

# Chapter 1 Study Sheet

## Characteristics and material of Life

Be able to do the following:

1. List the characteristics of life.
2. What is the smallest unit of life?
3. Who needs to reproduce?
4. What material carries our genetic code?
5. Why do organisms need to grow? How organisms grow?
6. What is a stimulus vs a response?
7. What is the main reason living things respond to the environment?
8. What is homeostasis? Name something other than your temperature that your body keeps within normal limits all the time.
9. What causes living things to evolve? Over what length of time do living things evolve?  
Who cannot evolve?

## Scientific method study questions

1. Independent Variable vs. Dependant Variable
2. Explain why a hypothesis is more than just a wild guess.
3. What is being controlled that makes an experiment "controlled"?

4. What is the purpose of the control group?
5. Why do you try an experiment more than one time?
6. Understand the Placebo effect and how a Blind experiment helps solve this problem.
7. Understand Direct measurement vs. Indirect measurement and an example of each.

Read this paragraph, then answer the questions.

On July 20, 1976, the *Viking I* lander touched down on the dusty red surface of Mars. A few months later, the *Viking II* lander arrived on another Martian plain. The primary mission of these two robot spacecraft was to determine if there was life on Mars.

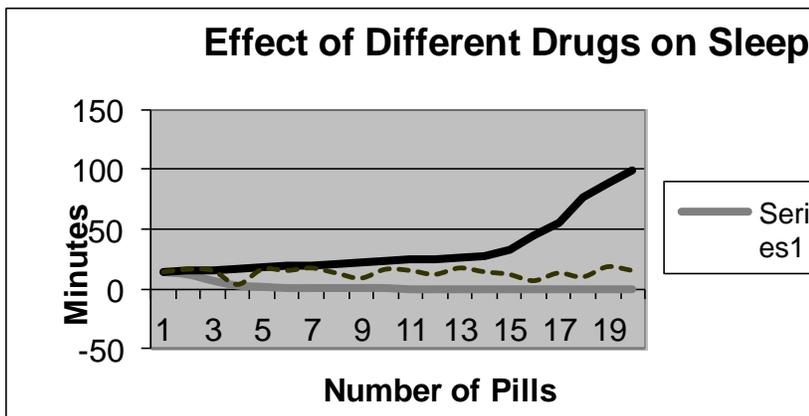
Conditions on Mars were thought to be far too harsh for large life forms. There is no liquid water on Mars and the atmosphere is very thin. During the course of a day, the temperature on Mars may range from 10°C to -80°C. The large changes in temperature produce strong winds and planetwide dust storms. Because of these conditions, scientists decided to look for microorganisms rather than large life forms.

The Viking spacecraft performed several experiments. In one experiment, samples of soil were taken from different locations. The soil samples were put into a nutrient broth that supported the growth of microorganisms on Earth. The amount of carbon dioxide in the broths was tested over a period of time.

Scientists were excited to discover that Martian soil produced carbon dioxide in the nutrient broth. However, the amount of carbon dioxide produced in the Martian soil was much smaller than the amount that would be produced by living things on Earth. Thus, the results of the Viking spacecraft experiments are not conclusive. Scientists are still not sure if life exists on Mars.

- a. What problem were they trying to answer?
- b. Were they gathering data by direct or indirect measurement?
- c. Why did they collect data from many locations?
- d. What was the data that they collected?
- e. What was their conclusion?
- f. Why are they still not sure if there is life on Mars?

8. When you sit down to choose your conclusion, what is the only thing you can use to decide?
9. What are the three possible conclusions you can come to?
10. What does it mean if there is experimental error in an experiment?



different types of medicine.

11. Use the graph to answer the following questions:
  - a. The graph is measuring the number of minutes it took the patients to fall asleep after having been given increasing amounts of one of three

12. What was the maximum number of pills that any of the three groups was given?
13. Which of the three lines looks like it might be salt pills?
14. How many Series 2 pills did it take to keep the patients awake more than 1 hour?
15. Which of the lines would prove the hypothesis: More than 10 pills will make a person unable to stay awake for more than 5 minutes?
16. Which of the lines prove the hypothesis: The pills will show little effect unless taken in large doses?
17. Which pill looks like it might be the control group?