

Student Name: _____

Date: _____

Section 1: Multiple Choice (25 pts)

1. Variable deliberately changed in experiment:

- A) Dependent
- B) Independent
- C) Constant
- D) Responding

2. Peer review ensures:

- A) Results always correct
- B) Research evaluated by experts
- C) Experiment is repeated
- D) Hypothesis is tested

3. Scientific theory is best described as:

- A) A guess
- B) A proven fact
- C) Well-tested explanation for broad observations
- D) Law that cannot change

4. Percent error formula:

- A) $(\text{Exp} - \text{Acc}) / \text{Exp} \times 100$
- B) $(\text{Acc} - \text{Exp}) / \text{Acc} \times 100$
- C) $(\text{Exp} - \text{Acc}) / \text{Acc} \times 100$
- D) $\text{Exp} / \text{Acc} \times 100$

5. Standard deviation measures:

- A) The average
- B) Spread of data
- C) Sample size
- D) Correlation

6. Null hypothesis states:

- A) A relationship exists
- B) Experiment will succeed
- C) No relationship exists between variables
- D) Hypothesis was correct

7. Significant figures in 0.00340:

- A) 2
- B) 3
- C) 5
- D) 6

8. Falsifiability means hypothesis:

- A) Is false
- B) Can be proven wrong
- C) Has been repeated
- D) Is a theory

9. Random error reduced by:

- A) Same equipment
- B) Increasing sample size and trials
- C) Changing independent variable
- D) Removing outliers

10. Scatter plot best shows:

- A) Categorical comparisons
- B) Parts of whole
- C) Relationship between two continuous variables
- D) Changes over time only

Section 2: Matching (10 pts)

1. Accuracy	A. How consistently repeatable
2. Precision	B. How close to the true value
3. Systematic error	C. Not exposed to the variable
4. Control group	D. Always off in same direction
5. Replication	E. Independent scientists get same results

Section 3: Show Your Work (10 pts)

1. Design a complete experiment: Does light color affect plant photosynthesis rate? Include hypothesis, IV, DV, 2 constants, control group, and measurement method.

2. Student measures copper density as 8.45 g/mL; accepted is 8.96. Calculate percent error.

3. Explain the difference between correlation and causation. Give a real-world example of each.

Multiple Choice Answers:

1. B
2. B
3. C
4. C
5. B
6. C
7. B
8. B
9. B
10. C