Scientific Method Worksheet

Name: _____ Date: _____ Class: _____

Part A. Put the steps in order

Number the steps 1 to 7.

- ☐ Analyze the data
- ☐ Communicate results
- ☐ Test with an experiment
- ☐ Construct a hypothesis
- ☐ Do background research
- ☐ Ask a question
- ☐ Draw a conclusion

Part B. Match each term to its definition

Write the letter in the box.

☐ Hypothesis	**A.** The factor you measure to see if it responds (time for the sugar to dissolve).
☐ Independent variable	**B.** The group that gets no change, used as the baseline for comparison.
☐ Dependent variable	**C.** A testable prediction that answers the question and could be proven wrong by an experiment.
☐ Controlled variables	**D.** The recorded results: numbers (quantitative) or descriptions (qualitative).
☐ Control group	**E.** A statement of whether the data support the hypothesis, based only on the results.
☐ Trial	**F.** The one factor you change on purpose (water temperature).
☐ Data	**G.** One run of the experiment. Repeating trials shows whether a result is consistent.
☐ Conclusion	**H.** Everything you keep the same so it cannot affect the result (amount of sugar, cup, stirring).

Part C. True or false

Write T or F in the box.

- ☐ 1. A hypothesis must be something you can test.
- ☐ 2. If the data do not support your hypothesis, the experiment failed.
- ☐ 3. Changing several variables at once gives clearer results.
- ☐ 4. Repeating trials makes results more reliable.
- ☐ 5. A scientific theory is the same thing as a guess.

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Scientific Method Worksheet

Part D. Read the experiment and answer

Jada wants to know whether plants grow taller with more light. She puts three identical bean plants in the same soil and pot size, waters each with 50 mL every two days, and places them under a lamp for 4, 8 and 12 hours a day. She measures each plant's height every week for four weeks.

1. What question is Jada testing?

2. Write her hypothesis as "If ... then ... because ..."

3. Independent variable

4. Dependent variable

5. Two controlled variables

6. How could she make her results more reliable?

Part E. Write your own hypothesis

Use the "If ... then ... because ..." form.

1. Does the temperature of a tennis ball change how high it bounces?

2. Does salt change how fast ice melts?

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Scientific Method Worksheet (Answer Key)

Name: Date: Class:

Part A. Put the steps in order

Number the steps 1 to 7.

- [5] Analyze the data
- [7] Communicate results
- [4] Test with an experiment
- [3] Construct a hypothesis
- [2] Do background research
- [1] Ask a question
- [6] Draw a conclusion

Part B. Match each term to its definition

Write the letter in the box.

[C] Hypothesis	**A.** The factor you measure to see if it responds (time for the sugar to dissolve).
[F] Independent variable	**B.** The group that gets no change, used as the baseline for comparison.
[A] Dependent variable	**C.** A testable prediction that answers the question and could be proven wrong by an experiment.
[H] Controlled variables	**D.** The recorded results: numbers (quantitative) or descriptions (qualitative).
[B] Control group	**E.** A statement of whether the data support the hypothesis, based only on the results.
[G] Trial	**F.** The one factor you change on purpose (water temperature).
[D] Data	**G.** One run of the experiment. Repeating trials shows whether a result is consistent.
[E] Conclusion	**H.** Everything you keep the same so it cannot affect the result (amount of sugar, cup, stirring).

Part C. True or false

Write T or F in the box.

- [T] 1. A hypothesis must be something you can test.
- [F] 2. If the data do not support your hypothesis, the experiment failed.
- [F] 3. Changing several variables at once gives clearer results.
- [T] 4. Repeating trials makes results more reliable.
- [F] 5. A scientific theory is the same thing as a guess.

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Scientific Method Worksheet (Answer Key)

Part D. Read the experiment and answer

Jada wants to know whether plants grow taller with more light. She puts three identical bean plants in the same soil and pot size, waters each with 50 mL every two days, and places them under a lamp for 4, 8 and 12 hours a day. She measures each plant's height every week for four weeks.

1. What question is Jada testing?

Do bean plants grow taller with more hours of light per day?

2. Write her hypothesis as "If ... then ... because ..."

If a bean plant gets more hours of light, then it will grow taller, because it can make more food by photosynthesis.

3. Independent variable

Hours of light per day (4, 8, 12).

4. Dependent variable

Plant height.

5. Two controlled variables

Type of plant, soil, pot size, amount of water, watering schedule (any two).

6. How could she make her results more reliable?

Use several plants per light level (repeat trials) and average the heights.

Part E. Write your own hypothesis

Use the "If ... then ... because ..." form.

1. Does the temperature of a tennis ball change how high it bounces?

If a tennis ball is warmer, then it will bounce higher, because the air inside expands and the rubber is more elastic.

2. Does salt change how fast ice melts?

If salt is sprinkled on ice, then the ice will melt faster, because salt lowers the freezing point of water.

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