KEY - The Nature of Science – Experimental Design

	Independent Variable	Dependent Variable
1)	**breakfast**	**energy**
2)	**bottled water**	**smoothness/shininess of fur**
3)	**rubbing alcohol**	**germs**
4)	**chocolate**	**pimples**
5)	**hand weights**	**size of muscles**

(Choose two questions from #1-5 and **set up a detailed experiment** for each to test each hypothesis. Answers vary).

If a question asks for *lab design*, include the following:

a. Your hypothesis and/or predictions/expected results
b. The independent variable - what treatments will you apply
c. The dependent variable - what will you measure
d. The variables to be controlled (very important)
e. The organism/materials/apparatus to be used
f. Describe what you will actually do
g. Describe how you will actually take and record data
h. Describe how the data will be graphed and analyzed
i. State how you will draw a conclusion (compare results to hypothesis and predictions)

Note: Your experimental design needs to be at least theoretically possible and it is very important that your conclusions/predictions be consistent with the principles involved and with the way you set up the experiment.

6-10: These can be general or talk about increases/decreases.

6) (answers vary) If the amount of salt in the soil changes, plant growth may be affected.
7) (answers vary) If the color of light changes, plant growth may be affected.
8) (answers vary) If the temperature changes, bacterial growth may be affected.
9) (answers vary) If ultra-violet light is present, skin cancer may occur.
10) (answers vary) If the temperature changes, the color of leaves may change.

11-15: Five original if-then hypotheses…

Example: If I do yoga every morning, then I will become more flexible.

11) (answers vary)
12) (answers vary)
13) (answers vary)
14) (answers vary)
15) (answers vary)