Return to the Moon Lessons and Activities 6th Grade		
Timing	Mission and Description	Supported Standards
Pre-Mission	**Investigating the Moon:** A pre-unit discussion activity that activates a student's prior knowledge about the Moon. The students are encouraged to talk about what they know about the Moon. The teacher helps scaffold student knowledge to broader ideas and concepts.	Science:1.4, 2.2, 3.3 Math:-- English:1.1, 2.3 Social Studies:-- Visual Arts:--
	Lunar Craters: Students will be able to discuss the various parts of a lunar crater by creating craters themselves! By dropping marbles into a pan of flour, from a consistent height, students can see how physical impacts from comets and meteors have affected the surface of the Moon.	Science:4.1 Math:1.1, 4.1 English:1.1 Social Studies:-- Visual Arts:--
	Moon Phases: In this hands-on lesson, students will create a model of the Moon and the Sun and will use it to observe how the Sun creates the various phases of the moon. This activity introduces students to new vocabulary (i.e. waning, waxing, gibbous, crescent, etc.).	Science:-- Math:1.1, 4.1 English:2.2, 2.3 Social Studies:2.2 Visual Arts:--
	Basic Life Support System: Students are challenged to identify the necessities to creating a balanced and organized environment, in which life can thrive. In small groups, students are tasked with creating a functional biosphere. This endeavor also asks students to continually observe and monitor the changing conditions of their biosphere.	Science:1.4, 2.1, 2.2, 3.3 Math:1.1, 1.2 English:1.1 Social Studies:-- Visual Arts:--
	Lunar Geology: Geology can often be a difficult and abstract science for students. With this activity, students will become geologists and analyze the composition of a mineral sample. By using graphical data, students will problem-solve to determine the makeup of their mineral sample.	Science:1.1, 1.2, 1.4, 3.3 Math:1.1, 1.2, 1.3, 2.1, 2.2, 3.1 English:1.1 Social Studies:-- Visual Arts:--
	Water on the Moon: A major focus of the space program is how to create and maintain a safe and useful habitat for humans on the lunar surface. Here, students will try and extract water from a frozen sample of soil. Then they will evaluate if the process is efficient by weighing the pros and cons of using a solar collector to collect water on the Moon.	Science:1.1, 1.2, 1.3, 2.1, 3.2, 3.3 Math:1.1, 2.1, 2.2 English:1.1 Social Studies:-- Visual Arts:--
	Distance to the Moon: Students will create a Moon viewer and will use it to determine relative distance from the Earth to the Moon. As data is collected, the students will use diameter and distance to determine the distance to the moon.	Science:-- Math:1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 4.1 English:2.1, 2.2 Social Studies:-- Visual Arts:--
	Extending the Mission: This is one of the final lessons to prepare the students for their mission at Challenger. It begins by asking students to debate some of the legalities surrounding the moon. Who has the mineral, land, and water rights when it comes to the moon?	Science:-- Math:-- English:1.1, 2.2, 2.3, 4.1, 4.2, 4.3 Social Studies:1.1, 1.2, 4.1 Visual Arts:--
Mission Day	**Tracking Lunar Progress (STK):** Students will use the Satellite Tool Kit (STK) to track where the Lunar Transport Vehicle is in comparison to the Earth. Students will observe that Earth is on a tilted axis.	Science:3.1 Math:1.1, 1.2, 1.3, 2.2, 3.1, 4.1 English:1.1 Social Studies:2.1 Visual Arts:--
	Checking Solar Array: An important part of the *Return to the Moon* mission involves checking the angle of the solar arrays. The students will determine if the spacecraft is receiving an optimal amount of solar power.	Science:2.1 Math:1.1, 4.1 English:1.1 Social Studies:-- Visual Arts:--
	Navigating Spacecraft: During a mission, students will use critical thinking and analysis to navigate the spacecraft to the Moon. Students will triangulate the position of the spacecraft using major landmarks around them (i.e. Earth, Moon, Sun). The Navigation team will tap into their prior knowledge about craters and highland areas of the Moon to determine a safe landing site.	Science:2.1 Math:1.1, 1.2, 1.3, 2.2, 3.1, 4.1 English:1.1, 2.2 Social Studies:2.1 Visual Arts:--
	Testing Lunar/Earth Mineral Samples: At this station, students will be using robotic arms and gloveboxes to test and examine Lunar and Earth rock samples. They will also determine the color, luster, and magnetic properties of the minerals and regolith they are testing.	Science:1.1, 1.2, 1.3, 1.4 Math:1.1, 4.1 English:-- Social Studies:-- Visual Arts:--

	Checking Oxygen Filters: Due to increased levels of radiation in space, astronauts use a Geiger Counter to monitor radiation levels. Students will be testing oxygen filters to ensure radiation levels are safe.	Science:2.1, 3.3 Math:1.1, 1.3 English:-- Social Studies:-- Visual Arts:--
Post-Mission	**Press Conference:** Students are asked to prepare for a press conference to answer questions surrounding their mission. Parents, teachers, and administrators ask students to reflect on their experience and explain what they learned as a result of their mission.	Science:-- Math:-- English:1.1, 2.2, 2.3, 3.2, 4.1, 4.2, 4.3 Social Studies:-- Visual Arts:--