

CIE Biology GCSE

7 - Human Nutrition

Flashcards



What is a balanced diet?



What is a balanced diet?

A balanced diet is a diet that contains the correct proportions of nutrients that the body needs to function correctly (e.g. carbohydrates, lipids, proteins)



Which general group of people require the most calories in their diet?



Which general group of people require the most calories in their diet?

Adolescent males with active lifestyles



Why do pregnant/breastfeeding women need a larger caloric intake?



Why do pregnant/breastfeeding women need a larger caloric intake?

They need more energy to support the development of the child. The diet needs to be balanced as well to provide the correct nutrients



What is constipation caused by?



What is constipation caused by?

A lack of dietary fibre



What is starvation?



What is starvation?

Suffering or death that is caused by not eating enough food



What is constipation?



What is constipation?

Infrequent bowel movements causing
difficulty passing faeces



What is scurvy caused by?



What is scurvy caused by?

A lack of vitamin C



Give 3 sources of carbohydrates in the diet?



Give 3 sources of carbohydrates in the diet?

Pasta

Bread

Potato



Give 3 sources of fat in the diet



Give 3 sources of fat in the diet

Oily fish

Nuts

Full-fat dairy



Give 3 sources of protein in the diet



Give 3 sources of protein in the diet

Meat

Fish

Nuts



Give 2 sources of Vitamin C in the diet



Give 2 sources of Vitamin C in the diet

Fruit

Vegetables



Give 2 sources of Vitamin D in the diet



Give 2 sources of Vitamin D in the diet

Oily fish

Eggs



Give 2 sources of iron in the diet



Give 2 sources of iron in the diet

Brown rice

Meat



Give 2 sources of calcium in the diet



Give 2 sources of calcium in the diet

Milk

Cheese



What are the 2 main groups of dietary fibre?



What are the 2 main groups of dietary fibre?

Soluble fibre

Insoluble fibre



Give 2 sources of soluble fibre



Give 2 sources of soluble fibre

Oats

Fruit



Give 2 sources of insoluble fibre



Give 2 sources of insoluble fibre

Wholemeal bread

Nuts



What are the causes of vitamin D deficiency?

(Higher/Supplement)



What are the causes of vitamin D deficiency? (Higher/Supplement)

- Not enough sunlight
- Not enough oily fish, egg yolks or fortified milk



What are the effects of vitamin D deficiency?

(Higher/Supplement)



What are the effects of vitamin D deficiency?
(Higher/Supplement)

Vitamin D deficiency can cause rickets in children which leads to weak bones which can cause deformities



What are the causes of iron deficiency? (Higher/Supplement)



What are the causes of iron deficiency?

(Higher/Supplement)

- A diet lacking iron
- Blood loss
- Pregnancy



What are the effects of iron deficiency? (Higher/Supplement)



What are the effects of iron deficiency? (Higher/Supplement)

- Fatigue
- Dizziness
- Headache
- Chest pain



What is kwashiorkor? (Higher/Supplement)



What is kwashiorkor? (Higher/Supplement)

Types of protein deficiency



What is the difference between
kwashiorkor and marasmus?
(Higher/Supplement)



What is the difference between kwashiorkor and marasmus? (Higher/Supplement)

Kwashiorkor is protein deficiency whereas marasmus is not enough energy intake in many forms (not just protein)



What are the effects of kwashiorkor and marasmus?

(Higher/Supplement)



What are the effects of kwashiorkor and marasmus? (Higher/Supplement)

- Diarrhea
- Loss of muscle mass
- Fatigue



What is ingestion?



What is ingestion?

The intake of substances into the body through the mouth



What is mechanical digestion?



What is mechanical digestion?

The process of breaking down food without altering it chemically



What is chemical digestion?



What is chemical digestion?

Breaking insoluble large molecules into smaller soluble ones



What is chemical digestion?



What is chemical digestion?

Breaking insoluble large molecules into smaller soluble ones



What is absorption?



What is absorption?

The process where ions and broken down food molecules move into the blood through the wall of the intestine



What is assimilation?



What is assimilation?

The movement of digested food molecules into the cells of the body where they are used



What is egestion?



What is egestion?

