	473 ml
4 cups	32 fluid ounces	1 quart	946 ml
1 pint	16 fluid ounces/ 1 pint	32 tablespoons	473 ml
2 pints	32 fluid ounces	1 quart	946 ml 0.946 litres
8 pints	1 gallon/ 128 fluid ounces	4 quarts	3785 ml 3.78 litres
4 quarts	1 gallon/128 fluid ounces	1 gallon	3785 ml 3.78 litres
1 litre	1.057 quarts		1000 ml
1 gallon	4 quarts	128 fluid ounces	3785 ml 3.78 litres
<b>Dry Or Weight Measurements (approximate)</b>			
1 ounce		30 grams (28.35 g)	
2 ounces		55 grams	
3 ounces		85 grams	
4 ounces	1/4 pound	125 grams	
8 ounces	1/2 pound	240 grams	
12 ounces	3/4 pound	375 grams	
16 ounces	1 pound	454 grams	
32 ounces	2 pounds	907 grams	
1/4 pound	4 ounces	125 grams	
1/2 pound	8 ounces	240 grams	
3/4 pound	12 ounces	375 grams	
1 pound	16 ounces	454 grams	
2 pounds	32 ounces	907 grams	
1 kilogram	2.2 pounds/ 35.2 ounces	1000 gram	

From the above table convert the following recipe ingredients to their metric equivalent

**Recipe 1: Beef Wellington**

	Metric Measurement
2 lb. 4 oz. of beef	
2 oz. butter	
3 tbsp. Olive Oil	
1 lb. mushrooms	
1lb pack of puff pastry	
1 tbsp. of olive oil	
2lb of prosciutto	
1 tsp of flour for dusting	

**Recipe 2: Sweet & Sour Sauce**

	Metric Measurement
4 fl oz. of water	
2tbsp of cornflour	
4 tbsp. of brown sugar	
1 fl oz. of soy sauce	
$\frac{1}{4}$ cup of white wine vinegar	
2 tbsp. of Ketchup	



**Answer the following questions:**

Q1.

How many ml are there in 4.75 L

Q2.

How many ml in 4 fl oz.

Q3.

3385 ml converts to how many L

Q4.

Convert 662L to ml

Q5.

Convert .96 kg to g

Q6.

How many ml in 4l

Q7.

A measuring jug has 440ml of milk poured into it. A further 650ml is added, and then finally 550ml more is added. How many **litres** of milk is that in total?

Q8.

A recipe requires 800ml of stock, 40ml of soy sauce and 300 ml of water. How many litres of liquid is that in total?

Q9.

A saucepan contains 4500ml of vegetable stock. How much stock is there in litres?

Q10.

Paul bought 10 bananas. Each banana weighed 50g. The cost of bananas is €6.50 per kg. How much did Paul spend on the bananas?

Q11.

Michelle ran out of orange juice for a recipe for a party. She needed 3 litres of orange juice. The shop only sold 250ml cartons. How many cartons did Michelle need to buy?

Q12.

A container of 12 cans of soup weighs 4.8kg. How much grams does each can weigh?

## Unit 5: Ratios

We use ratios to make comparisons between two things. When we express ratios in words, we use the word "to"--we say "the ratio of something to something else." Ratios can be written in several different ways: as a fraction, using the word "to", or with a colon

Example:



- ratio of squares to circles is  $\frac{3}{6}$
- ratio of squares to circles is 3 to 6
- ratio of squares to circles is 3:6

### 5.1 Expressing Ratios in their simplest Form

- We can reduce ratios in the same way we reduce fractions by dividing by a common factor
- Example:
- 12:15
- 4:5 (Divide each part by 3)
- 
- 14:28:35
- 2:4:5 (Divide each part by 2)
- 
- 0.25:0.75
- 1:3 (
- Divide each part by 0.25)



To express one quantity as a ratio of another:

- Make sure both quantities are in the same units
- Remove the units and write the numbers as a ratio
- Simplify the ratio

Complete the following exercise, making sure that all your units are the same:

1. 4:8

8. 2:8:10

2. 15:20

9. 400m:2km

3. 3:9

10. 75cm:2m

4. 12:30

11. 900g:1kg

5. 6:10

12. 4 days: 2 weeks

6. 8:12:20

13. 2 hours:40mins

7. 15:20:25

## 5.2 Proportional Parts

Ratios can be used to divide, or share quantities.

