



7th Grade Studying People Unit

Benchmarks

Chapter 1: The Nature of Science

The Scientific World View

1A (6-8) #2 Scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.

Scientific Inquiry

1B (6-8) #1 Scientists differ greatly in what phenomena they study and how they go about their work. Although there is no fixed set of steps that all scientists follow, scientific investigations usually involve the collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected evidence.

1B (6-8) #2 If more than one variable changes at the same time in an experiment, the outcome of the experiment may not be clearly attributable to any one of the variables. It may not always be possible to prevent outside variables from influencing the outcome of an investigation (or even to identify all of the variables), but collaboration among investigators can often lead to research designs that are able to deal with such situations.

1B (6-8) #3 What people expect to observe often affects what they actually do observe. Strong beliefs about what should happen in particular circumstances can prevent them from detecting other results. Scientists know about this danger to objectivity and take steps to try and avoid it when designing investigations and examining data. One safeguard is to have different investigators conduct independent studies of the same questions.

1B (6-8) #4 New ideas in science sometimes spring from unexpected findings, and they usually lead to new investigations.

The Scientific Enterprise

1C (6-8) #5 In research involving human subjects, the ethics of science requires that potential subjects be fully informed about the risks and benefits associated with the research and of their right to refuse to participate. Science ethics also demand that scientists must not knowingly subject coworkers, students, the neighborhood, or the community to health or property risks without their prior knowledge and consent.

Chapter titles and headers correlate with *Benchmarks for Science Literacy* by Project 2061. To fully understand the context and intent of the benchmarks, essays within each chapter and section of *Benchmarks* must reviewed.

Because animals cannot make informed choices, special care must be taken in using them in scientific research.

1C (6-8) #7 Accurate record-keeping, openness, and replication are essential for maintaining an investigator's credibility with other scientists and society.

Chapter 7: Human Society

Social Trade-Offs

7D (6-8) #2 One common aspect of all social trade-offs pits personal benefit and the rights of the individual, on one side, against the social good and the rights of society, on the other.

Chapter 12: Habits of Mind

Values and Attitudes

12A (6-8) #1 Know why it is important in science to keep honest, clear, and accurate records.

12A (6-8) #2 Know that hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.

Communication Skills

12D (6-8) #1 Organize information in simple tables and graphs and identify relationships they reveal.

12D (6-8) #2 Read simple tables and graphs produced by others and describe in words what they show.