

Physics

We are studying forces such as air resistance.... List all the other forces that you think could change an object's motion:

Homework:

Observe what other forces change object's motion, and what factors might change how that force affects the motion of objects.

Watch "Creation of the Universe". **Take notes** on the following questions:

How does examining the past give information about the structure of matter?

What are the basic components and particles of matter?

** What are the four fundamental forces in the universe? Describe their similarities and differences in terms of strength, range, particles affected, and interactions with other particles?

How do particle accelerators determine information about the four different forces?

How does the early history of the universe give information about the four forces?

How is it possible that all four forces can be found to be one?

Be prepared to show these notes (not just one word answers to questions) for a classwork credit next time.

CREATION OF THE UNIVERSE movie questions:

- 1) How is looking at stars an example of looking into the past?
- 2) How old are the subatomic particles that make up the atoms in the rocks?
- 2.5) What magnification do you need to see DNA molecules?
- 3) What are the three main particles inside an atom?
- 4) How many quarks make up a proton and neutron?
- 5) What force holds the quarks in the nucleus together?
- 6) With what instrument do scientists study sub atomic particles?
- 6.5) How big is the biggest particle accelerator in the US?
- 11) What are the four main forces in the universe?
- 12) What force helps a baseball player catch a ball?
- 13) What particle carries the electromagnetic force and what is its range?
- 14) What force is responsible for radioactive decay and what is its range?
- 15) What force binds quarks together and what is its range?
- 16) Which is the weakest force and what is its range?
- 18) How many forces did Aristotle think there was?
- 19) Why was gravity the only force that Newton and others knew about?
- 20) Why is the unified electroweak theory with all its particles flawed?
- 21) What needs to happen for the electromagnetic and the weak force to be emitted by the same particle?
- 21) Where is the largest particle accelerator in the world? (hint: its scientists invented the World Wide Web)
- 22) Why do scientists use hydrogen atoms in particle accelerators?
- 24) How do particles change from one to another?
- 23) How do scientists detect whether protons decay (and thus atoms are non permanent) ?
- 24) How does the early history of the universe give information about the four forces?