

Answer Keys

Chapter 1—Scientific Inquiry

Section: Scientific Investigation

The Scientific Method (page 4)

- II. 1. What do you want to learn from the experiment?
 2. What is already known about the topic?
 3. What do you think will happen in the experiment?
 4. How will you test the hypothesis and record the results?
 5. What do the results tell about the experiment?
 6. Do the results support your hypothesis?

Purpose (page 5)

- I. 1. Good 2. Too General
 3. Too General 4. Good
- II. 1. Does temperature affect the growth rate of bread mold?
 2. Does a paper towel's texture affect absorbency?
 3. Does colored light affect the growth rate of plants?
 4. Does light affect the movement of meal worms?
 5. Does rust affect the strength of magnets?

Research (page 6)

- I. 1. seed, sprout 2. breakfast, memory
- II. Answers will vary but might include the following:
 Temperature:
 1. Why does temperature affect metal?
 2. How is the temperature of metal measured?
 3. Who uses magnets in extreme temperatures?
 4. What effect does temperature have on the properties of metal?
 5. When does temperature change the state of metal from a solid to a liquid?
 6. Where are magnets used in connection with extreme temperatures?

Magnet:

1. Why are magnets used?
 2. How do magnets work?
 3. Who in my community would be a good resource?
 4. What metals are used to make magnets?
 5. When does temperature have an effect on magnets?
 6. Where are magnets used?

Hypothesis (page 7)

- I. 1. Fertilizer will increase (decrease) the growth rate of a plant.
 2. Increased (Decreased) air pressure will increase (decrease) the height a basketball will bounce.

3. Increased age will increase (decrease) the heart rate of humans.

- II. 1. Independent: water temperature; Dependent: heart rate of fish
 2. Independent: design of the plane; Dependent: distance traveled
 3. Independent: amount of light; Dependent: movement of meal worms

Procedure (page 8)

- I. 1. c 2. d 3. b 4. a
 II. 1. procedure 2. one
 3. dependent variable 4. data 5. data table

Data (page 9)

1. 53 cm 2. 67 cm
 3. 125 cm 4. 173 cm

Analysis (page 11)

Graph #1: The temperature increased from 12:00 noon to 4:00 P.M. The temperature stayed the same between 4:00 P.M. and 6:00 P.M. and between 8:00 P.M. and 10:00 P.M. The temperature decreased from 6:00 P.M. to 8:00 P.M.

Graph #2: Eight different species ate the corn and millet seeds. Five species ate the thistle seeds. Twelve species ate the sunflower seeds.

Graph #3: The most abundant gas in the atmosphere is nitrogen (78%). The next is oxygen (21%). The category of other gases is the least abundant (1%).

Conclusion (page 12)

- I. The results proved that the higher the temperature of the water, the higher the respiration rate of the guppy. The hypothesis was correct.
 II. The results proved that the greater the air pressure, the higher a basketball will bounce. The hypothesis was correct.

Section: Scientific Equipment and Measurement

Scientific Measurement (page 14)

- I. 1. 48,000 mL 2. 88,000 g 3. 0.108 kg
 4. 120 cm 5. 1,400 cm 6. 6,250 mL
 7. 0.006 L 8. 950 cm 9. 300 cm
 10. 1.5 L
- II. 1. L 2. mL
- III. 1. mm 2. cm 3. m
- IV. 1. kg 2. g