

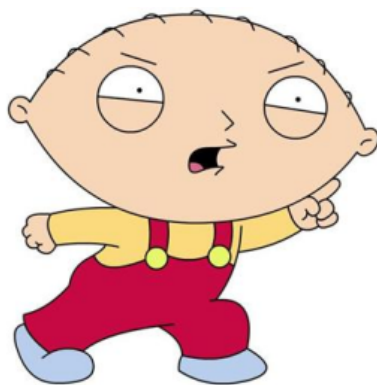
Ologies...

- Biology - study of life
- ✓ Taxonomy - study of classification
- ✓ Botany - " " plants
- ✓ Zoology - " " animals
- ✓ Microbiology - " " micro-organisms
- ✓ Virology - " " viruses
- ✓ Epidemiology - " " epidemic diseases
- ✓ Parasitology - " " parasites
- ✓ Ornithology - " " birds
- ✓ Entomology - " " insects
- ✓ Ichthyology - " " fish

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- ✓ Genetics - " " genes/ hereditary chromosomes
- ✓ Mycology - " " fungi
- ✓ Morphology - " " physical structures
- ✓ Physiology - " " function of living systems
- ✓ Pathology - " " diseases
- ✓ Ecology - " " ecosystems
- ✓ Anatomy - " " human body
- ✓ Paleontology - " " fossils
- ✓ Embryology - " " embryos (fetuses)
- ✓ Anthropology - " " human cultures
- ✓ Hematology - " " blood
- ✓ Cytology - " " cells

Scientific Theory

In the sciences, a **scientific theory** (also called an **empirical theory**) comprises a collection of concepts, including abstractions of observable phenomena expressed as quantifiable properties, together with rules (called scientific laws) that express relationships between observations of such concepts. A scientific theory is constructed to conform to available empirical data about such observations, and is put forth as a principle or body of principles for explaining a class of phenomena.



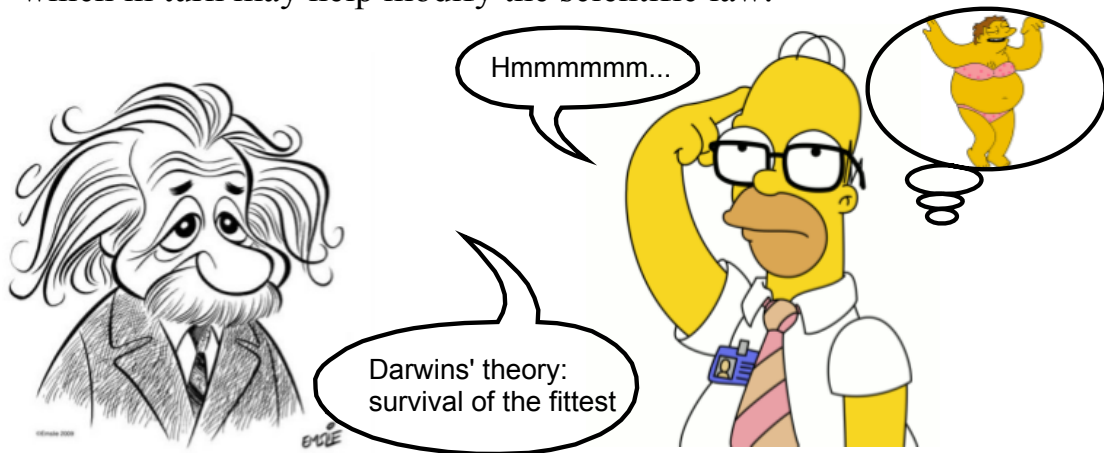
What the duce? Say that again in English or suffer my wrath!

An explanation of concept/idea that is supported by evidence and/or many experiments/trials and is widely accepted by the scientific community.



That's better.

A **theory** is an understanding of the world which has the possibility of being altered as new information modifies the individual's perception of the world. The sequential nature of theory development begins with primary observations that lead to a clearly defined **problem** that can be studied by creating a number of clearly defined **hypotheses**. A logical **procedure** should emerge followed by **structured observations** and then **interpretations**. Finally, by following many confirmed trials of an experiment a hypothesis may result in a change to a current theory which in turn may help modify the scientific law.



In other words:

A **theory** is an understanding of the world which has the possibility of being altered as new information modifies an individual's perception of the world.

