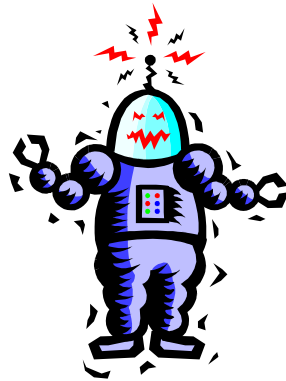


Robots

Pre-Visit Activities

3rd – 5th grade



Activities

These activities are intended for use before your visit to the Virginia Air and Space Center. It is beneficial for the students to have some prior knowledge about the content area covered in the program. All of the activities can be tailored to your specific classroom needs, and the procedures listed are suggestions for teaching.

Activity 1: Simple Machines

Machines are things we use to make work easier. The six simple machines are the wedge, the inclined plane, the screw, the pulley, the lever, and the wheel and axle. Compound machines are machines made up of two or more simple machines. Examples of compound machines are bicycles, scissors and wheelbarrows. Robots are compound machines. What makes robots different from a bicycle or a wheelbarrow is the parts they have. Robots have three parts: A body, a memory or control system, and a power source. Without a memory, a robot would just be a compound machine. Because it has a memory, a robot can do more one job or more than one job, whatever the programmer wants. This makes life a lot easier.

The attached worksheet shows three compound machines. Have your students try to list the simple machines that make up the compound machine.

Activity 2: History of Robots

Engineers have been making objects with movable parts for many centuries. The ideas of artificial life forms and machines that can do work for us have also been around for many years. Go to the website <http://prime.jsc.nasa.gov/ROV/history.html> about the history of robots. The bullets will give a timeline of these ideas and how robots as we know them came to be. Have your students investigate these bullets further, either in small groups or individually. Have the students give reports on them. The students may also discuss or design their own robots and report on how they work or what they were designed to do.

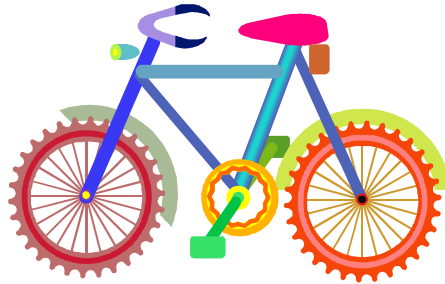
Activity 3: Robot Memory

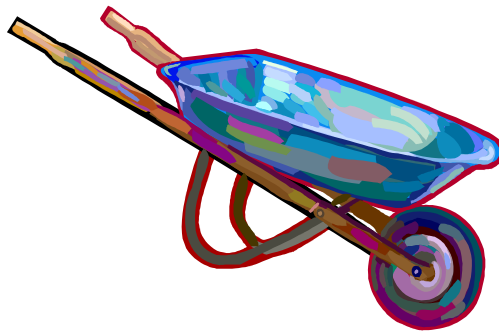
Robots are sometimes given more than one command at a time. Their memory allows them to keep the information and do all the tasks at the correct time they need to be done.

This activity can be done in groups of 5- 8 students. Choose a robot for each group. Have each person in the group say a command to the robot so that all the commands make a sequence. The robot must not do the commands until everyone has given them to him/her. The robot must remember all of the commands and do them in the correct order, or else he/she will have done the job incorrectly. Allow each student to have a turn as the robot.

Name _____

Look at the pictures of compound machines below. Write on the line provided which simple machines make up the compound machine. The six simple machines are: Pulley, Screw, Wheel and Axle, Lever, Inclined Plane and Wedge.





Resources

Books

Bridgman, Roger. Robot. DK Eyewitness Books Series, DK Publishing, 2004.

Hyland, Tony. How Robots Work. Black Rabbit Books, 2000.

Hyland, Tony. Robots at Work and Play. Black Rabbit Books, 2007.

Hyland, Tony. Space Robots. Black Rabbit Books, 2007.

Jefferis, David. Robot Workers. Crabtree Publishing Company, 2006.

Jefferis, David. Robot Voyagers. Crabtree Publishing Company, 2006.

Ling, Stanley. Robots. Perfection Learning Corporation, 2006.

Punter, Russell. Stories of Robots. EDC Publishing, 2004

Internet

<http://prime.jsc.nasa.gov/ROV/history.html>

<http://spaceplace.jpl.nasa.gov/en/kids/muses2.shtml>

<http://www.robots.com/movies.php>

<http://www.pbs.org/wgbh/nova/robots/>

<http://www.robotcafe.com/>

<http://bettscomputers.com/moodle/course/view.php?id=5#WhatisaRobot>