



## 7<sup>th</sup> Grade Science

In 7th grade students engage in Science and Engineering Practices and apply Crosscutting Concepts to deepen their understanding of science. Core ideas included in 7th grade are *Motion and Stability: Forces and Interactions*, *Energy, Structure of matter and chemical reactions*, *Matter and Interactions*, *Motion and Stability: Forces and Interactions*, *Energy and Waves*, and *Engineering Design*. Your child will have multiple opportunities to demonstrate science learning. Including, but not limited to, using models, providing evidence to support arguments, obtaining and analyzing data about relationships and interactions among observable components of different systems.

In 7th Grade science, your child will investigate the world in which he/she views daily. Inquiry based activities will be used to promote critical thinking. Your 7th Grade Scientist will be able to:

- Use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities
- Interpret data from laboratory experiences
- Determine if and how a chemical reaction occurred
- Design an experiment manipulating thermal or chemical energy
- Examine electric and magnetic forces and its interactions with objects.
- Use mathematical equations to determine the frequency, wavelength and amplitude of a sound wave.
- Conduct research on technical advances in science.
- Gather, read and synthesize information from multiple sources to support a scientific claim.
- Apply Newton's Laws to life events.
- Determine cause and effect relationships with an object in motion.
- Ask questions to frame a hypothesis.
- Employ scientific principles to formulate a conclusion

The Normandy Schools Collaborative will prepare your child by offering outdoor learning experiences and field trips as well as classroom learning labs. Your child will also navigate through online science simulations to extend learning. The 7th grade science exploration will prepare your child for long term successes in the sciences. Each lesson will provide knowledge needed to form critical evaluations of science systems. For example, your child will be able to explain how sound travels from different locations. your child will be able to assess how thermal energy impacts various aspects of life.

### **Examples of Your Child's Work at School:**

- Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- Plan an investigation to determine the relationships among energy transfer, type of matter, mass, and change in the energy of the particles as measured by the temperature.
- Analyze and interpret data on the properties of substances.
- Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- Define the criteria and constraints of a design problem to ensure a successful solution.

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## **How to Help Your Child at Home:**

- Encourage finding answers to questions through research and experimentation.
- Encourage the playing of “maker” games and apps such as Minecraft that develop engineering and collaboration skills.
- Join a club or group that offers activities such as robotics and computer programming.
- Analyze and interpret data on the properties of substances.
- Help your child create and test a Rube Goldberg device to solve a problem.

## **21<sup>st</sup> Century Skills Learned by the End of 7th Grade**

- Ability to plan, organize and prioritize work
- Ability to communicate verbally with classmates, teacher and individuals around the school
- Ability to obtain and process information
- Ability to analyze compute math problems associated with science, such as  $\text{Density} = \text{mass}/\text{volume}$
- Ability to identify and utilize general laboratory equipment
- Proficiency with computer software programs
- Ability to create and/or edit written reports
- Ability to sell and influence others