

## B2 Organisation - Knowledge Organiser

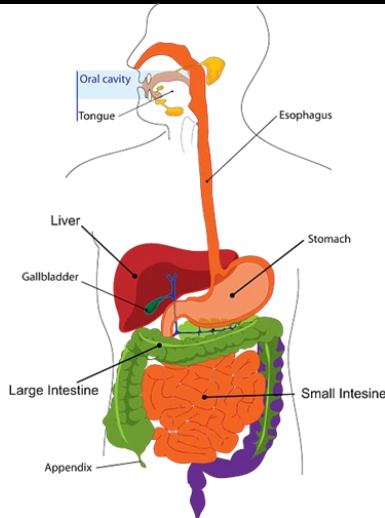
### Section 1: Organisation

1 Tissue	A <b>group of cells</b> with a <b>similar structure and function</b> e.g. muscle tissue
2 Organ	A <b>group of tissues</b> performing a specific <b>function</b> e.g. heart, leaf
3 Organ System	A <b>group of organs</b> that perform a specific <b>function</b> e.g. digestive system.

### Section 2: Human Digestive System

Order of movement of food through the digestive system:

Mouth	Many
Oesophagus	Ordinary
Stomach	Students
Small intestine	Struggle
Large intestine	Learning and
Rectum	Remembering
Anus	Answers



### Section 3: Enzymes Key Terms

5 Enzyme	A <b>biological catalyst</b> that can <b>speed up the rate of reaction</b> without being used itself. Made of a large <b>protein molecule</b> .
6 Substrate	The <b>chemical that fits into</b> the <b>active site</b> of an enzyme.
7 Lock and Key Model	Only <b>one type of substrate</b> can <b>fit into the active site</b> of an enzyme, like a key fits into a lock.
8 Denatured	When the <b>active site of an enzyme changes shape</b> and the <b>substrate can no longer fit in</b> . Can be caused by <b>pH</b> or <b>temperature</b> .

### Section 4: Testing for Biological Molecules

Molecule	Chemical Test	Positive Result
9 Starch	Add orange/brown <b>iodine solution</b> .	Colour turns to <b>blue/black</b> .
10 Sugar	Add blue <b>Benedict's solution</b> . Place in a <b>boiling water bath for 5 minutes</b> .	Colour turns <b>green/ yellow/ orange/ brick red</b> .
11 Protein	Add blue <b>Biuret solution</b> .	Colour turns to <b>lilac/ purple</b> .
12 Lipid	Add <b>ethanol</b> and decant into <b>water</b> .	<b>Cloudy white emulsion</b> .

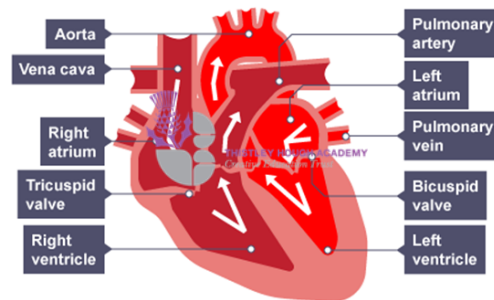
### Section 5a: Human Digestive Enzymes

Enzyme	Function	Sites of production	Sites of action
13 Amylase	Breaks <b>starch</b> into <b>sugars</b> .	Salivary glands Pancreas Small intestine	Mouth Small intestine
14 Protease	Breaks <b>proteins</b> into <b>amino acids</b> .	Stomach Pancreas Small intestine	Stomach Small intestine
15 Lipase	Breaks <b>lipids (fats)</b> into <b>fatty acids and glycerol</b> .	Pancreas Small intestine	Small intestine

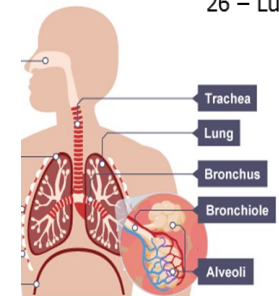
### Section 5b: Other Chemicals

16 Hydrochloric Acid	Acid with pH of 2 produced by the stomach. <b>Unravels proteins</b> .
17 Bile	<b>Emulsifies fats</b> (turns them into droplets to give a greater surface area). It is <b>alkaline</b> so <b>neutralises acid from the stomach</b> . <b>Produced in liver, stored in gall bladder</b> and is <b>released into the small intestine</b> .

### Section 6: Heart and Lungs



26 – Lung structure



### Section 6a: Structures in the Heart

27 Pacemaker	Group of cells in the <b>right atrium</b> that controls <b>resting heart rate</b> .
28 Right ventricle	Pumps <b>deoxygenated blood</b> to the <b>lungs</b> for <b>gas exchange</b> .
29 Left ventricle	Pumps <b>oxygenated blood</b> to the <b>body</b> . <b>Thick, muscular wall</b> .
30 Valve	Stops blood flowing the <b>wrong way</b> / leaking.

### Section 6b: Structures in the Lungs



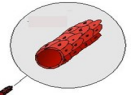
31 Alveoli	Small sacs where <b>gas exchange</b> occurs. <b>Surrounded by capillaries</b> . <b>Oxygen moves from the alveoli into the capillaries</b> , carbon dioxide moves from the capillaries into the alveoli
32 Trachea and Bronchi	Tubes through which gases move. <b>Lined with cartilage</b> so they don't collapse.

