

# Exercises

## Lesson 2: Cell Exercises

1. Why are cells called the “building blocks” of life?
2. Anton van Leeuwenhoek discovered animals no one had ever seen before. How was he able to do this?
3. You leave some bread on your counter. After a few days, you notice some mold growing on the bread. According to the cell theory, where did the cells that make this mold come from?
4. How does the shape of a nerve cell help it do its job?
5. If a cell had no cell membrane, what might happen to it? Why?
6. Where are the organelles found in a cell?
7. If a cell was making proteins, but the proteins were not the type the cell needed, what organelle is most likely not working properly? Why?
8. How are prokaryotes different from eukaryotes?
9. What are three places ribosomes are found?
10. How is the endoplasmic reticulum like a freeway?
11. What might happen in a cell if the Golgi Apparatus was not working properly?
12. What does the mitochondrion do in the cell?
13. How are vesicles and vacuoles similar? How are they different?
14. Name two organelles found in plant cells, but not animal cells.
15. What might happen to a plant if its cells didn't have cell walls?
16. Thinking about the organelles they have, why can't animals undergo photosynthesis?
17. Imagine that the wall of a dam breaks, and water begins rushing through the hole in the wall. Explain this in terms of concentration.
18. Nutrient X has a higher concentration inside a cell than outside a cell. Will active or passive transport be required to get nutrient X into the cell? Explain.
19. Is it possible for a protein to assist something cross the cell membrane, and have it still be considered passive transport? Explain.
20. Why is photosynthesis important to plants? Why is it important to animals?

21. Your friend tells you that photosynthesis “creates” energy for plants. How would you correct this statement?
22. How is glucose used differently than ATP in the cell?
23. What is the purpose of cellular respiration?
24. Name two types of cell division used by prokaryotes.
25. Why does the nucleus need to break down during mitosis?

# Answers to Exercises

## Answers to Lesson 2: Cell Exercises

1. Why are cells called the “building blocks” of life? **All living things are made of them**
2. Anton van Leeuwenhoek discovered animals no one had ever seen before. How was he able to do this? **Using his microscope, he was able to see things smaller than those things that can be seen with the naked eye**
3. You leave some bread on your counter. After a few days, you notice some mold growing on the bread. According to the cell theory, where did the cells that make this mold come from? **All cells come from other cells, so the mold cells must have come from cells in the bread itself**
4. How does the shape of a nerve cell help it do its job? **By having long extensions, the nerve cell can send messages to other cells**
5. If a cell had no cell membrane, what might happen to it? Why? **The cell could not survive because there would be nothing to stop harmful substances from entering.**
6. Where are the organelles found in a cell? **In the cytoplasm**
7. If a cell was making proteins, but the proteins were not the type the cell needed, what organelle is most likely not working properly? Why? **The nucleus, because it is the organelle that determines which proteins are made**
8. How are prokaryotes different from eukaryotes? **Prokaryotes do not have nuclei; eukaryotes do**
9. What are three places ribosomes are found? **Alone, in groups, or on the endoplasmic reticulum**
10. How is the endoplasmic reticulum like a freeway? **The ER transports proteins and lipids throughout the cell.**
11. What might happen in a cell if the Golgi Apparatus was not working properly? **Proteins would not get to the correct destination**
12. What does the mitochondrion do in the cell? **Provide energy**
13. How are vesicles and vacuoles similar? How are they different? **Both of these organelles hold and transport proteins and other nutrients. Vesicles are smaller than vacuoles.**

14. Name two organelles found in plant cells, but not animal cells.  
**Chloroplast and cell wall**
15. What might happen to a plant if its cells didn't have cell walls?  
**The plant would lose its structure and rigidity**
16. Thinking about the organelles they have, why can't animals undergo photosynthesis? **Chloroplasts are needed for photosynthesis, and animal cells don't have them.**
17. Imagine that the wall of a dam breaks, and water begins rushing through the hole in the wall. Explain this in terms of concentration.  
**The water is moving from an area of high concentration, behind the dam, to an area of low concentration, on the other side of the wall**
18. Nutrient X has a higher concentration inside a cell than outside a cell. Will active or passive transport be required to get nutrient X into the cell? Explain. **Active, because we are going from an area of low to high concentration**
19. Is it possible for a protein to assist something cross the cell membrane, and have it still be considered passive transport? Explain.  
**Yes, as long as energy is not used, it is passive transport**
20. Why is photosynthesis important to plants? Why is it important to animals? **Photosynthesis provides energy for plants and oxygen for animals**
21. Your friend tells you that photosynthesis "creates" energy for plants. How would you correct this statement? **Energy cannot be created, but photosynthesis does change light energy into chemical energy that can be used by the plant.**
22. How is glucose used differently than ATP in the cell? **Glucose is the form in which the energy is stored. ATP is the form in which it is used.**
23. What is the purpose of cellular respiration? **To change chemical energy in glucose to ATP**
24. Name two types of cell division used by prokaryotes. **Binary fission and budding**
25. Why does the nucleus need to break down during mitosis? **A complete set of DNA, which is found in the nucleus, needs to go to each daughter cell.**