



## Natural Science – Grade 9

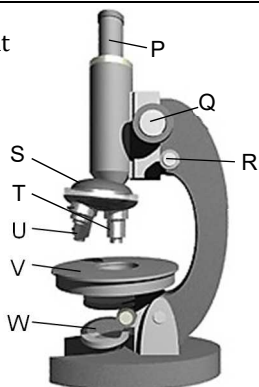
Welcome to your Conquesta Olympiad. When you have decided which of the answers is correct, scratch out the letter in the matching square on your answer sheet. Example:- If the answer to question 4 is c, then scratch out the letter c in the square containing c next to the number 4 (see example 1 below). If you've made a mistake and b should have been the answer, neatly cross out the mistake and then scratch out b (see example 2 below).

Example 1:- 4. a b ~~c~~ d

Example 2:- 4. a ~~b~~ ~~c~~ d

The diagram on the right is of a light microscope.  
(Questions 1 and 2.)

1. If P contains a lens with a magnification of 15x, and T gives a magnification of 10x, then a specimen will be viewed under a magnification of .....



- (a) 15x.  
(b) 150x.  
(c) 25x.  
(d) 1 500x.

Arrange steps (i) – (v) below in the correct order, to use the above microscope accurately.

- (i) Look through P and bring the specimen into focus using Q and R.  
(ii) Arrange the slide with the specimen above the centre of the hole in V.  
(iii) Change to high power by turning S until U is above the specimen.  
(iv) Use Q to lower T about 5mm from the slide.  
(v) Move W until light passes through the microscope.

2. The correct sequence of steps is:

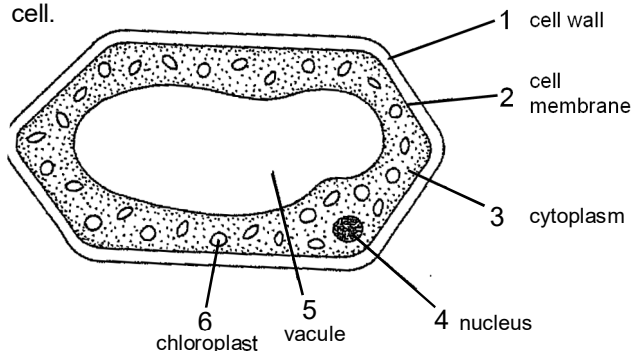
- (a) (iv)→(i)→(v)→(iii)→(ii) (b) (v)→(ii)→(iv)→(i)→(iii)  
(c) (i)→(ii)→(iii)→(v)→(iv) (d) (v)→(i)→(iii)→(ii)→(iv)

3. The diagram of a butternut alongside is shown in .....

- (a) cross section.  
(b) longitudinal section.  
(c) transverse section.  
(d) diagonal section.



Questions 4 – 6 refer to the following diagram of a plant cell.



4. A typical animal cell would not have parts:

- (a) 1, 3 and 5. (b) 1, 4 and 6.  
(c) 1, 5 and 6. (d) 2, 5 and 6.

5. Part number ..... makes up the cellulose fibres.

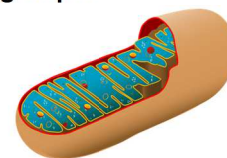
- (a) 1 (b) 2 (c) 4 (d) 6

6. The function of part number 6 is to .....

- (a) control what enters and exits the cell.  
(b) absorb light for photosynthesis.  
(c) store water and minerals.  
(d) control the activities in the cell.

7. Which term is used to describe a group of tissues that function together?

- (a) Organ.  
(b) Specialization.  
(c) System.  
(d) Organism.



8. Which of the following statements is false, regarding respiration?

- (a) Carbon dioxide is used during respiration.  
(b) Energy, water and carbon dioxide are produced during respiration.  
(c) Glucose is one of the two reactants.  
(d) It occurs in all living cells.

Inhalation take place when air moves from the outside of the body into the lungs.

Which of the following is the right path that oxygen will take as it moves into the lungs?

- (a) nasal cavity → bronchi → bronchioles → trachea → alveoli  
(b) nasal cavity → trachea → bronchioles → bronchi → alveoli  
(c) nasal cavity → bronchioles → trachea → alveoli → bronchi  
(d) nasal cavity → trachea → bronchi → bronchioles → alveoli

10. Which line in the table below, correctly shows the change in concentrations of oxygen and carbon dioxide in the blood as they pass through the lungs?

	Oxygen	Carbon dioxide
(a)	increases	decreases
(b)	increases	increases
(c)	decreases	decreases
(d)	decreases	increases

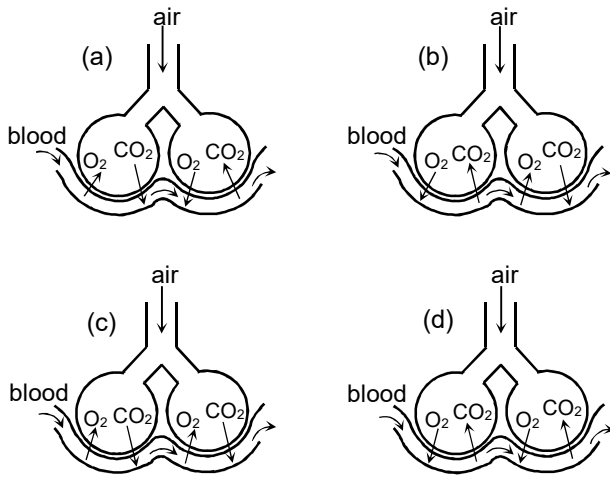
A woman's breathing was investigated and the results are shown in the table below.

