

Format: 14 multiple choice questions and 3 open ended questions

Concepts to Review:

- Scientific Inquiry Skills
  - Understand the terms *hypothesis*, *independent variable*, *dependent variable*, *control*, and *placebo*.
  - Be able to explain how scientific ideas are different from ideas in other subjects (see Homework 2).
  - Be able to identify the independent and dependent variables in an experiment.
  - Be able to write a hypothesis in “If... then...” form.
  - Be able to identify the control group and the experimental group in an experiment.
  - Be able to identify factors that must be kept the same in both the control and experimental groups.
  - Be able to design a scientific experiment (see Homework 4 and classwork).
  - Be able to explain why it is important to repeat an experiment and use many test subjects.
  
- Cells (see Homework 7 and 8)
  - Understand the terms *organelle*, *cell*, *tissue*, *organ*, *organ system*, and *organism*, and be able to order these terms from the simplest to most complex.
  - Be able to explain what the cell theory tells us about cells.
  - Understand the terms *structure* and *function*, as well as how they relate to each other.
  - Know the function (job) of each of the following cell organelles: *cell membrane*, *nucleus*, *ribosome*, *mitochondria*, *cell wall*, *chloroplast*.
  - Be able to label a diagram of a plant cell and an animal cell.
  - Know the differences between a plant cell and an animal cell.
  - Be able to explain how two cell organelles work together to maintain homeostasis.
  
- Lab Skills
  - Be able to describe some lab safety rules (Lab 1).
  - Be able to construct a line graph and a bar graph (see Homework 5).

Practice Exam Questions:

- Visit the “Practice Exam Questions” page on the course website at [www.spraguescience.com](http://www.spraguescience.com).
- Download the “Scientific Inquiry and Designing Scientific Experiments – Exam” file and try all practice questions.
- Download the “Cell Structure and Function – Exam” file and try all practice questions.
- Check your work to each set of practice questions by downloading the answer key.

Experiment Question Sneak Peak:

A television advertisement claims that Brand X cough drops reduce coughing for 8 hours.

Design an experiment to determine if the claim is valid. In your answer, be sure to:

- state the hypothesis your experiment will test [2]
- describe how the treatment given to the control group will be different from the treatment given to the experimental group [2]
- identify *two* factors that must be kept the same in both the experimental and control groups [4]
- identify the independent variable in the investigation [2]
- state the type of data that should be collected [2]
- state *one* observation that would lead to the conclusion that the claim is valid [2]