

## JSD High School: Nature and History of Science

Know how the words “fact” “observation” “concept”. “principle”, “law” and “theory” are generally used in the scientific community.

- *Recognize and understand important scientific vocabulary in written and oral communication.*

Understand that scientific knowledge is validated by repeated specific experiments that conclude similar results.

- *Conduct experiments to verify the experimental results of others.*

Understand that society, culture, history and environment affect the development of scientific knowledge.

- *Discuss the historical events and conditions surrounding major scientific discoveries and contributions.*
- *Investigate the influences of societal and/or cultural beliefs on science.*
- *Identify how those historical perspectives (i.e., cultural, political, religious, philosophical) have impacted the advancement of science.*

Understand that some personal and societal beliefs accept nonscientific methods for validating knowledge.

- *Demonstrate how non-scientific methods can be used to validate knowledge.*

Understand that sharing scientific discoveries is important to influencing individuals and society and in advancing scientific knowledge

- *Discuss how the contributions of some scientists have paved the way for new discoveries.*
- *Explain the importance of innovations (i.e., microscope, immunization, computer).*

Understand that scientific discovery is often a combination of an accidental happening and observation by a knowledgeable person with an open mind.

- *Present historical evidence of a major discovery that was the result of an accidental happening by an unbiased open minded observer.*
- *Use an account of an event to recognize the processes of science used by historically significant scientists (e.g., Goodall, Watson & Crick, Newton).*
- *Describe the importance of logical arguments (i.e., thought experiments by Einstein, Hawking, Newton)*

Understand that major scientific breakthroughs may link large amounts of knowledge, build upon the contributions of many scientists and cross different lines of study.

- *Present examples of scientific breakthroughs that unified theories and ideas from several scientific fields.*

Understand that scientific knowledge is ongoing and subject to change.

- *describe the role of serendipity in scientific discoveries.*
- *use experimental or observational data to evaluate a hypothesis.*

Understand that acceptance of a new idea depends upon supporting evidence and that new ideas conflict with beliefs or common sense are often resisted.

- *Present examples of new ideas that were not readily accepted at the time of their inception.*

*Investigate instances when scientists' observations were not in accord with prevailing ideas of the time.*