

NAME \_\_\_\_\_

## ENGINEERING DESIGN

**Directions:** Using the attached PowerPoint, complete the notes below.

### Slides 27-31

#### WHAT IS A MODEL?

- A \_\_\_\_\_ is a \_\_\_\_\_ of something in \_\_\_\_\_.
- A \_\_\_\_\_ is often a \_\_\_\_\_ - \_\_\_\_\_ structure. A model does \_\_\_\_\_ have to be a \_\_\_\_\_ structure. It can be an \_\_\_\_\_, \_\_\_\_\_ or \_\_\_\_\_. In fact, equations, diagrams and drawings are often used to model \_\_\_\_\_ ideas – such as \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_ - in a \_\_\_\_\_ way.
- \_\_\_\_\_ are important to engineering \_\_\_\_\_. Models are used to \_\_\_\_\_ and \_\_\_\_\_ to problems.
- A \_\_\_\_\_ is a type of model. It is the first \_\_\_\_\_ of a solution. A \_\_\_\_\_ is \_\_\_\_\_ and \_\_\_\_\_ over and over again before \_\_\_\_\_ the \_\_\_\_\_ solution.

#### DEVELOPING MODELS

- What two characteristics must a model have?
  1. \_\_\_\_\_  
\_\_\_\_\_
  2. \_\_\_\_\_  
\_\_\_\_\_

#### USES FOR MODELS

- A \_\_\_\_\_ is used to \_\_\_\_\_ ideas and solutions that are too \_\_\_\_\_ or too \_\_\_\_\_ to visualize. For example:
  - A model of the \_\_\_\_\_ helps you study the \_\_\_\_\_ that span more than 7.5 billion kilometers in space.

- A model of an \_\_\_\_\_ helps you study the extremely \_\_\_\_\_ particles that make up all \_\_\_\_\_ in the universe.
- A \_\_\_\_\_ can help you better \_\_\_\_\_ what you are studying. \_\_\_\_\_ objects, solutions and processes can make it \_\_\_\_\_ to \_\_\_\_\_ those ideas.
- \_\_\_\_\_ are especially helpful to \_\_\_\_\_. Models help \_\_\_\_\_ design \_\_\_\_\_ to problems. They make it possible to \_\_\_\_\_ solutions before \_\_\_\_\_ them. Models save engineers \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
- For example, an engineer that is responsible for constructing a \_\_\_\_\_ can build and test a \_\_\_\_\_ of the bridge FIRST before actually \_\_\_\_\_ it. In this way, he can \_\_\_\_\_ the design – to make it look different or to address complications in its features - before using \_\_\_\_\_ to build the actual thing.