

Identifying Variables & Designing Investigations

3 Kinds of Variables

_____ – something that is changed by the

What is tested

What is manipulated

_____ – something that might be affected by the
change in the independent variable

What is _____

What is _____

The data collected during the investigation

_____ – a variable that is not changed

Also called constants

Allow for a “ _____ ”

For Example:

Students of different ages were given the same jigsaw puzzle to put together.
They were timed to see how long it took to finish the puzzle.

Identify the variables in this investigation.

What was the independent variable?

What was the dependent variable?

What was a controlled variable?

It would not have been a fair test if some had an easy 30 piece puzzle and some had a harder 500 piece puzzle.

Another example:

An investigation was done with an electromagnetic system made from a battery and wire wrapped around a nail. Different sizes of nails were used. The number of paper clips the electromagnet could pick up was measured.

What are the variables in this investigation?

Independent variable:

Dependent variable:

Controlled variables:

- None of these items were changed

One more:

The higher the temperature of water, the faster an egg will boil.

Independent variable

Dependent variable

Controlled variable

Last one:

The temperature of water was measured at different depths of a pond.

Independent variable

Dependent variable

Controlled variable

Designing Investigations

Control Groups:

In order to conduct a proper experiment, one needs a comparison group that doesn't receive treatment. This is called a '_____ ' or just '_____ '.

Example:

You want to test which fertilizer is the best (makes plants grow the tallest).

You have 4 groups:

Group 1 – is fertilizer a

Group 2 – is fertilizer b

Group 3 – is fertilizer c

Group 4 – is NO FERTILIZER – control group!

The greater the amount of soap in a soap and water mixture, the bigger a soap bubble can be blown.

Design an investigation to test this hypothesis.

Identify the variables

What exactly will be changed? How will it be changed?

What exactly will be measured? How will it be measured?

The farther a ball drops, the higher it will bounce.

Design an investigation to test this hypothesis.

Identify the variables

What exactly will be changed? How will it be changed?

What exactly will be measured? How will it be measured?