

Zoon Balloon

Grades 5+ | Students Served: 30

ELEMENTARY

MIDDLE LEVEL



Essential Questions

What is the similarity between a boat and a hot-air balloon?

How did hot-air balloons become the first reliable vehicles of human flight?

What are the scientific principles behind hot-air balloon flight?

Career Connections:

- Hot-Air Balloon Pilot
- Helicopter Pilot
- Travel Planner
- Design Engineer

STEM Connections

Science

- Buoyancy
- Density
- Molecular motion

Technology

- Design processes
- Modeling
- Historical perspectives

Engineering

- Problem solving
- Prototyping
- Technological design

Math

- Surface area
- Volume
- Measuring mass



Sample Activity

Maximum Payload


Challenge

Design and construct a balloon to hold the maximum payload possible and still maintain the ability to fly.

- Determine the gore size or use a gore template.
- Construct the balloon following the instructions in the user guide.
- Place the balloon on a digital scale and record the mass. Think of an object or objects you can use as payload. Also, think of a way to attach the payload to the balloon. (Avoid basket-type payloads as this will make the launch difficult.)
- Launch the balloon several times, increasing the payload each time.
- Find the maximum payload the balloon can carry.

Discussion

What is the maximum payload your balloon can carry? What can you change to increase your payload?

 **WARNING:** Cancer – www.P65Warnings.ca.gov