1. Primary observation leads to a **problem**
2. A **hypothesis** is created to study the problem

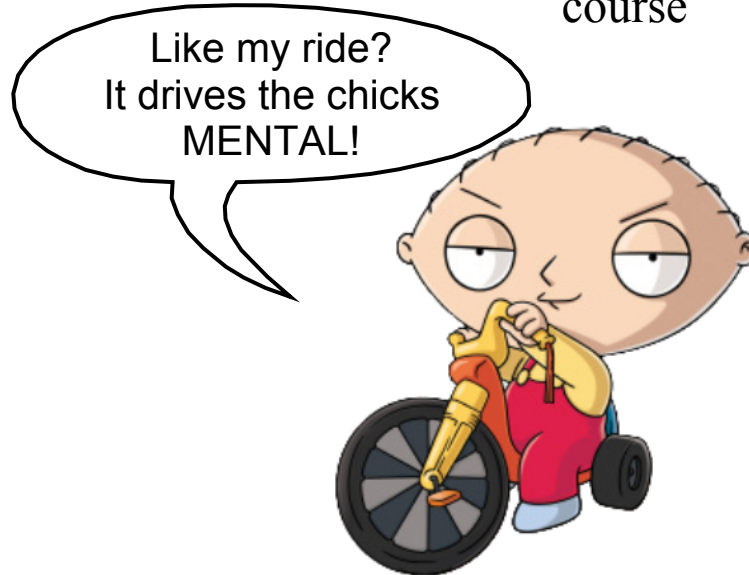
Inductive reasoning - use particular events to formulate general principles. Eg. All blackbirds are black

3. **Procedure**

Deductive reasoning	structured observations and then interpretations.
Experimental variable	changed. Only one at a time.
Control variable	unchanged during a certain trial.

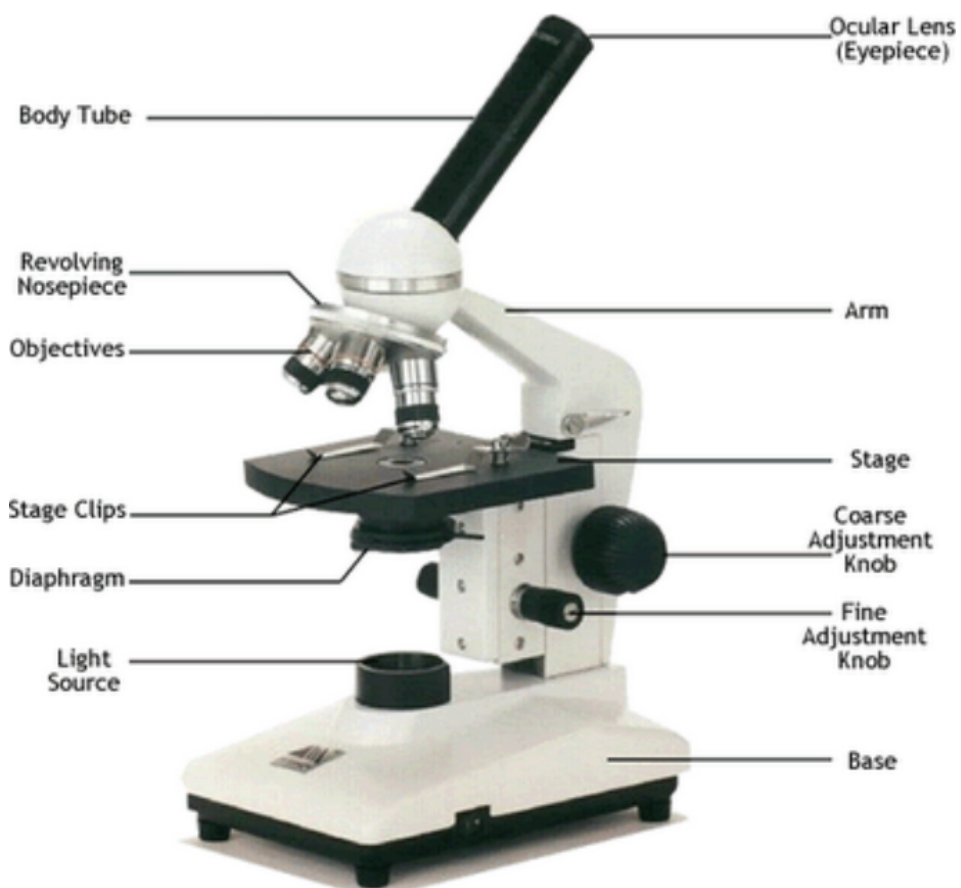
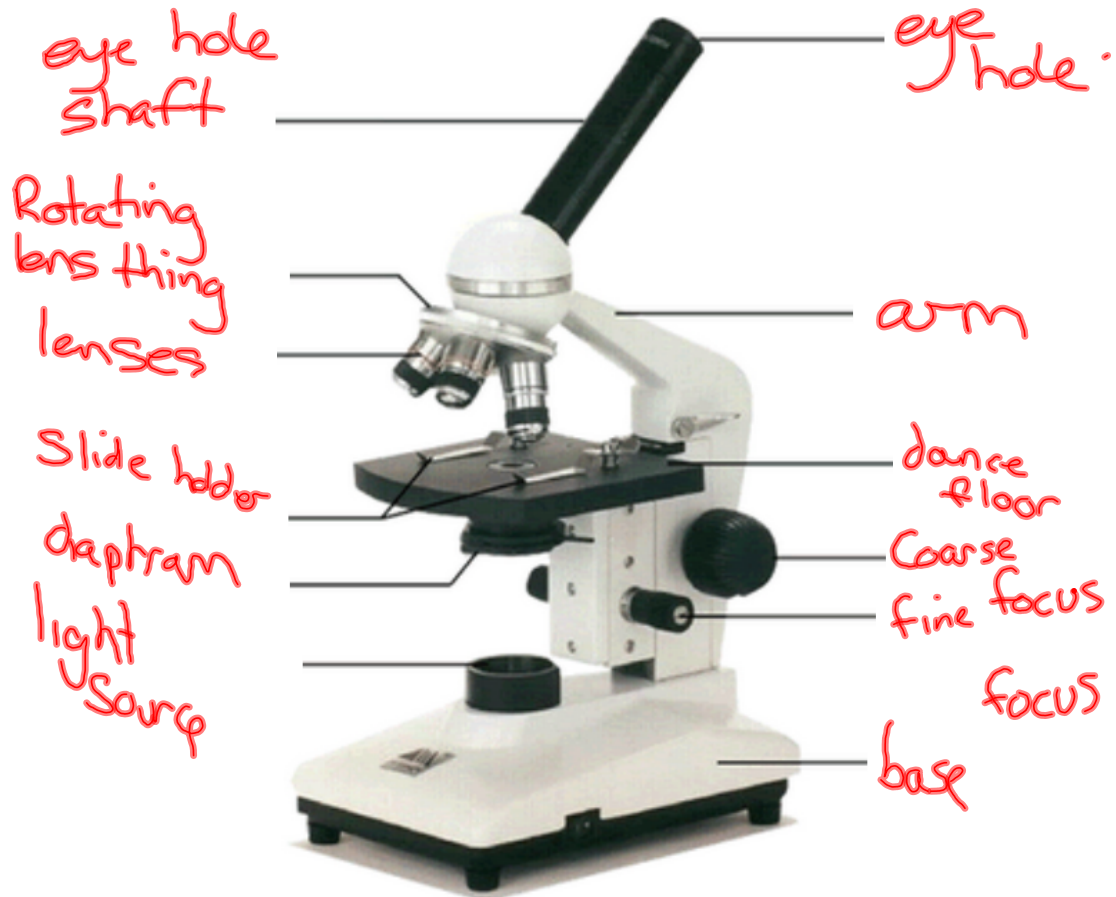
Following many confirmed trials of an experiment, a hypothesis may result in a change to a current theory which in turn may modify scientific law.

