The Methods Of Science (p. 6 – 13)

I. What Is Science?

1. Define the term science.

Science – process that uses observation + investigation to gain knowledge about events in nature

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2. List the three main fields of science & give an example of concepts studied by that science.

Field Of Science	Concepts Studied
1. Life Science	Zoology, Genetics, Evolution, Anatomy
2. Earth Science	Geology, Astronomy, Meteorology, Oceanography
3. Physical Science	Motion, Forces, Electricity, Magnetism, Waves

3. To be valid, scientific discoveries new to be test over and over again throughout time.

Circle One : (True) False

Ex - Flat Earth Society
- Lamarckism
- Geocentric Model of S.S.

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4. List three types of scientific investigation.

1. Observation → (Ducks at Vanderveer Park)
2. Experimentation → (Generic vs. Brand Name Pop)
3. Modeling → (Solar System / Geologic Time Scale)

II. Scientific Methods

1. Define the term scientific method.

Scientific Method – organized set of investigation procedures

2. Identify the steps of the scientific method.

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1. State The Problem
↓
2. Gather Information
↓
3. Form a Hypothesis
↓
4. Test Hypothesis
↓
5. Analyze Data
↓
6. Draw Conclusions

Apply to daily life!

3. **Define the term hypothesis.**

Hypothesis – possible explanation for a problem using what you know and what you observe

4. **Define the term experiment.**

Experiment – tests the effect of one thing on another using controlled conditions (Milgram Experiment)

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5. **Match the following terms with the correct definitions.**

Relate to Stanley Milgram experiment

1. F - Variable	A. The variable you change in an experiment.
2. D - Dependent Variable	B. Standard by which results can be compared.
3. A - Independent Variable	C. Scientist expectations change view of results.
4. E - Constant	D. The variable that changes due to other changes.
5. B - Control	E. Factor that does not change in an experiment.
6. C - Bias	F. Quantity that can have more than a single value.

III. Visualizing With Models

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1. **Define the term model.**

Model – represents an idea, event, or object to help people better understand it (Globes, Atoms, DNA, etc.)

IV. Scientific Theories & Laws

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1. **Define the term scientific theory.**

Scientific Theory – explanation of things or events based on knowledge gained from observations

Give an example of a scientific theory.

Evolution Theory, Big Bang Theory

2. **Define the term scientific law.**

Scientific Law – statement about what happens in nature (No attempt to explain it)

Give an example of a scientific law.

Law Of Gravity, Newton's Laws of Motion

V. Using Science – Technology

p. 13

1. **Define the term technology.**

Technology - application of science to help people

Can technology be bad?

- Atomic Bomb, Planes, Cell Phones?

Students give examples of technology.