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Scientific Method Review Examples

Multiple Choice
Identify the choice that best completes the statement or answers the question.

___ 1. **Abigail has the following objects:**

*Two Ice Cubes
*An Empty Glass
* A Glass of water at room temperature

Which question could Abigail answer most easily by conducting a scientific investigation?

a. What is the temperature of the water?
b. Does ice melt faster in air or in water?
c. How long does it take for water to freeze?
d. Does the mass of an ice cube change when it melts?

___ 2. **In which activity would using the Internet be most helpful?**

a. analyzing the results of an experiment
b. predicting the outcome of an experiment
c. measuring the variables used in an experiment
d. performing research before conducting an experiment

___ 3. **Which statement is an explanation rather than a description?**

a. The elephant weighs over 5 tons
b. The rock has many crystals in it
c. The bird flaps its wings while it is flying
d. The pond became smaller from evaporation

Explains

___ 4. **Use this table to answer the question:**

Insect Species on Different Trees

Tree	Number of Insects Species A	Number of Insects Species B
1	542	3
2	7	1098
3	0	763
4	876	5

Dr. D. examined the number of two different species of insects on four different kinds of trees in the same forest. The results of her examination are shown in the data table. What inference can the Dr. D. make about the insects?

a. Species B insects are the main food source for species A insects
b. Species A and species B insects are very closely related
c. There are more of species B insects than species A insects in the entire forest
d. Species A insects prefer different kinds of trees from species B insects

hook onto → 22°C = 72°F

___ 5. **Use the data table to answer the question.**

Temperature and Rainfall

Town	Average Temperatures (degree Celsius)	Average Annual rainfall (centimeters)
Medina	18 ~ 60°F	33
Jackson	25 ~ 85°F	72

Ethan compared the average temperature and annual rainfall for two towns in the same state. The results are shown in the data table. From these results, Matt concluded that hotter weather cause more rain to fall. What is another reasonable interpretation of this data?

a. Medina is a very cold place to live
b. Colder weather causes more rain to fall
c. Rain causes the temperature to increase
d. Jackson is the rainiest town in the entire state

only compared 2 cities

___ 6. **The table shows the steps of the scientific method in the WRONG Order.**

	Scientific Method
Step	Description
A	Form a Hypothesis
B	Analyze Data
C	Perform an experiment
D	Communicate the Results
E	Make an observation to Ask a Question

Which Sequence shows the steps of the scientific method in order?

a. ACEDB
b. EACBD
c. AEDCB
d. ECABD

___ 7. **Which step of the scientific method does this sentence best fit?**

Dawson predicted that seeds would start to grow faster if an electric current traveled through the soil which they were planted.

a. Recognize a problem
b. Form a Hypothesis
c. Test the hypothesis with an experiment
d. Draw a conclusion

___ 8. **Dr. Doss makes an important discovery while conducting an experiment. What should the Dr. Doss do next?**

a. Tell other scientists about the experiment and the discovery
b. Tell other scientists about the discovery but not about the experiments
c. Tell other scientists about the experiement but not about the discovery
d. Write about the discovery in his or her journal but not tell any other scientists about it

___ 9. **Dr. Seavers in 7th grade performed an experiment that had an unexpected result. Before telling anyone about the result, the scientist performed the experiment again. What is the MOST LIKELY reason that Dr. Seavers performed the experiment more than once?**

a. The scientist wanted to make sure no one else could do the experiment
b. The scientist had extra chemicals and wanted to use them all
c. The scientist wanted to be sure the results were accurate Correct / True
d. The scientist want to get different results

___ 10. **A group of Dr. D.'s students did an experiment about what type of light makes plants grow the most. They collected 9 plants and divided them into three groups. Each plant started at a height of 15 cm.**

Group A: 3 plants in regular (white) light
Group B: 3 plants in red light
Group C: 3 plants in violet light

The group's hypothesis was: ***If different groups of plants are placed in white, red, or violet light, then the plants in the white light will grow taller than the others, become white light is closer to sunlight than red or violet light.***

