

# Science 8

## Cell Unit Practice Test

Name:

Date:

Block:

1. List the 7 characteristics of living things.

1. Made of cells
2. Grows
3. Reproduces
4. Moves
5. Eliminates waste
6. Responds to stimuli
7. Needs nutrients

2. An explorer from another galaxy has arrived on Earth and believes cars are living things.

a. Which characteristic(s) of a living thing would a car show?

Moves, eliminates waste, needs energy (gas)

b. How would you explain that a car is not a living thing?

Does not have the other 4 characteristics

3. The coarse focus knob on a microscope should be used with which objective lens(es)?

Low and medium

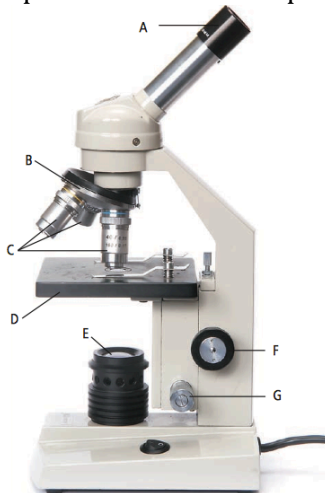
4. A slide on the microscope is moved toward you. In which direction does the object you are viewing through the eyepiece move?

Away

5. What is a wet mount slide? List the steps of making a wet mount.

- Place the specimen on the microscope slide.
- Place a drop of water on the microscope slide.
- Place the cover slip on top.
- Ensure there are no air bubbles.
- If there is too much water, dab it with a paper towel.
- Place on the stage of the microscope.

6. Label the parts of the microscope below.



- A. Eyepiece
- B. Revolving nose piece
- C. Objective lenses
- D. Stage
- E. Light source
- F. Coarse focus knob
- G. Fine focus knob

7. Animal cell vs. plant cell.  
 a. Which two organelles do plants have that animals do not?

Cell wall and chloroplasts

- b. What are their functions?

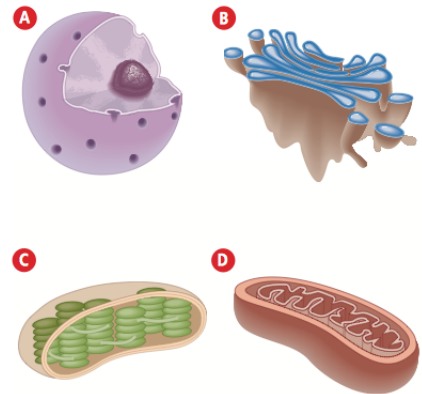
Cell wall – rigid protective barrier  
 Chloroplasts – location where photosynthesis occurs

8. Which organelle stores food and waste?

Vacuole

9. Identify each cell structure below and write its function.

	Structure	Function
A	Nucleus	Control centre of the cell
B	Golgi body	Modifies, packages and stores proteins
C	Chloroplasts	Location where photosynthesis occurs in plant cells
D	Mitochondria	Powerhouse of the cell



10. Animal cells do not have chloroplasts. Explain why.

Photosynthesis is not required

11. Compare and contrast the processes of cellular respiration and photosynthesis.

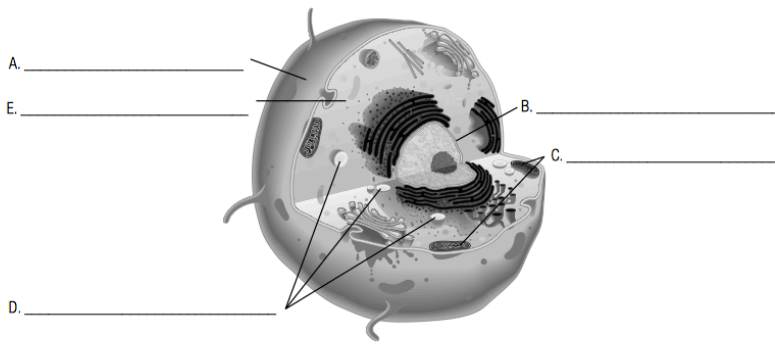
**Cellular Respiration**

- Occurs in the mitochondria
- Animal and plant cells
- Oxygen + food (glucose) → carbon dioxide + water + energy

