# 5th Grade: Patterns of the Earth and Sky

**Course description:** Throughout this lesson, students will be encouraged to look up at the sky at night and during the day and question what they see! By the end of the lesson, students will be able to name and graph both types of cloud and moon phases!

**Day 1:** Students will learn about the different types of clouds that form and how weather affects the earth.
*Demonstration:* To excite and engage the students, we will make a large liquid nitrogen cloud. After the demonstration, students will be doing an experiment to make their own clouds in a bottle! We'll discuss how rain affects insects and bring in insects that live in humid environments!

**Day 2:** Students will learn and observe the different types of cloud formations through an interactive activity.
*Demonstration:* Students will observe local cloud patterns that occurred for the past month in Philadelphia to discuss the different types of clouds that form. After learning about the types of clouds in the area in the past month, students will use cotton balls to make displays of the clouds types needed, and as a class, they will create a life size graph. If students are fast finishers they will then be tasked to find pictures within cloud photographs by outlining the edges of the clouds. They will be able to do so with different types of cloud formations and decide which is the easiest to find figures in. This will encourage students to do the same next time they are outdoors.

**Day 3:** Students will visually understand the phases of the moon occurring because of the revolution of the moon around the Earth. The amount that one sees of the moon depends on where the moon is in its revolution around the Earth. After an understanding of the science behind it. Students will learn how there is a pattern that occurs over the course of 29 days.
*Demonstration:* A three-dimensional model can help clarify this complex topic. Using a model of the moon, earth, and sun, students will move and explore the relation of the three and light! Students will receive a plant diagram they will fill out as other students move throughout the classroom and interact with the model! Students will observe an herbivorous species and discuss the importance of the Sun's energy in plants. We will leave the students with a challenge to look up that night and identify where in the pattern the moon is currently located and bring in this information to class the next day.

**Day 4:** Students will connect the pattern of moon phases to their current place in time and will predict future moon phases. Students will also learn the connection between moon phases and the ocean tides. High spring tides occur during a full or new Moon, and low neap tides occur during a quarter Moon.
*Demonstration:* After a hard week's worth of work learning about the sky above, it's time for a quick reminder about the majesty and power of our world's seas. Students will be given hundreds of pre-filled water balloons and then shown no mercy in an all-out battle of the century (in the parking lot). At the end of the "lesson", they will be informed that they are

fortunate that there are no more water balloons less the war would continue and then promptly taught the etymology of the phrase “thank your lucky stars” (thus ostensibly tying this activity to everything they learned earlier in the week).