

Assessment Schedule – 2021**Biology: Demonstrate understanding of biological ideas relating to a mammal(s) as a consumer(s) (90929)****Evidence Statement**

Q	Achievement	Merit	Excellence
ONE	<p>Describes (single, simple ideas):</p> <ul style="list-style-type: none"> • Simple reason for digestion. • Simple reason for chewing and the process of physical digestion. • Description of which enzymes are involved in digestion & the process of chemical digestion. <p>Example:</p> <ul style="list-style-type: none"> • The purpose of digestion is to break up food into small pieces which helps physical and chemical digestion occur. • Physical digestion occurs by chewing and muscle action to break food down into smaller parts • Physical digestion also occurs in stomach by churning of food • Chemical digestion occurs through the use of enzyme / acids to break food down into smaller parts. • The addition of bile and / or stomach acid also help chemical digestion. • Smaller food particles make it easier for the body to absorb. 	<p>Explains (gives reasons how or why something occurs / provides examples):</p> <ul style="list-style-type: none"> • how / why digestion occurs • how / why chewing occurs • how / why enzymes are involved in digestion • the process of chemical digestion • the process of physical digestion. <p>Example:</p> <ul style="list-style-type: none"> • Physical digestion occurs by chewing and muscle action to break food down into smaller parts. This process aids swallowing of food down the Oesophagus and into stomach – stops choking and helps increase surface area of food for chemical digestion. • Explain use of different enzymes – i.e. amylase in mouth to help break down Starch. The chemical digestion of food begins in the mouth with the secretion of saliva. Saliva contains an enzyme called amylase, which is able to break starch molecules down into smaller glucose molecules. This is necessary because starch molecules are too large to be absorbed through the walls of the digestive system, but glucose molecules are smaller and can be absorbed through the gut wall. • Explains how / why bile helps emulsify / breakdown fats into smaller droplets and increase surface area for enzymes / lipases to work. • Explains use of stomach acid to help break down chemical bonds in food and make pieces smaller – increase surface area for food particles so that other enzymes further down the digestive track can do their job. • Explain the physical action of teeth and stomach muscles to increase SA of food for enzymes to function plus make food smaller in size so easier to pass through digestive tract. 	<p>Discusses through comparing and contrasting the processes of chemical and physical digestion to show how both processes are important in enabling food to be digested efficiently.</p> <p>Example:</p> <ul style="list-style-type: none"> • Physical and chemical digestive processes are both required in order for food to be digested efficiently. Both physical and chemical digestion occur at various stages in the overall process of digestion. For example, both types of digestion occur in the mouth, where the process of digestion begins. Physical digestion occurs in the mouth through the processes of biting and chewing. These processes are important because they allow for the initial larger pieces of food to be broken down into smaller pieces. This is important because it creates a greater surface area for the enzymes involved in chemical digestion to act on and makes the food small enough for swallowing. • As this occurs, chemical digestion also begins in the mouth with the secretion of saliva. Saliva contains an enzyme called amylase, which is able to break starch molecules down into smaller glucose molecules. This is necessary because starch molecules are too large to be absorbed through the walls of the digestive system, but glucose molecules are smaller and can be absorbed through the gut wall. • Discuss use of Bile / Stomach Acid to aid chemical digestion via enzymes. These both help to support the physical digestion (churning in the stomach) that has occurred by continuing to increase the surface area of food particles. Increase in surface area allows for efficient absorption of food molecules to be taken in (assimilation) into the body.

N0	N1	N2	A3	A4	M5	M6	E7	E8
No response / no relevant evidence.	ONE relevant idea given.	TWO relevant ideas given.	THREE relevant ideas given.	FOUR relevant ideas given.	Explains TWO relevant ideas.	Explains THREE relevant ideas.	Provides ONE relevant example of discussing (physical or chemical digestion).	Provides TWO relevant examples of discussing (physical AND chemical digestion).

