

**Lesson Plan Topic:** Lawnchair Larry**Title:** Lawn Chair Pilot**Author:** Cassie Miller**Grade:** 7**Integrated Disciplines:** Integrated Science & Geology**Objectives:****E.ES.07.72:** Describe how different weather occurs due to the constant motion of the atmosphere from the energy of the sun reaching Earth's surface**E.ES.07.73:** Explain how ocean temperatures affect the different climates on Earth because water in oceans hold lots of heat**E.ES.07.74:** Describe weather conditions associated with frontal boundaries and the movement of major air masses and the jet stream across North America using a weather map**Purpose:**

The purpose of this summative and formative assessment is for students to be able to describe the different elements of weather that could effect a flight and understand exactly how the flight will be effected. This will be accomplished through a class discussion, science lab done together, and written evaluation which will be done individually and then discussed as a class. The class discussion will give students a chance to teach each other, thus, learning it better themselves. Once all the different weather elements are covered, the teacher will discuss the correct answers with the class as a whole and clear up any confusion or misconceptions to determine whether or not the class grasps the concept of weather in relevance to the story of Lawnchair Larry.

<b>Learning Targets</b>	<b>Section in which Target is Met</b>
I can describe how different weather occurs	Explain, Explore, Evaluate
I can explain how the constant motion of the atmosphere from the sun's energy affects wind patterns	Explore, Explain, Apply, Evaluate
I can understand why oceans affect climates	Explore, Explain, Evaluate
I can define all the different fronts and pressure systems as well as the weather associated with them	Explore, Evaluate
I can identify changes in temperature and air pressure in relevance to altitude	Apply, Evaluate

**Materials:**

- 30 balloons
- Helium (enough to fill each balloon)
- 100 ft. long string
- 30 pieces of 2 ft. long ribbon

- 2 yardsticks
- journals
- writing utensils
- internet access

### **Procedures:**

**Engage:** Discussion begun by teacher: Summarize the story of Lawnchair Larry and present YouTube video [http://www.youtube.com/watch?v=2GLrr\\_Xp0qc](http://www.youtube.com/watch?v=2GLrr_Xp0qc). Explain that the YouTube video is a reenactment, and is not actually Lawrence Walters. Relate Larry's experience back to class objectives. Students should have prior knowledge on the change in pressure and temperature with altitude as well as fronts and pressure systems. Ask the students questions like, "What were some of the risks associated with Larry's Journey?" Accept answers including elements such as lack of oxygen at high altitude, storms, freezing conditions, and more.

**Explore:** Present the facts to the students. Provide them with the handout included in this lesson plan, containing the exact date of Larry's journey, his maximum height, average summer temperatures in California, as well as other thought-provoking information such as the density of helium compared to oxygen. As the students look through this, have them highlight what they believe to be the important information to remember later on. Also display the charts of pressure and temperature correlated with altitude and have students answer the question associated with these charts in their handouts. Finally, after a class discussion on the oceanic currents in the Pacific on America's West coast, have the students draw them in on the map that they have.

**Explain:** Point out the starting and ending points on the map of California given to the students during Explore. Continue class discussion with the assumption that Larry's journey took place on a fair weather day. Ask questions about the types of pressure systems and fronts that might have been going on that day to influence the winds that moved Larry along his route. Have students draw both a high *and* a low pressure system on the California map with arrows indicating probable wind directions based on the hand-twist method. Continue the discussion of risks that began during the Engagement, but deepen the discussion. Explore exactly how cold it would get and how low the pressure would be as Larry's altitude increased, as well as how Larry even got off the ground. Use the handouts from the Explore to guide the discussion and provide potential answers.

**Apply:** Once the students seem to have a thorough understanding of the many different weather elements that helped create Lawnchair Larry's story, bring the discussion outside of the classroom to challenge and extend the students conceptual understanding and skills. Begin by providing each student with a helium-filled balloon attached to a piece of ribbon about two feet long. Lay the unraveled one hundred foot long string in the hallway or in another large, open space along with one or two yard sticks. Then, in small groups of three or four, have the students go out and securely tie their balloon and ribbon to the longer string about three feet or one yardstick apart from each other. Once the students have all completed this task, take the balloon-filled string outside with the class and have them bring their science journals and something to write with. Hold one end of the string and allow the other end along with all thirty balloons to float freely up into the air. Have students pay close attention to the directions that the lower balloons are facing compared to the higher balloons, assuring that they know the directions of North, South, East, and West from where they are standing. To add some extra fun and help keep students interested, have each student write his/her name on their balloons so that they can keep track of which one is theirs. Make sure that the class is writing down their observations

throughout the entire outdoors experiment on the observation sheet provided, and after five or ten minutes, return to the classroom to discuss the observations.

