

# ASSESSMENT OF UNDERSTANDING

## Chapter 1: Science and Measurement

### Vocabulary Bank

cause and effect    experimental technique    metric system    time    control variables  
experimental variables    procedure    trial    controlled experiment  
hypothesis    research question    variables    distance    investigation    scientific evidence  
velocity    English system    length    experiment    measurements    second  
scientific method

### Conversion resource

1 meter = 3.3 ft    1 inch = 2.54 cm    100 cm = 1 meter    1 mile = 1609 meters  
3 ft = 1 yard    1 km = .6 miles    1 minute = 60 seconds    60 minutes = 1 hour  
1000 mm = 1 meter    1 mile = 5280 ft    1000 meters = 1 km    12 inches = 1 ft

### Section 1.1 Time and Distance

- \_\_\_\_\_ A standard unit for time.
  - \_\_\_\_\_ How far it is from one point to another.
  - \_\_\_\_\_ A measure of the duration of an event.
  - \_\_\_\_\_ Uses inches, feet and miles to identify distances.
  - \_\_\_\_\_ Uses meters, millimeters, centimeters and kilometers to identify distances.
6. Measure and report the length of the follow line in    millimeters: \_\_\_\_\_  
centimeters: \_\_\_\_\_
- \_\_\_\_\_
7. Match the following to the unit that corresponds best to the distance:
- |                                |              |
|--------------------------------|--------------|
| a. Width of your little finger | 1 Kilometer  |
| b. Height of a first grader    | 1 Centimeter |
| c. five or Six city blocks     | 1 Millimeter |
| d. Width of a pencil lead      | 1 Meter      |
8. Use the factor-label method and convert the following:
- |                          |                        |
|--------------------------|------------------------|
| a. 25 seconds to minutes | c. 564 inches to yards |
| b. 22 miles to km        | d. 450 cm to meters    |

How do you think you did on that section??

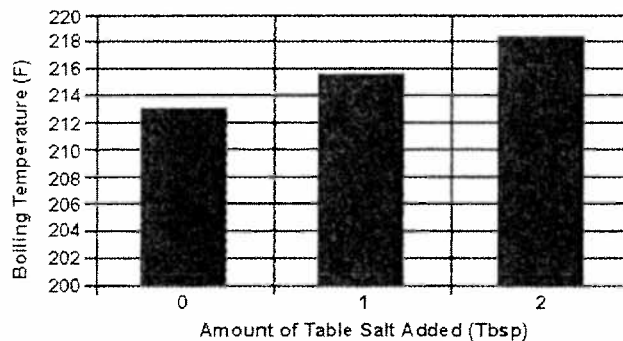
## Section 1.2 Investigations and Experiments

1. ----- Observations we can record and think about.
2. ----- A situation we set up to see how the universe behaves.
3. ----- Any observation that can be repeated with the same result.
4. ----- A prediction that can be tested by experiment.
5. ----- Factors that can affect the results of experiments.
6. ----- That factor whose effect you are testing when designing an experiment.
7. ----- Factors that you keep the same from trial to trial.

Jeremy decides to cook some pasta noodles. He notices that the directions say to add salt to the water before bringing the water to a boil. The next day, Jeremy asks his science teacher, Ms. Jackson, a question: "How does adding salt affect the boiling temperature of water?" Of course, Ms. Jackson asks Jeremy to plan and conduct an experiment to find the answer.

The following questions are based on the experiment Jeremy does to find an answer.

8. What was the control set-up for Jeremy's experiment?
  - a. One quart of boiling water with salt added
  - b. One quart of boiling water with no salt added
  - c. One quart of room temperature water with salt added
  - d. One quart of room temperature water with no salt added
9. Jeremy writes an excellent hypothesis before beginning his experiment. Which of the following is the hypothesis he wrote?
  - a. Pasta manufacturers and salt companies have signed a business deal.
  - b. Adding salt to pasta water makes the pasta taste better.
  - c. Adding salt to pasta water will cause the water to boil at a higher temperature.
  - d. Certain types of salts will not dissolve in boiling water.
10. The following graph summarizes Jeremy's results. What conclusion can be made from these results?



- a. Adding salt to the water causes the water to boil at a higher temperature.
  - b. Adding salt to the water causes the water to boil at a lower temperature.
  - c. Adding salt to the water has no effect on the temperature of the boiling water.
  - d. There is not enough information for a valid conclusion.
11. Based on Jeremy's findings, what would be a benefit of adding salt to pasta water?
  - a. There is no obvious benefit of adding salt to pasta water.
  - b. Salt clings to the cooking pot and allows the pot to hold more heat.
  - c. Adding salt to the water chemically breaks down the pasta to make it softer.
  - d. When you add salt to pasta water, the water can get hotter and pasta is cooked faster.

### Section 1.3 Speed

$$v = d / t$$

$$d = v \cdot t$$

$$t = d / v$$

1. A student is asked "what is the speed of a ball sitting still on the table?" Although the answer seems obvious, why might the student not answer zero?
2. What is the average speed of a car that travelled to Columbus (140 miles) in 3 hours?
3. How much time will it take a jet traveling at mach 1 (730 miles per hour) to circle the earth (25,000 miles)?
4. An extremely fast bullet flies at 3000 ft/ sec. How far will it travel in 1 minute (60 seconds)?
5. Light travels at 186,000 miles per second. a. How long does it take light to get from the sun (93,000,000 miles)? How long is that in minutes?
6. A marathon is 26.2 miles. Paul Tergot from Kenya has the world record time of 2 hours, 4 minutes and 55 seconds. What is his average speed in miles per hour? [hint: convert time to seconds then convert to hours.]

How do you think you did on this section??