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### Section 7: Heart Disease

33 Coronary Heart Disease	Build up of <b>fatty material in coronary arteries</b> . Can lead to a <b>blood clot</b> and a <b>heart attack</b> .		
Treatment	What it is	Advantage	Disadvantage
34 Stent	<b>Wire mesh</b> that <b>opens up a blocked artery</b> .	Keeps artery open. Low-risk surgery.	Fatty material can rebuild.
35 Statin	Drug that <b>reduces cholesterol</b> .	Reduces fat being deposited in arteries.	Side effects e.g. liver damage.
36 Heart transplant	<b>Replacement heart</b> from a donor.	Long-term.	Major surgery. Could be rejected.
37 Artificial heart	<b>Man-made heart</b> used while <b>waiting for a transplant</b> .	Not rejected. Keeps patient alive.	Short life-time. Battery has to be transported. Limited activity.
38 Mechanical heart valve	Mechanical replacement of faulty heart valve.	Can last a life-time.	Can damage red blood cells.
39 Biological heart valve	Biological replacement of faulty heart valve.	Don't damage red blood cells.	Valve hardens and may need replacing.

### Section 8: Blood Vessels

			
	<b>40 Artery</b>	<b>41 Vein</b>	<b>42 Capillary</b>
Purpose	Takes blood <b>away from the heart</b> .	Takes <b>blood back to the heart</b> .	<b>Exchange of substances between blood and cells</b> .
Adaptations	<b>Thick wall to withstand high pressure</b>	<b>Thin wall. Valves to prevent backflow of blood.</b>	Wall is <b>one cell thick</b> to allow <b>quick diffusion</b> of substances.

### Section 9: Components of the Blood

43 Plasma	<b>Liquid part of the blood</b> . Transports blood cells as well as <b>carbon dioxide, proteins, glucose, hormones</b> and <b>urea</b> .
44 Red Blood Cells	<b>Carries oxygen</b> . Packed with <b>haemoglobin</b> , a protein that binds to oxygen. <b>No nucleus</b> to create extra space for haemoglobin. <b>Biconcave shape</b> to give a <b>large surface area</b> .
45 White Blood Cells	<b>Destroy pathogens</b> . Some can produce <b>antibodies</b> .
46 Platelets	Cell fragments that help to <b>clot wounds</b> .





### Section 10a: Movement within Plants

47 Transpiration	The <b>loss of water vapour</b> from the leaves by <b>evaporation from cells</b> and then out through the <b>stomata</b> .
48 Transpiration Stream	The <b>movement of water</b> from the <b>roots</b> , up the stem to the <b>leaves</b> .
49 Translocation	The <b>movement of dissolved sugars</b> around the plant.

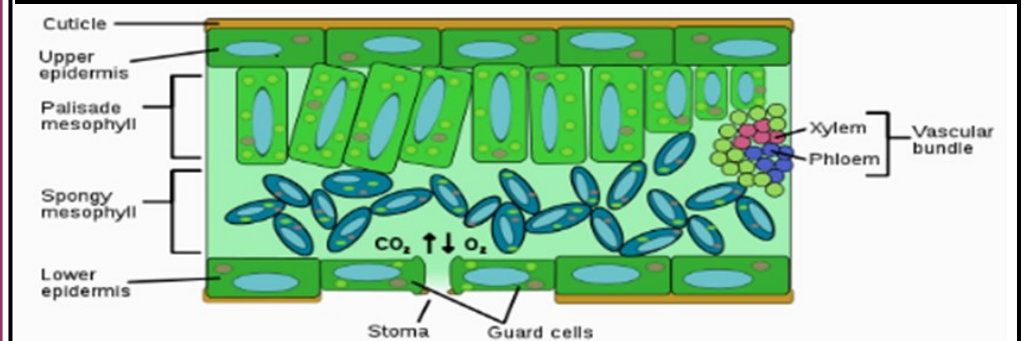
### Section 10b: Factors Affecting Transpiration

50 Temperature	Increasing temperature <b>increases the transpiration rate</b> as water evaporates quickly.
51 Humidity	Increasing humidity <b>decreases the rate of transpiration</b> as water evaporates slowly.
52 Wind speed	Increasing wind speed <b>increases the transpiration rate</b> as water evaporates quickly.
53 Light	Increasing light <b>increases the rate of transpiration</b> as <b>stomata open</b> .

### Section 11: Cell Adaptations for Movement Within Plants

			
54 Root hair cell <b>Extension</b> gives a <b>large surface area</b> to <b>absorb water and minerals</b> .	55 Xylem Vessels are <b>strengthened by lignin</b> to <b>withstand pressure</b> . Cell walls are <b>waterproof</b> .	56 Phloem End of cells <b>contain pores</b> to <b>allow dissolved sugars to move</b> between cells.	57 Guard Cells and Stoma Guard cells can <b>open the stoma</b> to <b>allow gas exchange</b> or <b>close</b> to <b>prevent water loss</b> .

### Section 12: Leaf Structure and Plant Tissues



58 Epidermis	<b>Cover the surfaces</b> of the leaf; lets <b>light penetrate</b> .
59 Xylem	<b>Carries water and minerals</b> from the roots around the plant.
60 Phloem	<b>Carries dissolved sugars</b> made through photosynthesis around the plant.
61 Palisade mesophyll	Where <b>most photosynthesis</b> takes place. Cells contain <b>many chloroplasts</b> . <b>Absorbs light</b> .
62 Spongy mesophyll	<b>Some photosynthesis</b> . Has <b>air spaces</b> for <b>diffusion</b> of CO <sub>2</sub> and O <sub>2</sub> .
63 Guard cells	Cells that <b>open and close stomata</b> .
64 Stoma	<b>Opening</b> that allows <b>CO<sub>2</sub> and O<sub>2</sub></b> to <b>diffuse</b> in and out of the leaf.