

Review for Exam 1

What is Science?

Definitions of science. Differences between definitions of science throughout history. The ideal of the scientific method. Theory, fact, hypothesis, laws.

Ancient Science

Sources of information about the science of prehistoric peoples. Differences between knowledge of the natural world and science. Relationship between science and technology in the ancient world. Natural vs. supernatural explanations. Neolithic observatories as evidence for scientific activity. Relationship between civilization, cities and science. Mesopotamia, Egypt, astronomy and calendars. China and the Mayans.

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Ancient Greeks and Astronomy

Hellenic period. Borrowing from earlier societies. Science for the sake of curiosity. Lack of official support for science.

Thales of Miletus. Matter theory. Pythagoras, math, and the Pythagorean school. Atomism. Philosophers of Change. Lack of a “standard model” of science. Plato as a philosopher and his influence on scientists. Realm of Forms. His ideas of astronomy. Aristotle versus Plato. Matter theory. Theory of motion. Astronomy.

Hellenistic period, post-Alexander. Spread of Greek ideas by conquest. Influence of conquered societies on Greek thought. Government support of science. The Museum of Alexandria. Euclid, Archimedes. Greeks and their contributions to astronomy. Ptolemy and the geocentric model. Epicycles, equants, eccentrics.

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The Scientific Revolution: Copernicus

The Renaissance and how the factors that led to it also facilitated the Scientific Revolution. New science occurring outside the university system. Return of mysticism to science. Calendars and astronomy (again!). Copernicus, his background, his motivation. The basics of his heliocentric theory. What it got right, what was wrong about it. Tycho Brahe, his background, his model of the solar system, his other astronomical contributions. Johannes Kepler, his laws of planetary motion, and his contributions to the geocentric/heliocentric debate.