

WJEC Eduqas GCSE

Food Preparation and Nutrition

Unit Two: The Principles of Nutrition



You must to **know** and **understand**...

- the **definition** of macronutrients and micronutrients in relation to human nutrition.
- the **role** of macronutrients and micro nutrition in human nutrition .

Key Term	Definition/Example
beriberi	
pellagra	
scurvy	
osteoporosis	
satiety	
diabetes	

Contents

Macronutrients

Protein 3-5

Carbohydrates 6-9

Fats, oils and lipids 10-13

Micronutrients

Fat-soluble vitamins and Water-soluble vitamins 14-17

Water soluble vitamins 18-20

Minerals 21-22

Trace elements 23-24

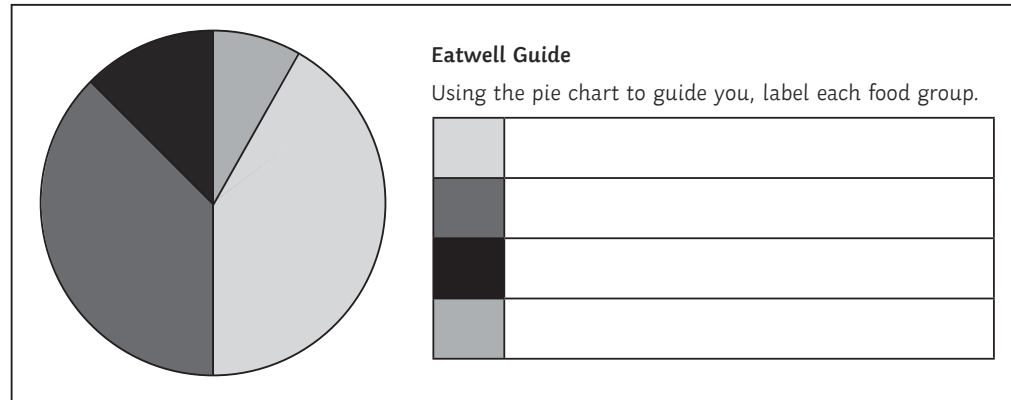
Macronutrients

Macronutrients definition:

How can the Eatwell guide help families to 'eat well'?

For each nutrient, you need to know and understand the...

- specific function.
- main sources.
- dietary values.
- consequences of malnutrition (over and under).
- complementary actions of nutrients.



Eatwell Guide
Using the pie chart to guide you, label each food group.

What are macronutrients measured/weighed in?

Key Macronutrient Food Groups

- i.
- ii.
- iii.

Glossary

Key Term	Definition/Example
nutrient	
nutrition	
macronutrient	
micronutrient	
function	
malnutrition	
protein	
enzyme	
amino acid	
HBV	
LBV	
deficiency	
kwashiorkor	
carbohydrate	
monosaccharide	
disaccharide	
polysaccharide	
glycaemic index	
intrinsic sugar	
extrinsic sugar	
NME	
cholesterol	
LDL	
HDL	
RDI	
fibre	
NSP	
insoluble fibre	
soluble fibre	
fat-soluble vitamin	
water-soluble vitamin	

Give two foods high in saturated fat.

i)

ii)

How can cholesterol affect our health?

Using examples, describe two problems associated with a fat deficiency

Explain why it is important for diabetics to monitor their blood glucose level.

What is the difference between an intrinsic and extrinsic sugar.

What health problems may occur in a person who has a diet high in sugars?

Protein

What do the following acronyms stand for?

HBV:

LBV:

Protein

Essential for _____ and _____.

Maintains _____.

Helps the body produce chemicals such as _____ and _____.

hormones good growth enzymes repair health

Sources of Protein

HBV	
LBV	

How many calories are there in 1g of protein? _____

Amino Acids

Proteins are made up of chains called amino acids.

About 20 amino acids combine to make up the millions of proteins found in nature.

What is meant by a 'conditionally essential' amino acid and why are they important?

i.

ii.

iii.