Concentration of oxygen in inhaled air	20%
Concentration of oxygen in exhaled air	16%
Number of breaths per minute	15
Average volume of each breath	500 cm <sup>3</sup>

11. What was the volume of oxygen absorbed by her lungs each minute?

- (a) 20 cm<sup>3</sup> (b) 300 cm<sup>3</sup> (c) 1200 cm<sup>3</sup> (d) 1500 cm<sup>3</sup>

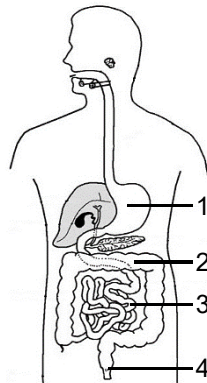
12. Which diagram below is correct in representing gaseous exchange in a pair of air sacs, in a human lung?



The diagram on the right shows the human digestive system.

13. Which are the two main regions of the human body where digestion takes place?

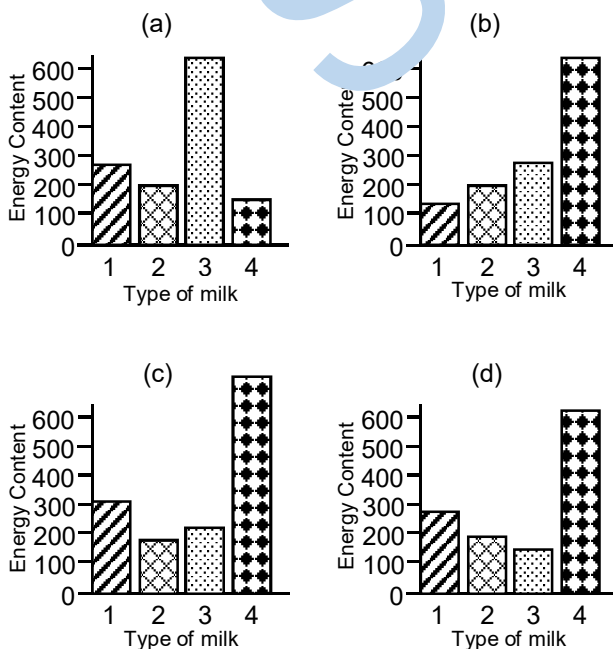
- (a) 1 and 2.
- (b) 1 and 3.
- (c) 2 and 3.
- (d) 3 and 4.



The table below shows the energy content of four types of milk.

Type of Milk	Energy content per 100 g (kJ)
1. Full cream	275
2. Semi-skimmed	195
3. Skimmed	145
4. Evaporated	630

14. Which of the following graphs represents the correct information in the table above?

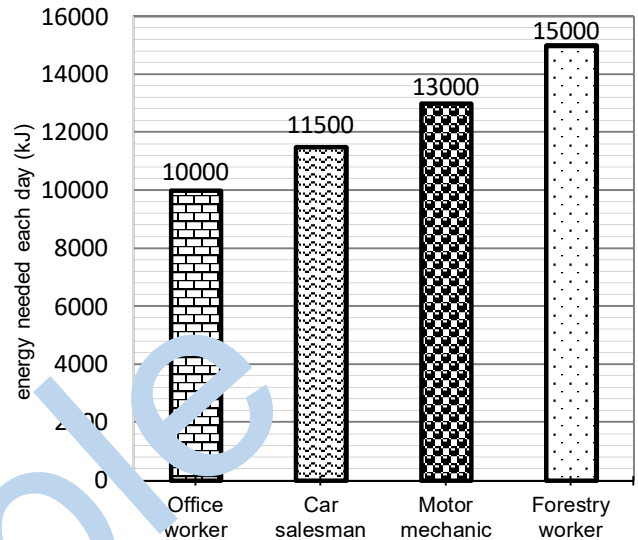


During swimming a teenager was found to use energy at a rate of 38 kJ per minute. The energy needed for 10 minutes of this activity could be supplied by consuming 20 grams of one of the foods in the table below.

15. Choose the correct row in the table that shows this.

Food	Energy content (kJ per gram)
(a) honey	12
(b) sucrose	19
(c) biscuit	21
(d) chocolate	24

The bar graph below shows the amount of energy needed each day to do four different types of jobs. (Questions 16 – 18.)



16. Which job uses up 11500 kJ of energy daily?

- (a) Office worker.
- (b) Car salesman.
- (c) Motor mechanic.
- (d) Forestry worker.

17. How many more kilojoules (kJ) are used per day by a forestry worker, compared with a car salesman?

- (a) 1 500 kJ
- (b) 2 000 kJ
- (c) 3 500 kJ
- (d) 5 000 kJ

Imagine the office worker changes his job and becomes a motor mechanic.

18. What would the percentage increase be, in the amount of energy that he would need each day?

- (a) 15%
- (b) 20%
- (c) 30%
- (d) 50%

Refer to the following table to answer questions 19 and 20 on page 3.

Foodstuff	Number of grams present per 100 g portion of food		
	Carbohydrate	Protein	Fat
bacon	0,0	11,0	48,0
brussel sprouts	4,6	3,6	0,0
cabbage	5,8	1,5	0,0
carrots	5,4	0,7	0,0
cheese	0,0	25,4	34,5
chocolate	54,5	8,7	37,6
coconut	6,4	6,6	62,3
eggs	0,0	11,9	12,3
fish fingers	20,7	13,4	6,8
liver (fried)	4,0	30,0	16,0
macaroni	84,0	9,9	1,0
milk	4,2	2,8	17,8
oranges	8,5	0,7	0,0
trifle	26,5	3,1	7,1