

01.1 Organ

01.2 Palisade mesophyll → Contains the most chloroplasts. Spongy mesophyll → Contains many air spaces.

01.3 Transpiration

01.4 Cellulose

01.5 The upper epidermis is transparent so that light can pass straight through it to reach the palisade mesophyll layer below, where most of the photosynthesis happens.

01.6 stomata, guard cells

01.7 a permanent vacuole

01.8 Diffusion

01.9 Mitochondria

02.1 The skin acts as a physical barrier preventing entry of pathogens. It also produces antimicrobial secretions.

02.2 $63/210$ which is $3/10$

02.3 At pH1: $210 - 23 = 187$. At pH5: $216 - 185 = 31$. Difference = $187 - 31 = 154$.

02.4 The student found the mean of the values for pH1 and pH3. So $(23+63)/2 = 43$.

03.1 Platelets → Help clot the blood where the vaccine was injected. White blood cells → Produce antibodies to the measles virus.

03.2 1970

03.3 The number of people with measles rose until about 1955, then it stayed very high until about 1968, after which it decreased sharply.

03.4 The percentage decreased.

03.5 Parents were worried their children would get condition X.

03.6 Have the research peer reviewed.

03.7 The research was not valid because it was biased, the author was being paid. Also it wasn't peer reviewed.

04.1

Starch: You add iodine solution. If starch is present it turns blue-black. If not, it stays orange-brown.

Sugar: You add Benedict's solution and heat it in a water bath. If sugar is present it will turn from blue to green, yellow, orange or brick red. If not, it stays blue.

04.2 amylase, sugar

04.3 The type of bread

04.4 1. White bread is broken down the fastest. 2. Wholemeal bread is broken down the slowest.

04.5 The student repeated the experiment for each bread type and then calculated a mean average.

04.6 $(58 + 55 + 61) / 3 = 174 / 3 = 57$

04.7 Each person's sense of taste is different.

05.1 Ionising radiation, Viruses. (Ticks both)

05.2 Mitosis

05.3 grow, replicate

05.4 40%

05.5 Chromosomes are pulled to each end of the cell.

05.6 cell membrane

05.7 $50\text{mm} / 800 = 0.0625\text{ mm}$. $0.0625 \times 1000 = 62.5\text{ }\mu\text{m}$.

05.8 cells, people

05.9 A placebo.

06.1 1. Size/mass of potato pieces. 2. Volume of the salt solution.

06.2 You should gently blot the surface of the potato to remove excess water.

06.3 A top-pan balance.

06.4 0.1 g

06.5 D

06.6 $1.1 / 6.0 \times 100 = 18.333\ldots$ so 18.33%

06.7 Line graph

06.8 water, osmosis, partially permeable membrane

06.9 0.2 mol/dm^3

07.1 Arteries

07.2 Pushing on the chest manually pumps the heart, which pushes blood around the body. This is vital to deliver oxygenated blood to the brain and other organs.

07.3 It provides oxygen to be absorbed into the blood.

07.4 Statins

07.5 A stent is a mesh tube inserted into a narrowed coronary artery. It is expanded to widen the artery and hold it open, restoring blood flow to the heart muscle.

07.6 Smoking increases the risk of all the diseases shown. The risk increases the most for disease H.

07.7 (Draws graph with correct scale and labels, but plots bar G at 30 instead of 29).

07.8 Lack of regular exercise.

08.1 In the nucleus.

08.2 A, D and E

08.3

A person with CF produces thick mucus which blocks the pancreatic duct. This prevents digestive enzymes like amylase, protease and lipase from reaching the small intestine. So, large food molecules like starch, protein and fats are not broken down into smaller molecules like glucose, amino acids, and fatty acids. This is why they have difficulty digesting food.

Because the food is not digested, these small, soluble molecules cannot be absorbed into the blood. This means the body's cells don't receive the nutrients needed for respiration or for building new cells and tissues. This leads to weight loss or difficulty gaining body mass.

08.4 1. A large surface area. 2. A moist lining for gases to dissolve in. 3. Thin walls, only one-cell thick.

08.5 A reduced amount of oxygen means less aerobic respiration can occur in cells. This leads to less energy (ATP) being released. The body might try to compensate by increasing anaerobic respiration, which produces lactic acid and leads to muscle fatigue.