Q	Achievement	Merit	Excellence
TWO	<p>Describes (single, simple ideas):</p> <ul style="list-style-type: none"> the purpose of transporting oxygen around the body the purpose of transporting the products of digestion around the body the parts of the circulation system. <p>Examples:</p> <ul style="list-style-type: none"> The purpose of transporting oxygen around the body is so that it can be taken to the body cells for respiration. The purpose of transporting products of digestion around body and to body cells is for respiration. Oxygen and digestion products are transported around the body from the lungs and small intestine to the body cells in the blood vessels carried in blood. Three types of blood vessels called arteries, veins, and capillaries. Capillaries in lungs pick up oxygen. Capillaries in small intestine walls collect digestion products. The heart pumps blood through the blood vessels and around the body. 	<p>Explains (gives reasons how or why something occurs / provides examples):</p> <ul style="list-style-type: none"> the purpose of transporting oxygen around the body the purpose of transporting the products of digestion around the body the parts of the circulation system respiration / aerobic respiration. <p>Examples:</p> <ul style="list-style-type: none"> Oxygen needs to be transported around the body from the lungs to the body cells via the blood vessels because it is needed by the body cells to carry out the process of aerobic respiration. Respiration is an essential process in the body because it releases energy from the digested food molecules so that it can be used for other life processes, such as movement and growth needed for survival. Capillaries in lungs pick up oxygen – one-cell-thick walls and Capillaries in small intestine walls collect digestion products – one-cell thick. Absorption in capillaries is via diffusion – Explain short diffusion distance. The walls of the capillaries are only one cell thick. This is so that the diffusion distances are small, and therefore diffusion can occur quickly and efficiently. This is important because the body cells need a continuous supply of nutrients to function effectively. For example, muscle cells, when in use, require a continuous supply of glucose so that it can be broken down and the energy released for body functions, such as movement. Explain glucose is needed for respiration – able to diffuse across Small Intestine wall into villi capillaries and be carried by blood to body cells (unlike fats that need to go HPV and lacteals etc). 	<p>Discusses how the circulation of oxygen and the products of digestion around the body of a mammal are essential to its survival.</p> <p>Examples:</p> <ul style="list-style-type: none"> Oxygen needs to be transported around the body from the lungs to the body cells via the blood vessels because it is needed by the body cells (as are the products of digestion) to carry out the process of aerobic respiration. (need to describe / explain structure of circulation system and how they enable the carrying of oxygen and digestion products). Digested nutrients are absorbed into the blood stream surrounding the small intestine and transported to the cells for respiration and energy production. Some cells have a higher-level energy requirement e.g., muscle cells, therefore need more glucose to produce this energy. A combination of oxygen with digested food products enables cells to carry out cell processes for survival. (need to make links to both systems and survival due to cells needing energy). Respiration is an essential process in the body because it releases energy from the digested food molecules, so that it can be used for other life processes such as movement and growth. Without the circulation of oxygen and delivery of digested food molecules to the body cells, aerobic respiration would be unable to occur, and thus there would be no energy for other essential life processes, such as movement and growth, and the mammal would not survive.

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No response / no relevant evidence.	ONE relevant idea given.	TWO relevant ideas given.	THREE relevant ideas given.	FOUR relevant ideas given.	Explains TWO relevant ideas.	Explains THREE relevant ideas.	Provides ONE relevant example of discussing (making multiple links).	Provides TWO relevant examples of discussing (making multiple links)