The removal of undigested food as waste from the anus



What is diarrhoea?



What is diarrhoea

Passing watery faeces



How can diarrhoea be treated?



How can diarrhoea be treated?

Using oral rehydration therapy (ORT) which involves taking a sugar/salt solution orally (through the mouth)



What is cholera?



What is cholera?

A disease caused by a bacterium that causes severe dehydration and diarrhoea

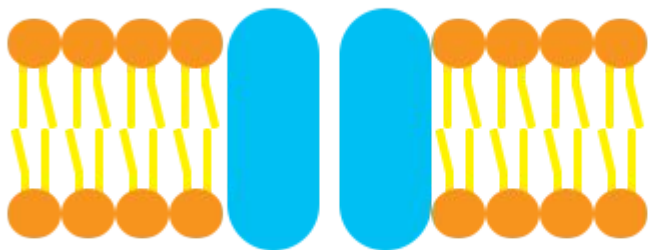


What is an ion channel? (Higher/Supplement)



What is an ion channel? (Higher/Supplement)

They are proteins that span cell membranes that allow charged molecules to pass through the membrane



How does the cholera bacterium cause
dehydration and diarrhoea?
(Higher/Supplement)

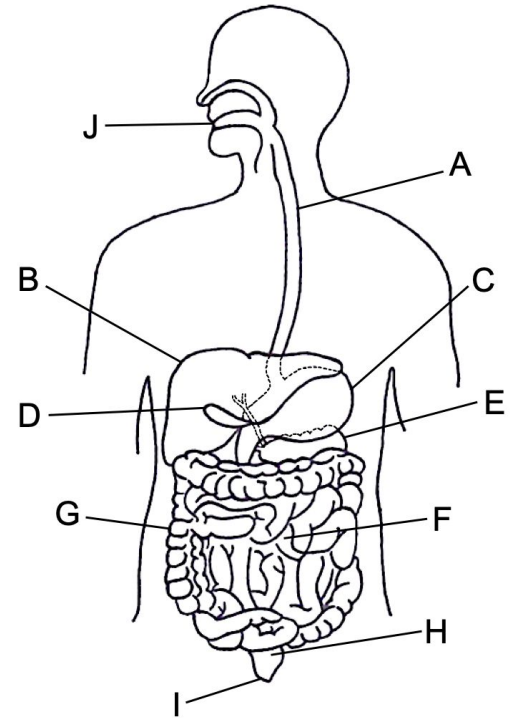


How does the cholera bacterium cause dehydration and diarrhoea? (Higher/Supplement)

- The cholera bacterium produces a protein toxin
- The toxin causes chloride ion channels in the small intestine membranes to open
- Chloride ions move into the gut
- Water then also moves into the gut down its concentration gradient (lots of chloride ions in the gut lowers the water potential)
- Faeces becomes watery

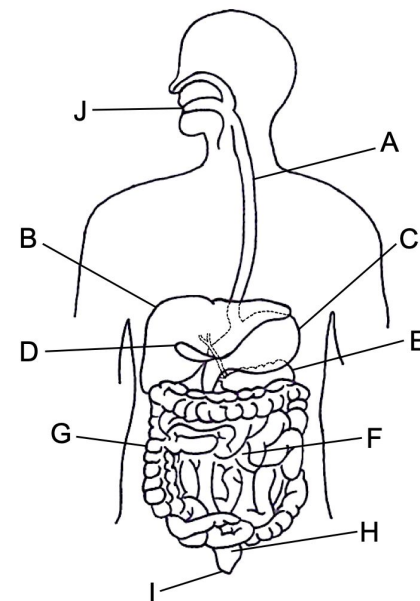


Identify the structures of the digestive system labelled in the diagram



Identify the structures of the digestive system labelled in the diagram

A	oesophagus	F	small intestine
B	liver	G	large intestine
C	stomach	H	rectum
D	gall bladder	I	anus
E	pancreas	J	mouth



What is the difference between the alimentary canal and the digestive system?



What is the difference between the alimentary canal and the digestive system?

The alimentary canal involves the tubes that the food passes through whereas the digestive system also includes digestive glands



Describe the passage of food through
the alimentary canal



Describe the passage of food through the alimentary canal

Mouth → oesophagus → stomach →
small intestine → large intestine →
rectum



What is the function of the mouth?



