

Exercises

Lesson 1: Living Organisms

1. What is science?
2. What do scientists do if their conclusions go against what they used to think?
3. What are some observations you have made today?
4. Why are hypotheses sometimes called educated guesses?
5. Your friend has a hypothesis that some plants die because witches cast evil spells on them. Is this a good hypothesis? Why or why not?
6. If a scientist's hypothesis is wrong, does that mean their experiment was bad?
7. Why should you do research before starting an investigation?
8. How can you tell if you can trust a particular web site, when doing research?
9. A student does an experiment to see if rap music helps plants grow. She takes 10 plants, waters them, gives them sunlight, and plays rap music for them. They all grow beautifully. Has she proven that rap music helps plants grow? Why or why not?
10. In question 9, what important group is missing? Describe what the student would (or would not) do to this group?
11. What are some ways scientists communicate results?
12. Why is it important to communicate results?
13. Why do scientists use models?
14. What is one thing our body does to keep a constant temperature?
15. Why do offspring tend to look like their parents?
16. What are cells?
17. How are autotrophs and heterotrophs different?
18. Why do we need to classify organisms?
19. If two animals were in the same phylum, would they be more or less similar than two animals in different phyla? (Phyla is the plural of phylum.)
20. What is the first word in an organism's scientific name?
21. Why are scientific names useful?

Answers to Exercises

Answers to Lesson 1: Living Organisms Exercises

1. What is science? **A method of answering questions based on evidence**
2. What do scientists do if their conclusions go against what they used to think? **They must change their way of thinking**
3. What are some observations you have made today? **Answers could include anything noticed using the five sentences**
4. Why are hypotheses sometimes called educated guesses? **They are guesses because they haven't been proven, but they are educated because they are based on some research.**
5. Your friend has a hypothesis that some plants die because witches cast evil spells on them. Is this a good hypothesis? Why or why not? **No, because it is not provable (Remember that the problem is not that you might think this hypothesis is silly. If you could somehow prove it, it would be a valid hypothesis to test.)**
6. If a scientist's hypothesis is wrong, does that mean their experiment was bad? **No**
7. Why should you do research before starting an investigation? **This allows you to see what scientists already know about the topic**
8. How can you tell if you can trust a particular web site, when doing research? **It is useful to look at what person or organization made the site, and determine if they are trustworthy and knowledgeable.**
9. A student does an experiment to see if rap music helps plants grow. She takes 10 plants, waters them, gives them sunlight, and plays rap music for them. They all grow beautifully. Has she proven that rap music helps plants grow? Why or why not? **No, they plants might have grown just as well without the rap music**
10. In question 9, what important group is missing? Describe what the student would (or would not) do to this group? **It is missing a control group. This group of plants should get the sunlight and water, but not the rap music.**
11. What are some ways scientists communicate results? **Creating web sites, writing scientific articles, or giving lectures**

12. Why is it important to communicate results? This allows other scientists to do their own experiments based on the first scientist's results.
13. Why do scientists use models? To represent things that can't easily be seen
14. What is one thing our body does to keep a constant temperature? Answers could include reducing blood flow, sweating, or shivering.
15. Why do offspring tend to look like their parents? Parents pass on traits to their offspring
16. What are cells? The smallest parts of living things still considered alive
17. How are autotrophs and heterotrophs different? Autotrophs create their own food; heterotrophs do not
18. Why do we need to classify organisms? Because there are so many of them, they have to be organized in some way
19. If two animals were in the same phylum, would they be more or less similar than two animals in different phyla? (Phyla is the plural of phylum.) More similar
20. What is the first word in an organism's scientific name? The genus
21. Why are scientific names useful? They are the same everywhere in the world, no matter what language is spoken