**Photosynthesis**

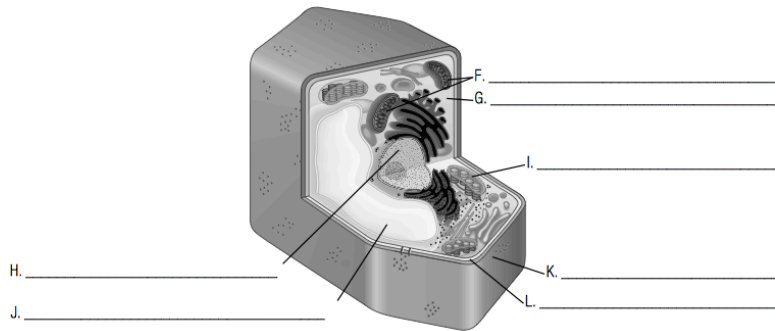
- Occurs in the chloroplasts
- Plant cells only
- Carbon dioxide + water + energy → oxygen + food (glucose)

12. Identify the follow cells as either a plant or animal cell and then label the organelles.



**Animal cell**

- A. Cell membrane
- B. Nucleus
- C. Mitochondria
- D. Vacuoles
- E. Cytoplasm



**Plant Cell**

- F. Mitochondria
- G. Cytoplasm
- H. Nucleus
- I. Chloroplasts
- J. Vacuole
- K. Cell wall
- L. Cell membrane

13. Summarize the 3 key points of the cell theory.

1. All living things are made up of one or more cells.
2. A cell is the basic unit of life
3. All cells came from pre-existing cells.

14. What is the difference between a prokaryotic and eukaryotic cell? Give an example of each.

**Prokaryotic cell**

- Simple cell
- No membrane bound nucleus
- Ex. bacteria

**Eukaryotic cell**

- More complex cell
- Contains a membrane bound nucleus
- Ex. humans

15. Describe one difference between bacteria and viruses.

**Bacteria are living and viruses are non-living.**

16. What process causes water to enter and leave the cell?

**Osmosis**

17. Diffusion vs. Osmosis

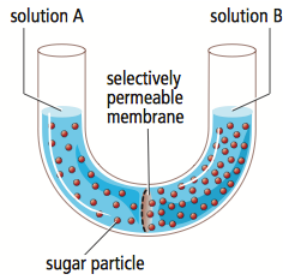
- a. How are diffusion and osmosis similar?

**Particles are moving. Result is an equal concentration.**

- b. How are they different?

In the process of diffusion, the particles are free to move in all directions. In the process of osmosis, only the water molecules move across the semipermeable membrane to achieve equal concentration.

18. Which way will the water flow in the diagram below? Explain.



Water will flow to the right side to balance out the concentrations.

19. Why are vacuoles usually larger in plant cells than in animal cells?

More water is required to be stored.

20. During class someone peels an orange. Why will everyone in the class not smell the orange at the same time? Explain and draw a diagram.

No they will not smell the orange at the same time. The people sitting closest to the orange will smell it first.

21. You have just bought a tropical fish for your freshwater aquarium. Unfortunately, you do not realize it is a saltwater fish. Using your knowledge of osmosis, explain why this fish will not survive in your aquarium.

The fish is accustomed to living in a saltwater environment. In a freshwater aquarium, the concentration of salt is too low in the water so water from the surroundings will enter the cells of the fish.

22. The tables below show the results of an experiment to find the effect of osmosis on potato cells. Two cubes of potato were weighed and placed in purified water, and another two cubes were weighed and placed in salt water. The mass of each potato cube was then measured every 15 minutes for an hour.

Time (min)	Salt Water		
	Cube 1 Mass (g)	Cube 2 Mass (g)	Average Mass (g)
0	59	60	59.5
15	58	58	58
30	50	55	52.5
45	50	54	52
60	50	53	51.5

Time (min)	Purified Water		
	Cube 1 Mass (g)	Cube 2 Mass (g)	Average Mass (g)
0	51	52	51.5
15	51	52	51.5
30	52	53	52.5
45	53	54	53.5
60	55	53	54

- a. Calculate the average mass of the potato cubes in purified water and the average mass of the potato cubes in salt water for each time interval. Write your results in the last column of each table.

$$\text{Average Mass} = (\text{Cube 1 Mass} + \text{Cube 2 Mass}) \div 2$$

- b. What happened to the mass of the potato cubes in purified water? Why?

The mass increased. Water entered the cells of the potato.

- c. What happened to the mass of the potato cubes in salt water? Why?

The mass decreased. Water left the cells of the potato.