What is the function of the mouth?

- To chew and break down food
- To secrete digestive enzymes



What is the oesophagus?



What is the oesophagus?

The tube that carries food from the mouth to the stomach



What does the stomach do?



What does the stomach do?

The stomach is a muscular sac containing acid that pummels the food and breaks it down further



What role does the pancreas play in digestion?



What role does the pancreas play in digestion?

The pancreas secretes digestive enzymes into the small intestine



Where are the salivary glands located?



Where are the salivary glands located?

In the mouth



Name the 2 parts of the small intestine



Name the 2 parts of the small intestine

Duodenum and ileum



What is the function of the duodenum?



What is the function of the duodenum?

The duodenum receives food directly from the stomach and uses enzymes and chemical digestion to break the food down



What is the function of the ileum?



What is the function of the ileum?

Most nutrients are absorbed from the food in the ileum into the blood

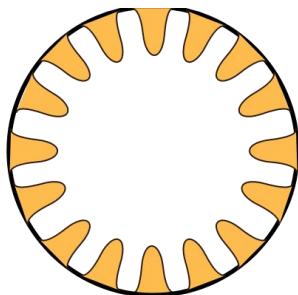


How is the ileum adapted for absorption?



How is the ileum adapted to absorption?

The ileum is lined with villi and microvilli which provide a large surface area for absorption



How are villi adapted for absorption?



How are villi adapted for absorption?

- Thin walls
- Large surface area
- Good blood supply close to the surface



What is the function of the large intestine
(colon)?



What is the function of the large intestine (colon)?

Water is reabsorbed into the blood in the large intestine



What is the function of the rectum?

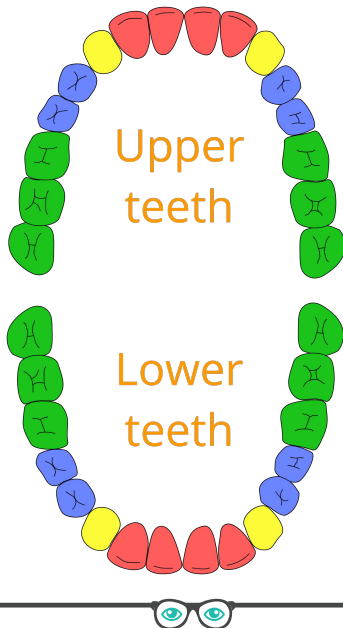


What is the function of the rectum?

The rectum stores faeces before egestion



Name the types of teeth in each of the 4 coloured sections (red, yellow, blue and green)



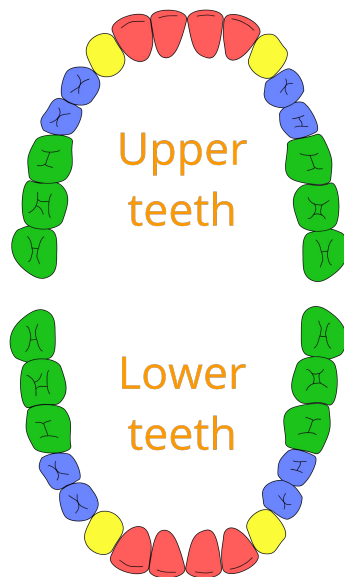
What is the function of the rectum?

