



PLTW Flight and Space Virtual Learning

8th Grade/Hot Air Balloon

April 29, 2020

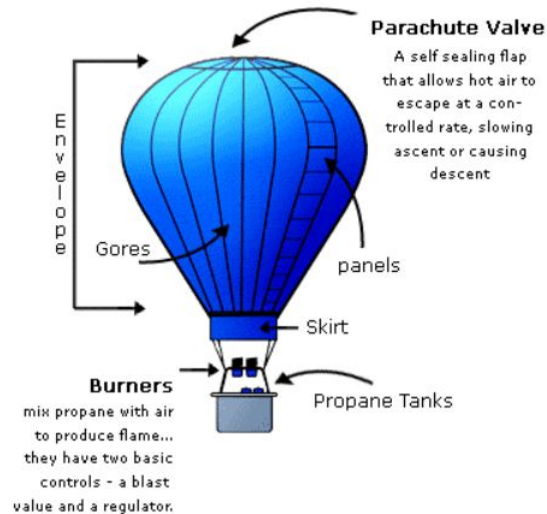


8th Grade/Flight and Space
Lesson: April 29, 2020
Day 2 of 2

Objective/Learning Target:
Students will learn about the history of flight in hot air balloons construct and fly a large hot air balloon.

Warm-Ups:

Practice what you know on this Quizlet [Hot Air Balloon Terms](#).



Lesson Introduction/Background Information:

Man has been inspired to take to the skies for hundreds of years. Hot Air Balloons were one of the first ways we realized manned flight.

Today you will build your own hot air balloon! Here is a video of [a science teacher](#) completing our experiment. We will build the Balloon envelope and skirt. We will use a heat source for the burner. We will not build the other main component of balloons, the basket. That would add too much weight and make it difficult to apply our “burner”.

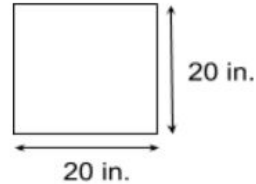
As with any experiment, please be sure to get permission to build and launch and permission to use the supplies needed.

Practice:

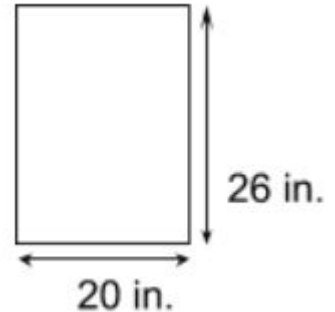
Materials needed:

- 9 sheets of tissue paper (if you don't have tissue paper find something that is very light that you can substitute for it like newspaper, plastic bags, fabric, or any paper. Remember, the lighter the better!)
- Construction paper strip or any other stiff paper
- Glue, scissors, pencil, ruler (optional but helpful)
- Hot air balloon launcher such as hair dryer or hot air popcorn popper

1. Make a square 20 inches by 20 inches.

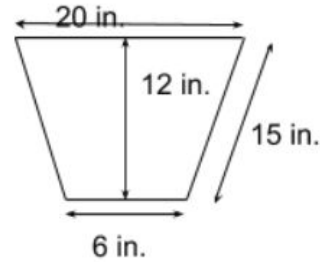


2. Make four rectangles 20 inches by 26 inches. Cut two from one color and two from a second color if you have color options.

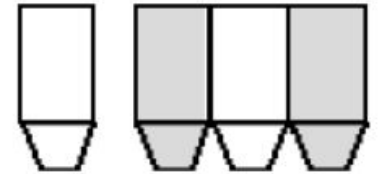


Practice:

3. Make four trapezoids as shown. Cut two from one color and two from a second color if possible.



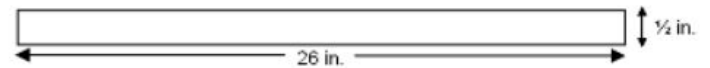
4. Glue the rectangles and trapezoids into panels, alternating colors.



5. Glue the square on top.



6. Make a construction paper ring 1/2 inch by 26 inches. Glue it on to the bottom edge of the balloon.



Practice:

Now it's time to launch! Hold the opening of your balloon envelope over your burner or heat source. Allow the air in the balloon to become hotter than the surrounding air and launch. Be sure to follow all safety precautions.

Here is a video of other PLTW students launching hot air balloons



Self-Assessment:

On your notes from day one write about your struggles and your success in building and launching your hot air balloon. Reflect on what you know about why a balloon filled with hot air rises.

Extend Your Learning/Continued Practice:

Here's more demonstrations of [How Hot Air Balloons Work](#)

Here's [NASA's Hot Air Balloon experiment](#)