

Machines and Motion Field Trip

Grade 5

Description: The Sandy Spring Museum’s “Machines and Motions” field trip introduces students to science curriculum in a historical setting. Students will tour the exhibit hall and will describe the motion of a piece of 19th century kitchen technology using distance traveled, time, and speed. Next, students will have a chance to do hands-on activities using the simple machines that made the lives of 19th and early 20th century people easier. Applying their knowledge of physics, students will better understand how and why these machines work. The field trip also includes a trip to the museum’s working forge where students will learn about the role that different types of motion, friction, gravity, and energy (kinetic and potential) play in the forge. This tour meets MSDE content standards in geography, economics, and physics (mechanics).

In the Museum students will tour the gallery and discover how producers provided goods and services to the Sandy Spring community (5.1.5.3). Students will learn how taxes financed some of Sandy Spring’s public services (5.6.5.1). Students will describe the motion of a piece of 19th century kitchen technology using distance traveled, time, and speed (5.5.A.1)

In the Blacksmith’s Shop students will see how the blacksmith acts as a producer in his community and provides goods and services to satisfy economic wants (5.5.1.3). Students will explore how changes in technology have impacted the economy and see how specialized work results in trade, interdependence, and economic growth (5.4.5.4, 5.7.5.2). Students will also learn about the role that different types of motion, friction, gravity, and energy (kinetic and potential) play in the forge (5.5.A.1, 5.5.A.2, 5.5.A.4).

In the Barn students will identify simple machines and discover how they were used to adapt and modify the natural environment of Sandy Spring through the Civil War time period (5.4.4.1). Students will also discover how changes in farm technology impacted the Sandy Spring economy (5.4.5.4). Students will be able to use and identify different types of simple and complex machines and describe the motion they make and the types of energy they use (5.5.A.1, 5.5.A.4).

Bonus:

If your group has another 30 minutes to spend at the museum you may add the option of seeing a live spinner demonstrate the production process of yarn-making. This option depends on the availability of our spinner so if you are interested in adding (or swapping the spinner for the blacksmith) inquire with our Education Director.

Curriculum Standards

History and Social Science:

Geography

5.4.4.1

- a) Identify ways and reasons why people in the US through the Civil War era adapted to and modified their natural environment with technology, and analyze the consequences of the modifications

Economics

5.1.5.3

- a) Explain how producers combine resources to provide goods and services to satisfy economic wants

5.4.5.4

- a) Explain how changes in technology (factories, machinery, transportation, communication, new technology) have impacted the developing U.S. economy now and in the past

5.6.5.1

- a) Explain how taxes finance government operations and provide public goods and services

5.7.5.2

- a) Explain how specialized work results in interdependence, trade, and economic growth now and in early U.S. history

Science

Standard 5: Physics – Mechanics

5.5. A.1 Describe the motion of objects using distance traveled, time, direction, and speed.

- a. Observe, describe, and compare types of motion.
- b. Use measurements to describe the distance traveled as the change in position.
- c. Based on data describe speed as the distance traveled per unit of time.

5.5. A.2 Explain that the changes in the motion of objects are determined by the mass of an object and the amount (size) of the force applied to it.

- a. Observe and give examples that show changes in speed or direction of motion are caused by an interaction of forces acting on an object
- b. Observe and explain the changes in selected motion patterns using the relationship between force and mass.

5.5. A.4 Cite evidence that energy in various forms exists in mechanical systems.

- a. Identify ways of storing energy (potential) in an object.
- b. Identify that an object has energy (kinetic) related to its motion.
- c. Observe and cite examples showing that stored energy may be converted to energy of motion and vice versa.