

CLE 3321.2.4 Investigate characteristics associated with the gaseous state.

SPI 3221.2.7 Predict how changes in volume, temperature, and pressure affect the behavior of a gas.

Hot Air Balloons – Charles’s Law in Action

In this activity students work together to construct hot air balloons out of tissue paper. These balloons are almost 9’ tall! After they are assembled, the balloons are launched outdoors. If the weather conditions are just right (cool and dry) these balloons can fly quite a distance, sometimes until they are out of sight.

This activity is an excellent way for students to observe how changing the temperature of a gas affects the volume the gas occupies (Charles’s Law.) It also leads to a discussion of density and buoyancy.

Students thoroughly enjoy making and launching their balloons. This is a great way to wrap up a unit on gases.

Materials:

Hot Air Balloon Launcher and Lighter Than Air Flight paperback book can be purchased from Pitsco. The launcher is sort of pricey, but can be used for many years. The book contains all the directions needed to construct, test and launch balloons.

Tissue paper – assorted colors 20” by 30” is best – may be purchased from Pitsco or check art supply catalogs

heavy kraft paper, glue sticks, scissors, wire, propane canister, string

Directions:

Students follow the dimensions in the book to construct a gore template out of heavy kraft paper.

Glue several sheets of tissue paper together - how many depends on length of paper – so that each long strip is 9’. Each balloon consists of 10 long panels (gores.) Note: students can construct smaller balloons to save time and expense.

Use template to cut out 10 gores.

Use glue sticks to glue gores (panels) together to form a balloon.

Tie the top off with string.

Cut a length of wire, form a loop and glue to bottom opening.

Use a fan to check for leaks.

On a clear day, take balloons outside and launch. It is helpful to have a step stool so that students can reach the top of balloon while holding it over the launcher. When balloon is completely filled with hot air – let it go!

Be sure to bring a camera – these balloons can be beautiful as they fly across the sky.