Meat Alternative Products

Essential Amino Acids for _____	Additional Amino Acids Considered Essential for _____	Non-Essential Amino Acids
Isoleucine L _____ L _____ Methionine P _____ Threonine Valine Tryptophan	A _____ Cysteine G _____ G _____ Histidine P _____ Tyrosine	A _____ Asparagine A _____ acid G _____ acid

What are calories?

Keywords
leucine glutamine children lysine
glutamine glycine adults phenylalanine
arginine alanine aspartic

Complementary Proteins
Combine _____ or more _____ protein foods.
Provides the essential amino acids found in _____ dishes.

meat LBV two

What trends can you identify in protein intake?

Give three examples of complementary protein dish combinations.

i)
ii)
iii)

What could happen if too much protein is consumed?

Revision Questions

Why is dietary fibre an important factor in a healthy diet?

Explain the differences between insoluble and soluble fibre. Give food sources of each.

What are the dietary issues linked to a low fibre diet?

Explain the difference between a LBV protein and a HBV protein.

What are the primary functions of protein?

Why is it important to monitor the amount of fibre children have in their diet?

Suggest ways in which a family could increase their fibre intake.

How much protein do we need each day?

Children	RDA in Grams
1 to 3 years old	
4 to 6 years old	
7 to 10 years old	
11 to 14 years old	
15 to 18 years old	

Adults	RDA in Grams
19 to 50 years old	
50 years old and above	

What are the symptoms of Kwashiorkor?

What are the deficiencies of lack of protein in the diet?

i)

ii)

iii)



Meat Alternative Proteins	Origins and Uses
tofu	
Mycoprotein	
soya	
TVP	

Carbohydrates

Macronutrients

What are the main functions of carbohydrates?

i)

ii)

iii)

Monosaccharides and Their Sources

Glucose	Fructose	Galactose

glucose + fructose =	glucose + galactose =	glucose + glucose =

Starch	Cellulose	Pectin

Dietary Fibre

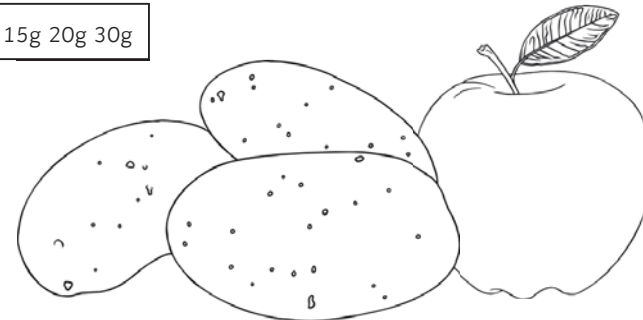
Micronutrients

Sources of Fibre	
Insoluble	Soluble

Maximum Daily Intake by Age Group	
Age Group	RDA in Grams
Children aged 2 to 5	
Children aged 6 to 11	
Children aged 11 to 16	
Adults	

What is IBS and why would fibre intake be adjusted to account for this?

30g 15g 20g 30g



Dietary Fibre

Micronutrients

What is the function of fibre in the body?

i)

ii)

iii)

Phytates are found in fibre rich foods. What is their importance in the diet?

What are the deficiencies of lack of fibre in the diet?

i)

ii)

iii)

What is insoluble fibre?

What is soluble fibre?

Fibre is also known as:

i) NSP

ii)

iii)

What could happen if too much fibre is consumed?

i)

ii)

iii)

Carbohydrates

Energy
Carbohydrates are the main source of energy for the body. Without carbohydrates what does the body burn for energy?

What is a monosaccharide made up of?

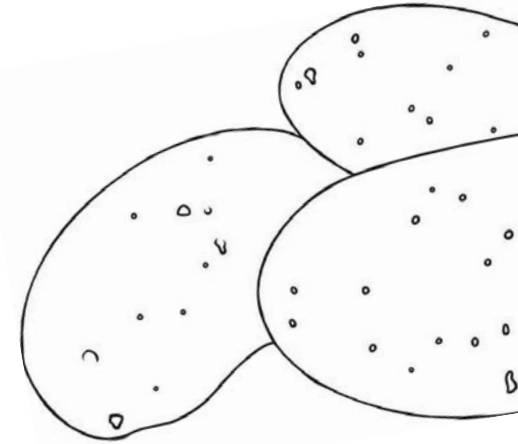
What is a disaccharide made up of?