To divide or share quantities:

- Add the ratios to get the total number of parts
- Divide the quantity by the total of the parts (this gives one part)
- Multiply this separately by each ratio

Example:

Divide €28 in the ratio 2:5

$2+5=7$  (7 parts in total)

$28 \div 7 = 4$  (1 part)

$4 \times 2 : 4 \times 5$

8 : 20

€8 : €20 (Ans)

Divide 300 Kg in the ratio 2:5:8

$2+5+8 = 15$  (15 parts in total)

$300 \div 15 = 20$  (1 part)

$20 \times 2 : 20 \times 5 : 20 \times 8$

40 : 100 : 160

40kg : 100kg : 160kg (Ans)

### 5.3 Direct Proportion

If two quantities increase or decrease in the same ratio, they are said to be in direct proportion

Example;

A box of 12 tins of beans cost €18. Find the cost of 1 tin, and find the cost of 7 tins

$$€18 \div 12 = €1.50 \text{ (1 tin)}$$

$$€1.50 \times 7 = €10.50$$

#### Practical Application



Q1.

A fruit desert dish was made up of 20% crumble mix and 80% mixed fruit. What is the lowest ratio of crumble mix to fruit?

Q2.

A restaurant needs to make up 10 litres of orange juice. If the ratio of mix is 4-parts water to 1-part concentrate, how many litres of water and concentrate are needed to make up the 10 litres



Q3.

A 2 litre bottle of diluted orange contains 25g of carbohydrate to 5mg of sodium. What is the ratio of carbohydrate to sodium in the orange (1g =1000mg)

Q4.

100 g of strawberry yoghurt has 8g of carbohydrate and 4g of protein. What is the ratio of carbohydrate to protein

Q5.

Direct proportion

If 4Kg of sugar cost €12.00 how much would 2kg of sugar cost?

Q6.

A box of 15 tins of peas cost €18.00. Find the cost of 1 tin, and find the cost of 8 tins

## 5.4 Recipes/ Ratio and Proportion

Example 1:

If a recipe for 4 people requires 200ml of tomato sauce, how do we figure out how much is needed for 30 people? We cross multiply

4 : 200 (4 people require 200 ml of tomato sauce)

30 : x (30 people require x ml of tomato sauce)

We cross multiply:

$$\begin{array}{ccc} \underline{4} & & \underline{200} \\ 30 & \times & x \end{array}$$

$$4x = 6000$$

$$X = 6000/4$$

$$X = 1,500$$

Therefore the recipe for 30 people requires 1500ml of tomato sauce

Example 2:

A recipe for lemonade for 8 people require 6 cups of water. How many cups for 30 people

8 : 6 ( 8 people requires 6 cups of water)

30 : x ( 30 people requires x cups of water)

$$\begin{array}{ccc} \underline{8} & & \underline{6} \\ 30 & \times & x \end{array}$$

$$8x = 180$$

$$X = 180/8$$

$$X = 22.5$$

Therefore the recipe for 30 people requires 22  $\frac{1}{2}$  cups of water

Q1.

The following is a recipe for Spaghetti Bolognese for 4 people. Work out the recipe for 30 people

- 2 tbsp. olive oil
- 400g beef mince
- 1 onion, diced
- 2 garlic cloves, chopped
- 100g carrot, grated
- 2 x 400g tin chopped tomatoes
- 400ml stock (made from stock cube. Ideally beef, but any will do)
- 400g dried spaghetti
- salt and pepper

Workings

Q2.

The following is a recipe for 12 banana muffins. Work out the recipe for 20 muffins

- 200g (7 oz.) plain flour.
- 1/2 teaspoon baking powder.
- 1 teaspoon bicarbonate of soda.
- 1/2 teaspoon salt.
- 3 large bananas, mashed.
- 150g (5 oz.) caster sugar.
- 1 egg.
- 75g (2 1/2 oz.) butter, melted.

Workings

Q3.

To make lemonade for 6 people you need 1 cup of sugar, 1 cup water, 1 cup of lemon juice, 3 cups of cold water. Work out the recipe for 20 people

Workings

## Unit 6 Calculating Food Costs Selling Price & Profit

### 6.1 Calculating Costs

When preparing dishes, recipes or menus for groups of people it is often a very useful tool to be able to calculate the cost per person or the cost per portion of that dish. Also going further if you wanted to decide on what selling price to charge in order to make a profit, your starting point would be to have an understanding of the costs per unit, per portion or per person.

Below is a recipe for a sponge cake with 10 portions

Ingredient	Quantity	Unit of purchase	Unit Cost	Individual Cost	Recipe Cost
Flour	125g	2000	€2.50	0.00125	€0.17
Caster Sugar	125g	1000	€1.80	0.0018	€0.23
Butter	60g	454g	€3.50	0.0077	€0.46
Eggs	5	24	€5.00	0.2083	€1.04
Total Cost					€1.90
Cost per portion					€0.19

\*\*\* Individual Cost = Unit Cost ÷ unit of purchase

$$\text{e.g. flour} = 2.50 \div 2000 = 0.00125$$

\*\*\* Recipe cost = Individual cost × quantity

$$\text{e.g. flour} = 0.00125 \times 125 = 0.15625 \text{ or } \text{€}0.17 / 17\text{cent}$$

\*\*\* Total Cost = All recipe costs added together

$$\text{€}0.17 + \text{€}0.23 + \text{€}0.46 + \text{€}1.04 = \text{€} 1.90$$

\*\*\* Cost per portion = Total Cost ÷ Number of portions

$$€1.90 \div 10 = €0.19$$

Q1.