Red - Incisors

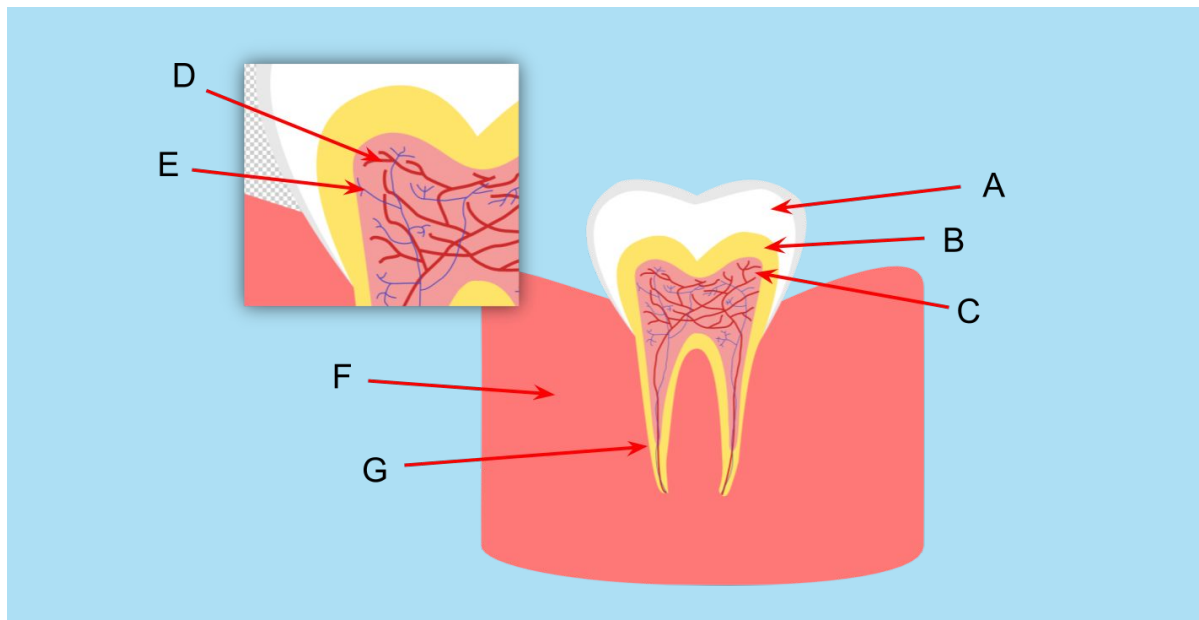
Yellow - Canines

Blue - Premolars

Green - Molars

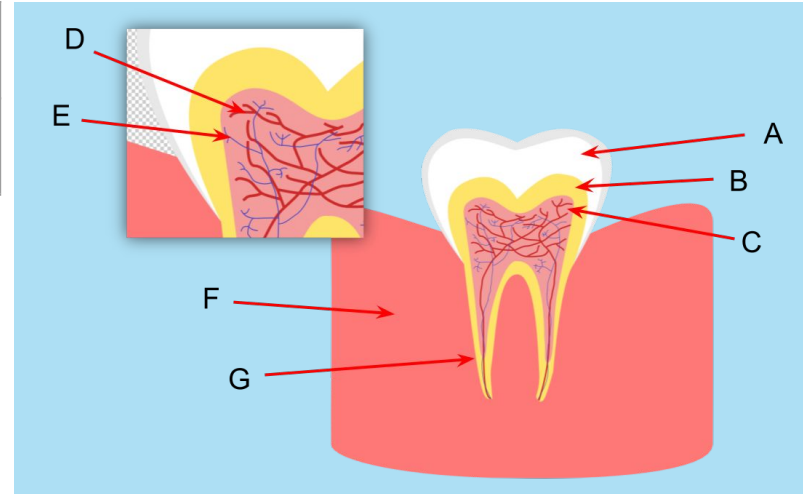


Label this diagram of a tooth



Label this diagram of a tooth

A	Enamel	F	Gums
B	Dentine	G	Cement
C	Pulp		
D	Blood vessel		
E	Nerve		



What is the function of incisors in mechanical digestion?



What is the function of incisors in mechanical digestion?

Biting and breaking sections of food off a larger piece



What is the function of canines in mechanical digestion?



What is the function of canines in mechanical digestion?

Ripping and shredding food



What is the function of premolars and molars in mechanical digestion?



What is the function of premolars and molars in mechanical digestion?

Chewing and grinding food



What causes dental decay?



What causes dental decay?

Bacteria found in the mouth use sugars from foods to respire which produces acid that breaks down the enamel on teeth



How can dental decay be prevented?



How can dental decay be prevented?

- Brush teeth regularly and thoroughly with fluoride containing toothpaste twice a day for roughly 2 minutes
- Control diet and limit the consumption of sugary food and drinks



What is the purpose of chemical digestion?



What is the purpose of chemical digestion?

Breaking larger insoluble molecules into smaller soluble molecules that can be absorbed



What does amylase do?



