NOTES- SCIENCE VS. ENGINEERING

Scientific Method vs. Engineering Design Process	• Both scientists and engineers contribute to the world of _____ knowledge, but in _____ ways.
Scientists….. _____	• use the scientific method to make _____ explanations and predictions about the world • asks a question and develops an _____ to answer that question • study how _____ works

The Scientific Method	• **Purpose**
	  • State the _____; ask a question
	• **Research**
	  • Find out about the _____
	• **Hypothesis**
	  • _____ the outcome of the problem
	• **Experiment**
	  • Plan a procedure to _____ the hypothesis.
	• **Data/Analysis**
	  • _____ the results of the experiment
	• **Conclusion**
	  • _____ the hypothesis to the experiment conclusion

Variables	Variables are anything that can be _____ within an experiment. There are ___ types of variables….
Types of Variables	**Independent (_____) Variable**: The variable that is changed/tested by the scientist; the '____ _____' variable. **Dependent (_____) Variable**: The variable that changes **because** of what the scientist changes **–"_____" (what is measured)** quantitative and qualitative observations and data.
Control Group	The control is the part of the experiment that is _____ changed and is used to _____ the experimental results to.

HYPOTHESIS

"IF_____, THEN_____BECAUSE_____."

[Independent Variable] [Dependent Variable] [Reason]

The variable that is changed by the scientist. **"I CHANGE"**	The variable that changes because of what the scientist changes. **"DATA"**	Explain why you think this will happen.

Types of Descriptions	**Qualitative** descriptions describe an object's _____ without using specific values. There are **NO** numbers _____ in qualitative _____. Ex: _____ **Quantitative** descriptions _____ an object using specific _____. There are _____ involved in quantitative _____. Ex: _____
Engineers…	■ use the engineering _____ process to create _____ to problems. ■ identify a specific _____: Who need(s) what because why? And then, he or she creates a solution that meets the need. ■ _____ new things, such as products, websites, environments, and experiences.
Engineering Design Process	■ **Ask** ■ define the _____, conduct _____ ■ **Imagine** ■ _____ ideas, possible solutions ■ **Plan** ■ draw a model or build a _____, make a materials list ■ **Create** ■ follow a plan to _____ the product, _____ the product, gather information/data ■ **Improve** ■ evaluate results, _____ the design, _____ and re-evaluate