Calculate in the table below the total recipe cost and cost per portion for a sponge cake with 12 portions

Ingredient	Quantity	Unit of purchase	Unit Cost	Individual Cost	Recipe Cost
Flour	150g	2000	€2.50	0.00125	
Caster Sugar	150g	1000	€1.80	0.0018	
Butter	75g	454g	€3.50	0.0077	
Eggs	6	24	€5.00	0.2083	
Total Cost					
Cost per portion					

## 6.2 Pricing a Menu

The key to good menu pricing is setting your selling prices to ensure you earn a profit. The main focus is ensuring you reach your profit margins whilst the customer gets value for money.

Gross profit margin measures the company's mark up on sales. It is the difference between the total amount for sales (turnover excluding V.A.T.) and the purchase cost of the goods you have sold.

(Fáilte Ireland 'Profitable Food Costing Workshop')

### Gross Profit

Sales - Cost of Sales (Cost of the food)

### Net Profit

Sales - total Costs (labour and overhead costs)

\*Vat must always be taken into account when doing your calculations

### 6.3 Costing By Percentage

#### Gross Profit

Gross profit is the difference between the cost of the food and the selling price of the food less VAT

#### Net Profit

Net profit is the difference between the selling price of the food (net sales) and the total cost (cost of food, labour and overheads).

Net Sales - Food Cost = Gross Profit

Net Sales - Total Cost = Net Profit

#### Cost Control Example

Net Food sales for one week	€20,000
Food cost for one week	€6,000
Labour and overheads for one week	€4,000
Then total costs for one Week	€10,000
Gross profit	€14,000
Net profit	€10,000


(Fáilte Ireland 'Profitable Food Costing Workshop')

#### Finding Gross Profit Percentage Formula

The required selling price to give a 60% gross profit can be found using the following formula

$$\text{Food cost \%} = \frac{\text{Food cost} \times 100}{\text{Selling Price}}$$

40



What is the Cost of Creating this Seafood Chowder Dish dish?

Quantity	Ingredients	Unit price	Unit	Cost Per Recipe
35g	Butter	€3.25	Kg	€0.11
60g	Bacon	€3.10	Kg	€0.19
90g	Onion	€0.54	Kg	€0.05
7g	Garlic	€3.00	Kg	€0.02
18g	Plain Flour	€1.80	kg	€0.03
500ml	Milk	€0.90	Litre	€0.45
500ml	Cream	€4.40	Litre	€2.20
10g	Bouillon	€5.80	Kg	€0.06
750g	Potatoes	€0.65	Kg	€0.49
350g	Assorted Fish	€12.50	Kg	€4.38
150ml	Cream	€4.40	Litre	€0.66
6g	Chives	€0.04	g	€0.24
6g	Parsley	€0.04	g	€0.24
Cost of Recipe				€9.12
Wastage @4%				€0.36
Total Food Cost				€9.48
Portion Yield				6
Cost per portion				€1.58

- Gross Profit Target 72% (Given)
- Food Cost % 28% (100-72)
- Cost Per portion €1.58 (Calculated Above)
- Net Selling Price (Formula)
 

<u>Food Cost</u>	x 100	€5.64
Food Cost %		
- Vat 9% €0.51 (9% of Selling Price)
- Gross Selling Price €6.15 (Selling Price + VAT)



(Adapted from Fáilte Ireland Profitable Food Costing Workbook)

Following the example on the previous page, calculate the cost of this Shepherd's Pie Dish?

Quantity	Ingredients	Unit price	Unit	Cost Per Recipe
28g	Tomato Puree	€1.45	150 g	€0.27
2 Tins (400g)	Chopped Tomato	€1.29	400g	€2.58
90g	Onion	€0.54	Kg	€0.05
7g	Garlic	€3.00	Kg	€0.02
14ml	Olive Oil	€4.39	Litre	€0.06
25g	Parmesan Cheese	€3.49	200g	€0.44
500g	Steak Mince	€4.00	500g	€4.00
6	Smoked Rashers	€2.50	6 pk	€2.50
400g	Spaghetti	€1.00	500g	€0.80
6g	Chives	€0.04	g	€0.24
6g	Parsley	€0.04	g	€0.24
Cost of Recipe				
Wastage @4%				
Total Food Cost				
Portion Yield				6
Cost per portion				

- Gross Profit Target                      70%
- Food Cost %                                30% (100-70)
- Cost Per portion
- Net Selling Price (Formula)

$$\frac{\text{Food Cost} \times 100}{\text{Food Cost \%}}$$

- Vat 9%

➤ **Gross Selling Price**