Example: To determine gas for best mileage
-change fuels (experimental variable)
-don not change: speed
distance
course

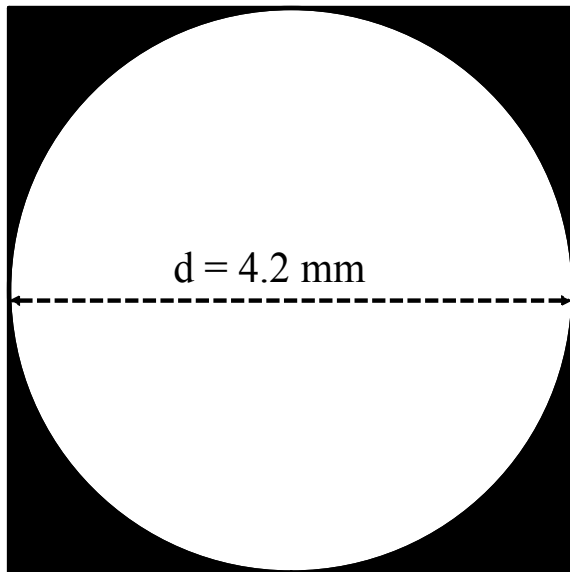


The light Microscope: A Review





How to calculate the field of view



Lets say that the diameter of your field of view at low power (4x) is 4.2 mm

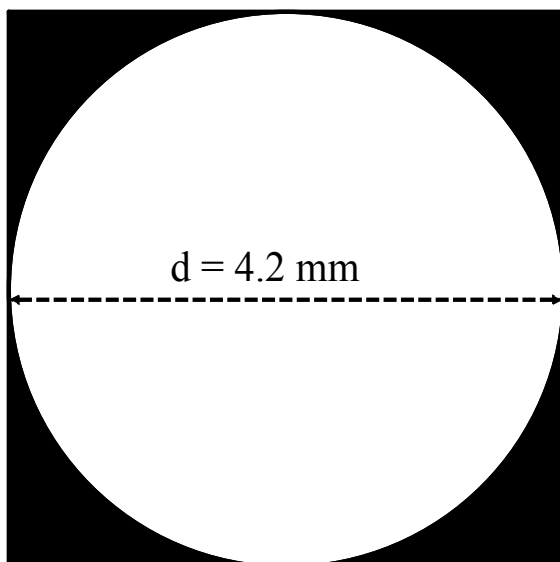
To calculate the field of view for medium power (10x) and high power (40x) do the following:

For medium power:

$$\text{diameter at low power} \times \frac{\text{low lens power}}{\text{medium lens power}}$$

For high power: $\text{diameter at low power} \times \frac{\text{low lens power}}{\text{high lens power}}$

How to calculate the field of view



Lets say that the diameter of your field of view at low power (4x) is 4.2 mm

To calculate the field of view for medium power (10x) and high power (40x) do the following:

For medium power:

$$4.2 \times \frac{4}{10} = 1.68 \text{ mm}$$

For high power: $4.2 \times \frac{4}{40} = 0.42 \text{ mm}$