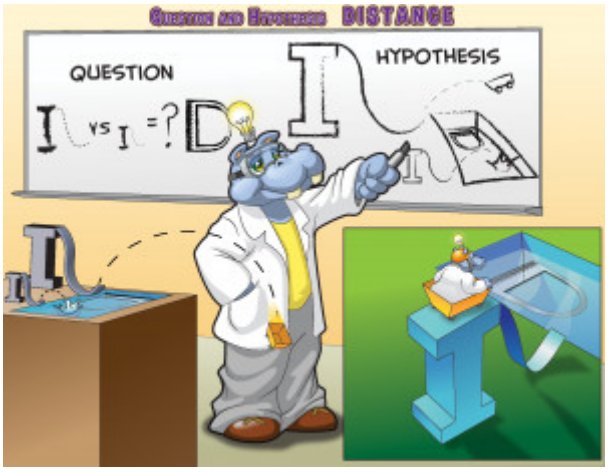
Question and Hypothesis - Distance

When designing an experiment, it's important to create a question and a hypothesis. The question is WHETHER the independent variable affects the dependent variable. The hypothesis is HOW the independent variable affects the dependent variable. It frequently uses words like "increase" or decrease", because we want to know the specific way in which the IV affects the DV. Finally, it's important for the hypothesis to be testable. If scientists create a hypothesis that isn't testable, they can't design an experiment around it.

An example is a scenario in which a scientist has a steep ramp attached to a jump platform. The height of the ramp is the independent variable, and the distance jumped from the platform is the dependent variable. The question is WHETHER the height of the ramp AFFECTS the distance jumped. The hypothesis is HOW height of the ramp AFFECTS the distance jumped. The hypothesis is that a LARGER ramp INCREASES the distance jumped. It can be tested by building a large and small ramp and measuring the distance jumped by a cart.



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Question: Does the independent variable effect the dependent variable?

Questioning whether height of I-ramp affects Distance Jumped over D-Shaped Ruler

The question is whether the independent variable affects the dependent variable. We don't want to get into any predictions about how it works with the question. We just want to know IF the independent variable affects the dependent variable.

Hypothesis: Proposed explanation for how the independent affects the dependent variable

Hypothesis-Hippo Describing larger I-ramp as increasing Distance jumped over D-Shaped Ruler

The hypothesis states HOW the independent variable affects the dependent variable. Does the independent variable increase the dependent variable? Does it decrease the dependent variable? The words "increase" and "decrease" are used frequently in hypotheses.

The hypothesis must be testable

Hypothesis-Hippo Testing Hypothesis

The hypothesis must be testable. It should be possible to design an experiment where you can alter levels of the independent variable and see how it affects the dependent variable.