What is a polysaccharide made up of?

What is the glycaemic index?



Low GI Food	Medium GI Food	High GI Food



Macronutrients

GI Scores	
Low GI	
Medium GI	
High GI	

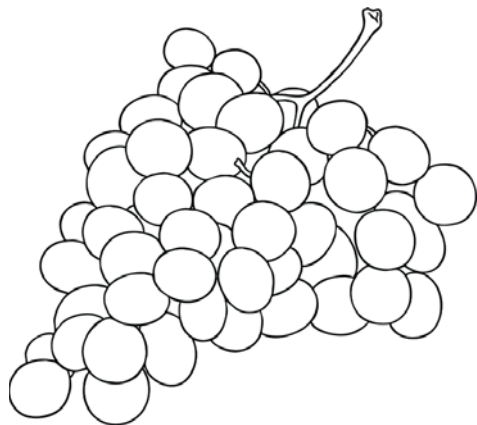
70 or more

56 - 69

55 or less

Maximum Daily Intake by Age Group	
Children	RDA in Grams
4 to 6 years old	
7 to 10 years old	
11 to 18 years old	

Extrinsic Sugar	
Types of Extrinsic Sugar	Sources



How much of the diet is recommended to come from starchy foods?

Intrinsic Sugar	
Types of Intrinsic Sugar	Sources

Non-Milk Extrinsic Sugar (NME)

- Also known as : _____
- Referred to as: _____
- Includes: _____

Approximately how much of the human body is composed of water?

What is the function of water in the body?

-
-
-
-
-

How much water is recommended we drink each day?

Apart from fresh water, where else can we get water from?

What could happen if too much water is consumed?

-
-
-
-

What are the deficiencies of lack of water in the diet?

-
-
-
-
-
-

Although drinks containing caffeine also contain water, why should caffeine be taken in moderation?

Trace Elements

Micronutrients

Iodine

Chemical symbol for iodine:

Function	Sources	Deficiency	Excess Side Effects

Zinc

Chemical symbol for zinc:

Function	Sources	Deficiency	Excess Side Effects

Fluoride

Chemical symbol for fluoride:

Function	Sources	Deficiency	Excess Side Effects

Fluoride is added to water in the UK. Why do you think this happens?



Carbohydrates

Macronutrients

What are the deficiencies of lack of carbohydrates in the diet?

i)

ii)

iii)

What could happen if too many carbohydrates are consumed?

i)

ii)

iii)

Fats, Oils and Lipids

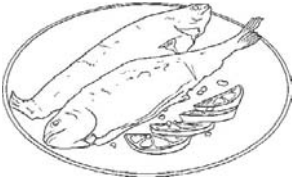
Macronutrients

What are the main functions of fats?

i)

ii)

iii)



What is a saturated fat?

What is an unsaturated fat?

What are **visible** fats?

What are **invisible** fats?

Unsaturated Fats and Their Sources		
Monounsaturated Fat	Polyunsaturated	Omega-3 and Omega-6

How many calories are there in 1g of fat? _____

Trace Elements

Micronutrients

Selenium

Chemical symbol for selenium:

Function	Sources	Deficiency	Excess Side Effects

What is meant by satiety?

Suggest a meal plan for a person with an iron deficiency to help boost their energy levels.

Include breakfast, lunch, dinner, snacks and drinks.

How can someone with a deficiency in a micronutrient have their levels boosted?

How important are micronutrients?

Calcium	Chemical symbol for calcium:
----------------	------------------------------

Function	Sources	Deficiency	Excess Side Effects

Magnesium	Chemical symbol for magnesium:
------------------	--------------------------------

Function	Sources	Deficiency	Excess Side Effects

Sodium	Chemical symbol for sodium:
---------------	-----------------------------

Function	Sources	Deficiency	Excess Side Effects

Why can high blood pressure be dangerous?