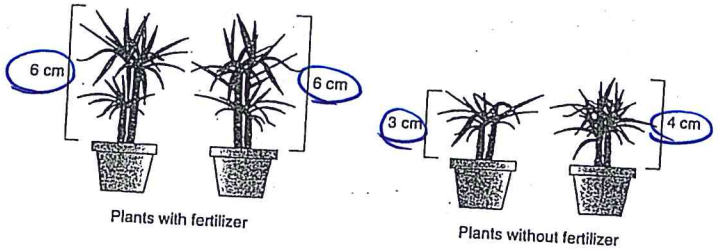
This is the data collected in the experiment:

	White light	Red Light	Violet Light
Average plant height of 3 plants in group	17.5 cm	20 cm	19 cm

Which conclusion will best fit the outcome of this experiment:

a. Plants grow best in White Light
b. Plants grow best in Red Light
c. Plants grow best in Violet Light
d. Plants grow best in Any Light

___ 11. **Shaynia wanted to test the effects of a new fertilizer on the growth of plants. In her experiment, she grew four of the same plant. Two of them were given the fertilizer every week for a month. The other two were not given the fertilizer. Every other variable was the same for each plant. After a month, she observed the following results.**



Plants with fertilizer

Plants without fertilizer

What explanation can you give based on the results of Shaynia's experiment?

a. The fertilzer helps plants grow more leaves
b. The fertilzer shrinks plants
c. There is no effect of the fertilizer on the plants
d. The plants grow taller with the fertilizer

___ 12. **Ryan and Andi want to do an experiment to determine how the temperture of water affects how much salt can be dissolved in it. In what order should they perform the following steps?** Experiment

1. Gradually put salt into the water of each beaker, a half-teaspoon at a time
2. Pour equal amounts of water into two identical beakers
3. With Dr. D.'s help, bring the water in one of the beakers to a boiling point
4. Record how many half-teaspoons of salt are completely dissolved in each beaker

a. 1 2 3 4
b. 4 3 2 1
c. 2 3 4 1
d. 2 1 3 4

___ 13. **Kate wants to learn more about the feeding habits of humminbirds. What steps should Kate take in order to best study the patterns of hummingbirds?**

a. Record data, form a hypothesis, make a conclusion, conduct experiment
b. form a hypothesis, record data, conduct experiment, make a conclusion
c. conduct experiment, form a hypothesis, make a conclusion, record data
d. form a hypothesis, conduct experiment, record data, make a conclusion

___ 14. **How could you test the hypothesis that marigolds need more water than cacti?**

a. Observe the differences between plants grown in a warm place and in a cool place
b. Stop watering a cactus plant and observe whether it dies
c. Give the same amount of water to each type of plant and observe their growth
d. Plant marigolds in the desert and observe whether the seed sprout to form plants

___ 15. **Which is not a step in the scientific method?**

a. finding an equivalency
b. forming a hypothesis
c. analyzing results
d. making an observation

Short Answer

16. **Ms. Kizner followed a series of steps to determine if the temperature affects the rate of metamorphosis in frogs. In what order did she perform the following steps**

2 a. Equal numbers of tadpoles will be placed in each of 3 containers under lamps with 20, 40, 60 watt light bulbs Experiment

4 b. Conclude which temperature produces the highes rate of metamorphosis Conclusion

1 c. Predict whether or not warmth will affect the rate of metamporphosis Hypothesis

3 d. Record the number of days it takes for tadpoles to become frogs Data

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17.

A. Recognize the problem
B. Form a Hypothesis
C. Test your Hypothesis
D. Analyze your data
E. Draw conclusions

Scientist go through several steps as they solve problems. Read the following stages in problem solving. Then write the letter of each stage that is described on the line provided.

D 1. After taking measurements for 2 hours, Nate tried to make sense of the numbers. Analyze

C 2. Ashtynn added fertilizer to half of the plants and plain water to the other half of the plants. Experiment

B 3..Christopher thought the plants would grow with the addition of nutrients. Hyp.

A 4. Tyler wondered why he could never grow flowers in the family's garden. (?) problem

E 5. The class looked at the data and realized that the plants needed a lot of fertilizer. Conclusion.