**Evaluate:** Once the students have acquired a deep understanding of all the different weather elements that could effect a flight such as Larry's, have them re-write their own version of Lawnchair Larry with an alternative ending on the assessment sheet provided. His starting point can be anywhere (i.e. Grand Rapids, MI), and weather conditions including fronts, pressure systems, winds, and even the amount of balloons he is using must be described in detail. Finally, students must note where Larry landed based on common wind directions at certain altitudes under whichever weather conditions they chose to provide Larry with on his next flight. Further requirements for this evaluation can be seen on the rubric provided.

**Vocabulary:** Cold Front, Warm Front, High Pressure System, Low Pressure System, Altitude, Temperature, Air Density, Weather Balloon

**Closure:** After all evaluations have been graded and handed back, allow students to share their stories of Lawnchair Larry and have them watch the movie UP!, taking note of all the things in the movie that relate to the activities and discussions from class.

**Sources:**

[http://www.ehow.com/how\\_7916072\\_5th-science-use-weather-balloons.html](http://www.ehow.com/how_7916072_5th-science-use-weather-balloons.html)

Birdman, Harvey. "5th Grade Science: How to Use Weather Balloons." *EHow*. Demand Media, 09 Feb. 2011. Web. 25 Mar. 2013

[http://gocalifornia.about.com/od/calamenu/ss/Los\\_Angeles\\_by\\_Month\\_7.htm](http://gocalifornia.about.com/od/calamenu/ss/Los_Angeles_by_Month_7.htm)

"Los Angeles By Month." *About.com California Travel*. N.p., n.d. Web. 25 Mar. 2013.

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"Crazy Lawn Chair Balloon Flight!" *YouTube*. YouTube, 04 Nov. 2009. Web. 25 Mar. 2013.

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Tocci, Salvatore, and Patricia Rasch. *Experiments with Air*. New York: Children's, 2002. Print.

Simon, Seymour. *Weather*. New York: Harper Collins, 1993. Print.

**Other:**

<http://physics.info/density/>

<http://eo.ucar.edu/webweather/basic5.html>

[http://en.wikipedia.org/wiki/Larry\\_Walters](http://en.wikipedia.org/wiki/Larry_Walters)

## **Lawnchair Larry--The Facts:**

### **Summary:**

Lawrence Richard Walters, nicknamed "Lawnchair Larry" or the "Lawn Chair Pilot", was an American truck driver who took flight on July 2, 1982, in a homemade airship. The "flying machine" consisted of an ordinary patio chair with 45 helium-filled weather balloons attached to it. Walters rose to an altitude of over 15,000 feet (4,600 m) and floated from his point of origin in San Pedro, California, into controlled airspace near Los Angeles International Airport. His flight was widely reported in many newspapers. His intention was to attach a few helium-filled weather balloons to his lawnchair, cut the anchor, and then float above his backyard at a height of about 30 feet (9.1 m) for several hours. He planned to use a pellet gun to burst balloons to float gently to the ground.

Walters attached the balloons to his lawn chair, filled them with helium, put on a parachute, and strapped himself into the chair in the backyard of a home at 1633 W. 7th St. in San Pedro. When his friends cut the cord that tied his lawn chair to his Jeep, Walters' lawn chair rose rapidly to a height of about 15,000 feet (4,600 m). At first, he did not dare shoot any balloons, fearing that he might unbalance the load and cause himself to spill out. He slowly drifted over Long Beach and crossed the primary approach corridor of Long Beach Airport.

After 45 minutes in the sky, he shot several balloons, and then accidentally dropped his pellet gun overboard. He descended slowly, until the balloons' dangling cables got caught in a power line, causing a 20-minute blackout in a Long Beach neighborhood. Walters was able to climb to the ground.

### **Key Facts:**

Date of Flight: July 2, 1982

Flight Starting Point: San Pedro, CA

Flight Ending Point: Los Angeles, CA (LA International Airport)

Maximum Height Reached: 15,000 ft. (4,600m)