What is cholesterol?

What are low density lipoproteins?

What are high density lipoproteins?

Saturated Fats and Their Sources	
Saturated Fat	Trans-Fat

Name four fat soluble vitamins and their sources	
Vitamin	Sources

Maximum Daily Intake by Age Group		
	Men	Women
Total Fat		
Saturated Fat		

95g 20g 70g 30g

Why are unsaturated fats considered 'good fats'?

Some supermarkets have pledged to ban hydrogenated fats in their foods.

Why is this a positive change?

Suggest ways to reduce the amount of fat in the diet.

What could happen if too much fat is consumed?

i)

ii)

iii)



What are the effects of a lack of fats in the diet?

i)

ii)

iii)

Minerals

Phosphorus Chemical symbol for phosphorus:

Function	Sources	Deficiency	Excess Side Effects

Iron Chemical symbol for iron:

Function	Sources	Deficiency	Excess Side Effects

Potassium Chemical symbol for potassium:

Function	Sources	Deficiency	Excess Side Effects

What is osteoporosis?

B Vitamins

Water-soluble vitamins are needed daily because...

Vitamin B9
Also known as:

Function	Sources	Deficiency	Excess Side Effects

Vitamin B12
Also known as:

Function	Sources	Deficiency	Excess Side Effects

Vitamin C

Vitamin C is also known as:

Function	Sources	Deficiency	Excess Side Effects

What is scurvy?

Micronutrients definition:

For each nutrient, you need to know and understand the...

- specific function.
- main sources.
- dietary values.
- consequences of malnutrition (over and under).
- complementary actions of nutrients.

Micronutrient Examples

Fat Soluble Vitamins	Water-soluble Vitamins	Minerals	Trace Elements

Why are micronutrients essential for good health?

What is a supplement?

What are micronutrients measured in?

Fat-Soluble Vitamins

Micronutrients

Vitamin A	Vitamin A is also known as:
------------------	-----------------------------

Function	Sources	Effects of Deficiency

Excess Side Effects	RDA
	Men:
	Women:

Suggest ways in which vitamin A could be increased in the diet.

Water-soluble Vitamins

Micronutrients

B Vitamins	Water-soluble vitamins are needed daily because...
-------------------	--

Vitamin B4
Also known as:

Function	Sources	Deficiency	Excess Side Effects

Vitamin B5
Also known as:

Function	Sources	Deficiency	Excess Side Effects

Vitamin B7
Also known as:

Function	Sources	Deficiency	Excess Side Effects

Why is a deficiency of B5 rare?

What is anemia?

Water-Soluble Vitamins

Micronutrients

B Vitamins

Water-soluble vitamins are needed daily because...

Vitamin B1
Also known as:

Function	Sources	Deficiency	Excess Side Effects

Vitamin B2
Also known as:

Function	Sources	Deficiency	Excess Side Effects

Vitamin B3
Also known as:

Function	Sources	Deficiency	Excess Side Effects

What is pellagra?

What is beriberi?

Fat-soluble Vitamins

Micronutrients

Vitamin D

Vitamin D is also known as:

Function	Sources	Effects of Deficiency

Excess Side Effects	RDA
	Men:
	Women:

What is rickets and why do you think it is on the increase?

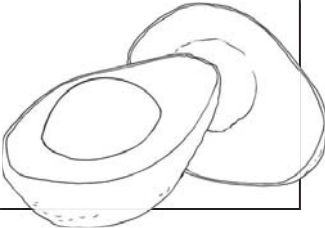


Vitamin E	Vitamin E is also known as:
------------------	-----------------------------

Function	Sources	Effects of Deficiency

Excess Side Effects	RDA
	Men:
	Women:

Why is it important to have a healthy immune system?



Vitamin K	Vitamin K is also known as:
------------------	-----------------------------

Function	Sources	Effects of Deficiency

Excess Side Effects	RDA
	Men:
	Women:

Vitamin K deficiency is considered rare.

Why do you think this is?