

Scientific Models Activity

Scientific models are used to study, understand, and explain:

- objects that are too small to see
- objects that are too large to see
- relationships among objects
- objects that are not readily available
- objects that no longer exist
- objects that have not yet been invented, but may be in the future, referred to as prototypes
- catastrophic events that occur very rapidly or sporadically
- uniformitarian events that occur over long periods of time or in cycles

Three types of scientific models:

- physical models are models that can be seen or touched
- mathematical models consist of equations and data which is often displayed in charts or graphs
- conceptual models are diagrams, maps, or charts that show relationships among objects or events

Representation	Examples of scientific models		
	Physical	Mathematical	Conceptual
Objects that are too small to see	<ul style="list-style-type: none"> • molecular models 	<ul style="list-style-type: none"> • equations that represents the energy in a hydrogen atom 	<ul style="list-style-type: none"> • diagram of an atom • diagram of the organs of an insect
Objects that are too large to see	<ul style="list-style-type: none"> • globe of the Earth or another planet 	<ul style="list-style-type: none"> • equations used to navigate space ships to other planets 	<ul style="list-style-type: none"> • maps of places on the Earth • maps of the universe • diagram of the interior of a star or planet
Relationships among objects	<ul style="list-style-type: none"> • orrery 	<ul style="list-style-type: none"> • equations for chemical reactions 	<ul style="list-style-type: none"> • periodic table of the elements • images showing the relative sizes of planets or stars • images showing the relative sizes of plants and animals • food pyramid
Objects that are not readily available	<ul style="list-style-type: none"> • anatomy models • model planes 	<ul style="list-style-type: none"> • equations used to predict the amount of energy released by the Sun 	<ul style="list-style-type: none"> • diagram of the relationships among consumers and producers in a food chain
Objects that no longer exist	<ul style="list-style-type: none"> • dinosaur and fossil models 		<ul style="list-style-type: none"> • diagrams of dinosaurs or fossils • diagrams of ancient land masses
Objects that have not yet been invented, but may be in the future, referred to as prototypes	<ul style="list-style-type: none"> • prototypes of cars of the future • spacecraft prototypes • models of new buildings, bridges, and tunnels 	<ul style="list-style-type: none"> • equations that model air resistance, speed, acceleration, torque, and force in cars 	<ul style="list-style-type: none"> • diagrams of computer programs
Catastrophic events that occur very rapidly or sporadically	<ul style="list-style-type: none"> • volcanic eruption models 	<ul style="list-style-type: none"> • earthquake predictions • hurricane predictions 	
Uniformitarian events that occur over long periods of time or in cycles		<ul style="list-style-type: none"> • plate tectonic movement predictions 	<ul style="list-style-type: none"> • tree of life chart • water cycle chart • carbon cycle chart • geologic time scale chart • plate tectonic maps

Name:

Scientific Models Activity

A. Are there any **physical models** in your classroom, other locations at school, or at home? If so, what are they?

1.

2.

3.

B. Are there any **mathematical models** in your classroom, other locations at school, or at home? If so, what are they?

4.

5.

6.

C. Are there any **conceptual models** in your classroom, in other locations at school, or at home? If so, what are they?

7.

8.

9.