### **July Weather in California:**

Average High Temperature: 82°F/28°C

Average Low Temperature: 63°F/17°C

Rain & Clouds Index: 0.01 inches (0.03 cm) rain, 96% sunshine

Note that July is the middle of California's smog season

### **Densities (kg/m<sup>3</sup>):**

Density of Helium : 0.164 kg/m<sup>3</sup>

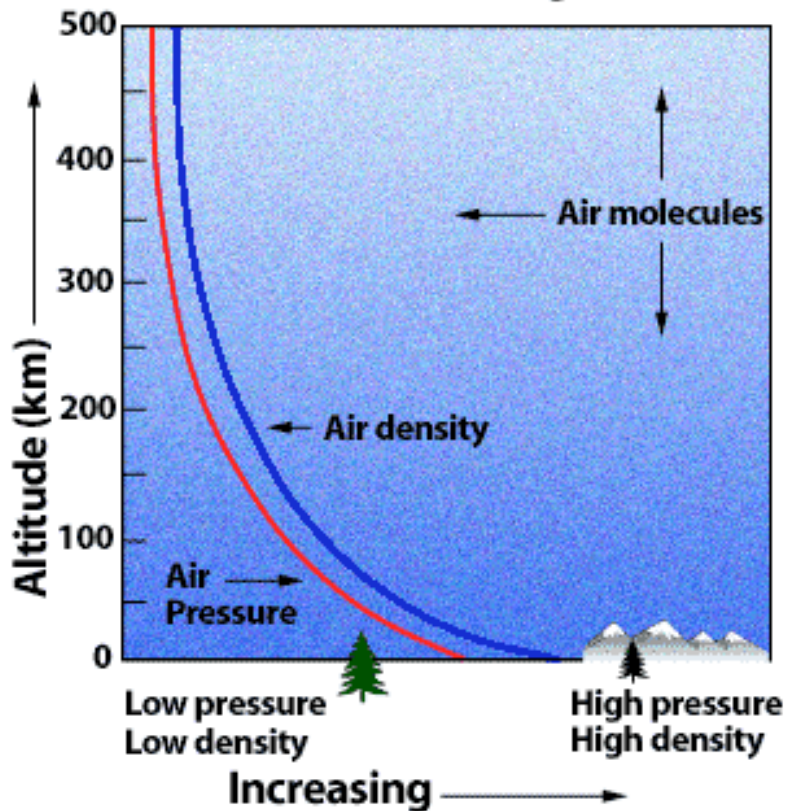
Density of Oxygen: 1.308 kg/m<sup>3</sup>

Density of Air: 1.161 kg/m<sup>3</sup>

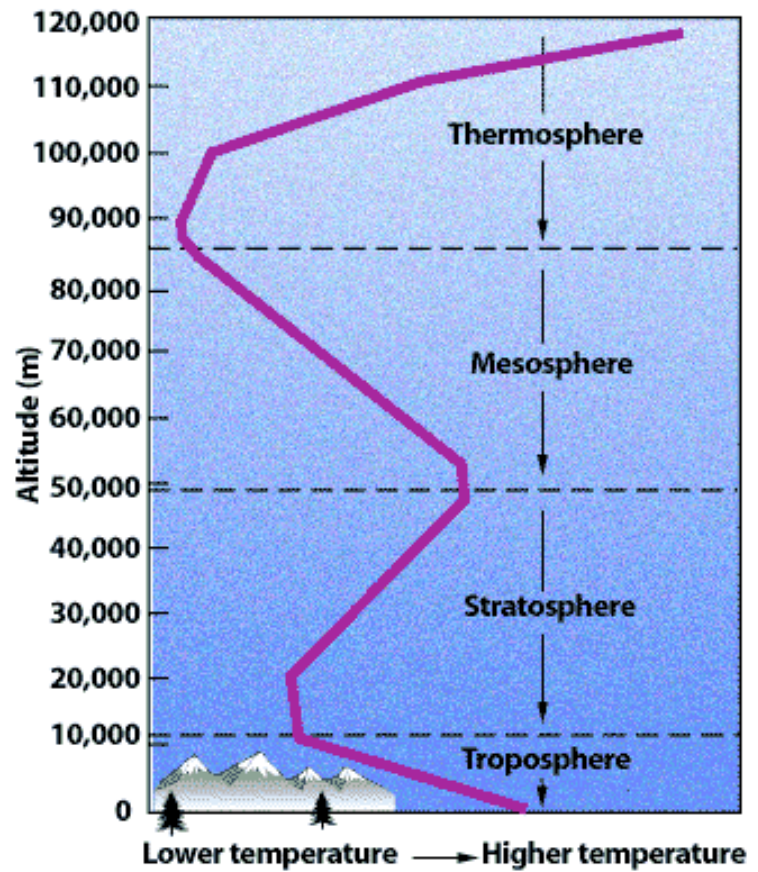
## Helpful Graphs:

### Altitude v. Air Pressure and Density

Both air pressure and air density decrease with increasing altitude.



### Altitude v. Temperature



Explain: How did air pressure, air density, and temperature change throughout Larry's flight? By the time he reached his maximum height of approximately 15,000m, was temperature increasing or decreasing? What about air pressure? Air density? Which layer(s) of the atmosphere did Larry enter?

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## Lawn Chair Pilot Rubric

Read over this rubric carefully before you hand in your assessment. Feel free to go back and make any necessary changes.

30 (I'm a master)	15 (I mostly understand)	5 (I'm not sure)
I included a type of front and its effects on Larry's journey	I included a type of front in Larry's journey but not how it effected him	I did not include a type of front in Larry's journey
I included a type of pressure system and its effects on Larry's journey	I included a pressure system but not how it effected Larry's journey	I did not include a type of pressure system in Larry's journey
I gave a clear explanation of how Larry got from his starting point to his ending point	I was unsure of the types of winds that got Larry from his starting point to his ending point	I did not explain or provide a starting or ending point for Larry's journey
I discussed the general weather conditions and their associated risks	I discussed a few weather conditions and associated risks	I did not discuss weather conditions or associated risks on Larry's journey