

PHYSICS
Science

- **Physics** is the _____ of science.
- **Science** tells about the _____ and _____ in nature.
- Science should be _____, but it is a human endeavor and carries the same tendency to be biased. People always want to hold on to the familiar and resist change. So, new ideas in science are sometimes rejected, just because they are new.
- **Scientific** _____ is the primary way to observe nature. The 5 senses are the secondary qualities of nature.
 - _____ 235BC measured the **circumference of the earth** to be 250,000 stadia=25,000 miles=40,000 km (and therefore **diameter** = 8,000 miles)
 - _____ 240BC measured **diameter of moon** to be earth's diameter/3.5 (approximately).
 - **Distance to** _____ can be found using Aristarchus' diameter and comparison of $\frac{1}{2}$ cm of your fingers at arm's length (50 cm). Since this is $1/100$, the actual diameter/actual distance must be 2,000 miles/200,000 miles (it's actually about 240,000 miles)
 - _____ also found a way to measure the **distance of the Sun** by waiting for half moon when Sun must be making right triangle with moon and earth. He used simple trigonometry to find the hypotenuse. The distance is 93,000,000 miles=150,000,000 km.
 - **Diameter of** _____ can be found like diameter of moon ... use finger method. It is actually 864,938 miles=1,391,980 km.
 - Oddly enough ... _____ **diameter/moon's distance** = _____ **diameter/sun's distance**. That's why we can have a perfect solar eclipse!
- _____ comes into science. Amazingly, the more rules we discover, the more we find that nature's rulebook often goes by numbers... often by simple numbers.

- **The Scientific Method**

1. _____: **WHAT YOU DIRECTLY EXPERIENCE**
2. _____: **WHAT YOU THINK**
3. _____: **WHAT WOULD HAPPEN NEXT**
4. _____: **WHAT REALLY DOES HAPPEN**

5. **Redo any and all above until theory meets observation ...**

- **Being Scientific**
 - Call a hypothesis _____ if some observations show it to be true.
 - Call a hypothesis _____ if many observations repeatedly show it to be true.
 - Call a hypothesis _____ **or** _____ if a fact is shown true over and over again.
 - Call a hypothesis _____ if you can show one experiment where it is not true. (Galileo disproved Aristotle's claim that heavier objects fall faster in the famous Tower of Pisa experiment with **one counterexample**.)
- **Science and Religion** pick up in two different places. Science is mostly interested in the _____ of the universe whereas Religion is mostly interested in the _____ of the universe.