

Chapter 1 Quiz

Part A: Matching

Match the term with the correct definition.

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| <u>E</u> 1. law | (a) evidence gathered by the senses |
| <u>D</u> 2. theory | (b) a tentative explanation that can be tested |
| <u>B</u> 3. hypothesis | (c) any condition that can change in a scientific investigation |
| <u>F</u> 4. inference | (d) a widely accepted explanation of all available evidence |
| <u>A</u> 5. observation | (e) a general statement based on many observations that describes what happens |
| <u>C</u> 6. variable | (f) a tentative conclusion based on logic and reasoning |

Part B: True/False

Indicate whether each of the following statements is true or false. Rewrite the false statements to make them true.

- F 7. The investigator controls the dependent variable in an experiment.
- F 8. In a negative correlation, variable B increases as variable A increases.
- F 9. A scientific investigation in which the investigator purposefully controls the variables is called an observational study. Controlled Experiment
- 10. ~~Indigenous Knowledge is a type of empirical knowledge.~~
- F 11. Invention is to science as discovery is to technology.
- T 12. It is unethical to keep scientific information secret.

Part C: Multiple Choice

Circle the letter beside the statement that best answers the question.

13. Which of the following questions would be considered an appropriate scientific question?
- (a) Is there any life on Mars?
 - (b) Do insects experience pain?
 - (c) How does salt concentration affect the buoyancy of water?
 - (d) Where did the universe begin?
14. Which of the following statements is a direct visual observation?
- (a) The candle is heavy.
 - (b) The flame is hot.
 - (c) The candle is lit.
 - (d) The wax is soft.

Chapter 1 Quiz (continued)

15. Two golf ball manufacturers each claim that its ball goes farther. Which would provide the best scientific evidence to help determine which ball goes farther?
- (a) The best golfer in the world hits each ball 100 times, and you measure how far each goes.
 - ☒ (b) A machine hits each ball with exactly the same force, and you measure how far each goes.
 - (c) You read results of tests conducted on the two balls by each company.
 - (d) You hit each ball 100 times, and you find the average distance of each ball.
16. Janine has been experimenting with water rockets. She can vary the amount of water in the rocket and the launching angle of the rocket. She can also change the weight of the rocket by adding sand to the nose cone. She wonders which factors will affect the height to which the rocket will rise. Which of the following is a hypothesis that she could test?
- ☒ (a) Rockets using warm water will rise higher than rockets with cold water.
 - ☒ (b) Rockets using five tail fins will rise higher than rockets with three tail fins.
 - ☒ (c) Rockets with a pointed nose cone will rise higher than rockets with a rounded nose cone.
 - ☒ (d) Rockets using more water will rise higher than rockets with less water.
17. Examine the data in Table 1. Which conclusion can you draw from this data?

TABLE 1

Amount of salt added to 100 mL of water (g)	Time required for water to freeze (min)
0	48
1.25	68
2.50	75
3.70	88
5.00	Didn't freeze during the time of the experiment

- ☒ (a) Doubling the salt doubled the time needed for the samples to freeze.
- ☒ (b) Increasing the amount of salt lowered the time needed for the samples to freeze.
- ☒ (c) Increasing the amount of salt increased the time needed for the samples to freeze.
- (d) A conclusion cannot be made because the last sample did not freeze.

Chapter 1 Quiz (continued)

18. Suppose you measure the swing rates of two pendulums. Pendulum A has a mass of 5 g and pendulum B has a mass of 10 g. Each pendulum has a length of 50 cm. How will the swing rates compare?

- (a) The swing rate of pendulum A will be twice as long as the swing rate of pendulum B.
- (b) The swing rate of pendulum B will be twice as long as the swing rate of pendulum A. *omit*
- (c) The swing rate of pendulum B will be three times as long as the swing rate of pendulum A.
- (d) The swing rates will be the same.

Part D: Short Answer

Use complete sentences to answer the question.

19. You have decided to test the effectiveness of five different plant fertilizers. Briefly describe how you will carry out this test. In your description, you must include the following:

- ① – a scientific question
- ② – a hypothesis
- ③ – a prediction
- ④ – the dependent, independent, and controlled variables
- ⑤ – a control
- ⑥ – how you will measure the results
- ⑦ – a detailed procedure
- ⑧ – a data table

① Q: which fertilizer causes plants to grow the most?

② hypothesis: – fertilizers with ~~greater~~ ^{different} mineral content will ~~work best~~ ^{affect} plant growth.

③ IF mineral content is higher then plant growth will increase

④ Dep. = plant height indep. = type of fertilizer (Amount of mineral content)
Control variables = light, WATER, mass of fertilizer, plant type

⑤ Control = A plant with NO fertilizer

⑥ measure results with ruler

⑦

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