What does amylase do?

Amylase is a digestive enzyme that breaks starch down into simple sugars

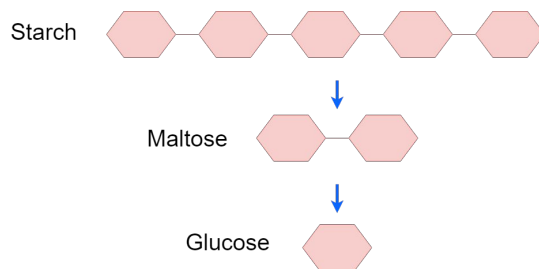


Describe the digestion of starch in the
alimentary canal
(Higher/Supplement)



Describe the digestion of starch in the alimentary canal (Higher/Supplement)

- Amylase is secreted and breaks starch down into maltose in the alimentary canal
- Maltase breaks maltose down on the membranes of the small intestine



What does protease do?



What does protease do?

Protease is a digestive enzyme that breaks proteins down into amino acids



What does lipase do?



What does lipase do?

Lipase is a digestive enzyme that breaks lipids down into fatty acids and glycerol



Give 2 places in the alimentary canal
that amylase is secreted



Give 2 places in the alimentary canal that amylase is secreted

- The pancreas
- The salivary glands in the mouth



Give 2 places in the alimentary canal
that protease is secreted



Give 2 places in the alimentary canal that protease is secreted

- The pancreas
- The stomach



Where in the alimentary canal is lipase secreted?



Where in the alimentary canal is lipase secreted?

The pancreas



Give 2 examples of protease enzymes
(Higher/Supplement)



Give 2 examples of protease enzymes
(Higher/Supplement)

Pepsin and trypsin



Where is trypsin secreted from? (Higher/Supplement)



Where is trypsin secreted from?
(Higher/Supplement)

The small intestine



Where is pepsin secreted from? (Higher/Supplement)



Where is pepsin secreted from?
(Higher/Supplement)

The stomach



What are the functions of the hydrochloric acid in gastric juice?



What are the functions of the hydrochloric acid in gastric juice?

- Killing bacteria
- Gives the appropriate (acidic) pH for enzymes to work

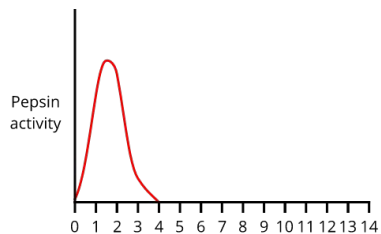


Explain the functions of hydrochloric acid in gastric juice (Higher/Supplement)



Explain the functions of hydrochloric acid in gastric juice (Higher/Supplement)

- Low (acidic) pH kills bacteria by denaturing the enzymes inside them
- Low pH is the optimum pH for pepsin



What does bile do? (Higher/Supplement)



What does bile do? (Higher/Supplement)

- Bile neutralises the stomach acid and provides alkaline conditions for the digestive enzymes in the small intestine
- Bile also emulsifies fats which increases their surface area for chemical digestion



In which part of the alimentary canal is digested food absorbed?



In which part of the alimentary canal is digested food absorbed?

The small intestine



What is the purpose of villi in the small intestine?
(Higher/Supplement)



What is the purpose of villi in the small intestine?
(Higher/Supplement)

Villi increase the surface area for absorption

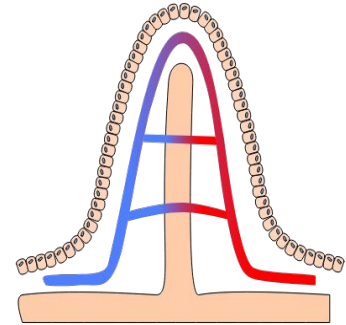


Describe the structure of a villus (Higher/Supplement)



Describe the structure of a villus (Higher/Supplement)

- Central lacteal used for transporting fatty acids and glycerol in the lymph fluid
- Lots of capillaries to absorb nutrients into the blood
- Thin wall to minimise the diffusion distance



State 2 parts of the alimentary canal
where water is absorbed



State 2 parts of the alimentary canal where water is absorbed

- The small intestine (most water absorbed here)
- The colon

