

Name:

Period:

Key

Read each statement below then write the hypothesis, variables, control groups and experimental groups.

1. Plants grow best in white light.

Hypothesis: If plants grow in white light, then they will grow taller.

Independent Variable: type of light Dependent Variable: plant growth

Control Group: plants w/ no light Experimental Group: plants in light

Controlled Variables: type of plant, soil, amount of water

2. The deer population decreases in the winter due to the lack of food.

Hypothesis: If there is a lack of food, then the deer population will decrease.

Independent Variable: amount of food Dependent Variable: deer population

Control Group: normal food amount Experimental Group: lack of food

Controlled Variables: environment, season

\* source of error - hunting season \*

3. Students who study perform better in school.

Hypothesis: If a student studies, then they will get better grades.

Independent Variable: studying Dependent Variable: grades

Control Group: not studying Experimental Group: study group

Controlled Variables: same school, same subject, same tests.

4. Vaping increases the risk of lung cancer.

Hypothesis: If you vape, then your chances of lung cancer are higher.

Independent Variable: vaping Dependent Variable: cancer rate

Control Group: non-smokers/vapers Experimental Group: smokers/vapers

Controlled Variables: time period, type of vape device

5. Eating breakfast increases performance in school.

Hypothesis: If you eat breakfast, then you will get better grades.

Independent Variable: eating breakfast Dependent Variable: grades

Control Group: no breakfast Experimental Group: eats breakfast

Controlled Variables: same grade, same breakfast, same tests.

6. Hummingbirds are more attracted to feeders that are red.

Hypothesis: If a bird feeder is red, then it will attract hummingbirds.

Independent Variable: color of feeder Dependent Variable: # of hummingbirds

Control Group: non red feeder Experimental Group: red feeder

Controlled Variables: same food, same time period, same placement of feeder.

7. Sharks are more likely to attack swimmers in bright swimsuits.

Hypothesis: If a swimmer wears bright swimsuits, then they are more likely to be attacked by a shark.

Independent Variable: swimsuit color Dependent Variable: # of attacks

Control Group: dark swimsuit Experimental Group: bright swimsuit

Controlled Variables: same water location



8. A student conducted an experiment in which he tested the effect of different ramp heights on the speed of toy cars. He used a different type of car to test each ramp. Using 1-2 sentences, explain why they can't draw any useful conclusions from their experiment.

The experiment has 2 independent variables; the cars and ramps. We do not know if the car or ramp is causing our results.

\* to fix this we could use the same car on each ramp \*

9. In a classmate's lab, **two independent variables** were listed. Can the student make a valid conclusion from the results of the experiment? Why or why not?

No, the student cannot make a valid conclusion. If you have 2 independent variables it means they change 2 things in their experiment at the same time. We cannot determine which independent variable is causing our results.