values particular to science

common values as applied in science

9-12

Exhibit traits such as curiosity, honesty, openness, and skepticism when making investigations, and value those traits in others.

In matters that can be investigated in a scientific way, evidence for the value of a scientific approach is given by the improving ability of scientists to offer reliable explanations and make accurate predictions.

Scientists value evidence that can be verified, hypotheses that can be tested, and theories that can be used to make predictions.

Curiosity motivates scientists to ask questions about the world around them and seek answers to those questions. Being open to new ideas motivates scientists to consider ideas that they had not previously considered. Skepticism motivates

The strongly held traditions of science, including its commitment to peer review and publication, serve to keep the vast majority of scientists well within the bounds of ethical professional behavior. Deliberate deceit is rare and

To be useful, a hypothesis should suggest what evidence would support it and what evidence would refute it. A hypothesis that cannot, in principle, be put to the test of evidence may be interesting, but it may not be scientifically

In science, a new theory rarely gains widespread acceptance until its advocates can show that it is borne out by the evidence, is logically consistent with other principles that are not in question, explains more than its rival theories, and has the

6-8

Often different explanations can be given for the same observations, and it is not always possible to tell which one is correct.

Scientific investigations usually involve the collection of relevant data, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected

Accurate record-keeping, openness, and replication are essential for maintaining an investigator's credibility with other scientists and society.

Hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.

3-5

Sometimes scientists have different explanations for the same set of observations. That usually leads to their making more observations to resolve the differences.

Offer reasons for claims and consider reasons suggested by others.

Keep clear and accurate records of investigations and observations.

Science is a process of trying to figure out how the world works by making careful observations and trying to make sense of those observations.

Records of observations are helpful when trying to recall those observations later.

K-2

When people give different descriptions of the same thing, it is usually a good idea to make some fresh observations instead of just arguing about who is right.

Raise questions about the world and be willing to seek answers to these questions by making careful observations and trying things out.