Q	Achievement	Merit	Excellence
THREE	<p>Describes (single, simple ideas):</p> <ul style="list-style-type: none"> • features of herbivore / carnivore digestive systems • differences between herbivore and carnivore digestive systems • functions of parts of the digestive systems of herbivore / carnivore. <p>Examples:</p> <ul style="list-style-type: none"> • Carnivores have sharp, tearing teeth as a carnivore eats mainly meat • Herbivores have teeth designed for grinding as a herbivore eats mainly plant material • Carnivores have a shorter digestive tract / system. • Herbivores have a longer digestive tract / system. • There is no amylase in the saliva of carnivores. • There is amylase in the saliva of herbivores. • The caecum is bigger in an herbivore gut than in a carnivore gut. • A carnivore stomach is bigger than a herbivore stomach. 	<p>Explains (gives reasons how or why something occurs / provides examples):</p> <ul style="list-style-type: none"> • features of herbivore / carnivore digestive systems • differences between herbivore and carnivore digestive systems • functions of parts of the digestive systems of herbivore / carnivore. <p>Examples:</p> <ul style="list-style-type: none"> • Carnivores have a shorter digestive system / tract. This is because they have very strong HCl in their stomachs, which is very efficient at breaking down meat-based proteins and fats, which is the main diet of carnivores. This means a longer digestive system that would be required to breakdown food that is more difficult to digest is not required for carnivores. • Herbivores have a longer digestive system / tract. This is because plant material (the primary food source of herbivores), e.g. cellulose, is more difficult to break down. The longer digestive system allows sufficient time for the herbivore's digestive system to break down plant material. • The teeth of herbivores and carnivores are different because of their different diets and the nature of their food. For example, herbivores, because they are plant eaters, have strong, wide, and flat molars that are made for grinding leaves, and small or non-existent canine teeth because they are not needed. • Many herbivores, such as horses and cows, have jaws that are capable of moving sideways, which allows for increased grinding motion. Alongside that, the strong flat molars allow the tough cellulose plant material to be broken down through a grinding action, which increases the surface area of the food. • Carnivores, meat eaters, have very defined canine teeth for tearing at meat, and sharp molars. The sharp / pointed canines allow the 	<p>Discusses how the physical and chemical differences in carnivore and herbivore digestive systems enable them to digest food efficiently to ensure their survival.</p> <p>Examples:</p> <ul style="list-style-type: none"> • Carnivores have a shorter digestive system / tract than herbivores. This is because carnivores have very strong HCl in their stomachs, which is very efficient at breaking down meat-based proteins and fats, which make up the main diet of carnivores. Herbivores on the other hand, eat plant-based material (e.g. cellulose), which is more difficult to digest. Because of this, a longer digestive system is useful because it allows the plant-based material more time in the digestive tract, thus allowing sufficient time for the system to break down the plant material into nutrients that can be absorbed. Thus, the differences in the digestive systems of herbivores and carnivores allow for efficient digestion of their respective food types to ensure they receive the nutrients they require from the different foods they consume. • All animals have teeth that are adapted to eating certain types of food. For example, herbivores / the rabbit, eat plant material / cellulose, have wide, flat molars for grinding tough celluloses, and small or non-existent canine teeth because they are not needed. The flat molars allow the tough cellulose plant material to be broken down through a grinding action. This helps with the difficult digestion of cellulose. (Herbivore incisors are sharp for tearing plants, but they may not be present on both the upper and lower jaw.) Many herbivores, such as rabbits have jaws that are capable of moving sideways which allows for increased grinding motion. On the other hand, carnivores eat meat, have very defined canine teeth for tearing at meat and piecing / holding / killing their prey, and sharp molars / carnassial which slice up the meat into bits to be swallowed. • Different diets result in different gut adaptations. For the rabbit to effectively digest the tough cellulose / plant material, it needs a much longer gut because the cellulose takes much longer to be digested, so needs to be kept inside the rabbit for longer. They also have a much bigger caecum, which houses cellulase / enzyme producing bacteria / microbes that digest the plant material for the rabbit. Rabbits have a smaller stomach, as they do not eat protein / meat, so not needed. While the dog eats meat, which is

		<p>carnivore to pierce and hold on to and cut through the flesh of its prey, killing it. Protein / meat isn't digested in the mouth OR protein / meat much easier to digest so doesn't need to be grind up.</p> <ul style="list-style-type: none"> • Carnivore's stomach is larger because it is the main site of protein / meat digestion OR rabbits have a smaller stomach because they do not eat protein so not needed as much. • Rabbits have a large caecum, which contains enzyme producing bacteria to digest the tough plant material / cellulose OR dogs have a smaller caecum because they don't eat plant material / cellulose, so don't need to house the bacterial to digest cellulose. 	<p>easier to digest by enzymes, therefore have a shorter gut as the food doesn't need to be held inside the dog for as long. They have a much larger stomach as this is where protein is digested by enzymes / pepsin. The dog's caecum is smaller because they don't digest / plant material / cellulose. Most mammalian herbivores have a relatively large caecum for this purpose. The caecum contains a large number of bacteria, which aid in the enzymatic breakdown of plant materials such as cellulose. However in carnivores, the food eaten does not contain cellulose so these bacteria are not required</p>
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Cut Scores

Not Achieved	Achievement	Achievement with Merit	Achievement with Excellence
0 – 7	8– 13	14– 20	21 – 24