Knowledge Probe, Variables, and Prediction Notes

Success Criteria
1. Identify and explain the steps of the ____________________________ (knowledge probe and prediction).

2. Write a __________________________ that answers the investigation question and provide reasoning for the prediction using scientific knowledge.

3. Identify the variable being changed (__________________________) and the variable being measured (__________________________) when given a scientifically testable question.

Knowledge Probe
A ____________________________ is the part of the investigation clarifies what the investigator and other scientists already know about the topic.

In class we will often watch __________ and read ______________ to gather information for this section.

Variables
A ____________________________ is any item, factor, or condition that can be controlled or changed.

*There are three types of variables in an investigation:

- ____________________________ - These are the variables that are ____________________________ and not changed.

- ____________________________ - This is the variable that is ____________________________ or altered by the scientist.

  Trick: Independent - I am doing the changing.

- ____________________________ - This is the variable that is ____________________________ by the scientist. The variable that is being affected by the experiment.

  Trick: Dependent - This depends on my observations.
Variable Example #1

*How does the amount of leaves on a tree affect where birds will build a nest?*

**Independent Variable:** The amount of leaves on a tree

**Dependent Variable:** The number of birds building nests

**Controls:**
- The location of the trees/temperature of environment
- The amount of birds in the area
- Season
- The bird species
- Type of tree
- The number of days you are collecting data

Variable Example #2

*How does calcium affect bone strength in humans?*

**Independent Variable:** ______________________________

**Dependent Variable:** ______________________________

**Controls:** ______________________________

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**Prediction**

- What do I think might happen?

A ______________________ is the part of the investigation that is a description of the outcomes that the researcher __________________ to happen.

It is written in the form ______________________ and also includes reasoning based on scientific principles.

The basic form is:
If...[I do this]..., then...[this outcome would happen].
This is because...[why do you think this?].
Prediction Examples
If...[I do this]..., then...[this outcome would happen].
This is because...[why do you think this?].

1. __ chocolate is given to teachers, ______ the amount of homework will decrease.
   This is ____________ teachers love chocolate and are happier once it enters their system.

2. __ plants are watered, ______ the height of the plant will increase.
   This is ______________ all living things need water to survive and thrive.

Practice
Complete the handout Identifying Variables and Writing Predictions with a partner.