



AIR & SPACE
STEM Outreach

STEM Activity

Parachute Drop

GRADES: 6-8

TIME: 45 minutes



OBJECTIVE:

Students will complete the engineering design process of planning, designing, building and testing a parachute through a series of challenges.

MATERIALS:

- Scissors
- Tape
- Hole punches
- Coffee filters
- Paper
- Fabric
- Cardboard
- Tissue paper
- Coins or small weights
- Eggs
- String
- Pipe cleaners
- Aluminum foil
- Paper clips
- Paper or plastic cups
- Balloons
- or any other materials found in your classroom!

STANDARDS:

- 3-5-ETS1-1 Engineering Design
- MS-ETS1-1 Engineering Design
- HS-PS2-3 Motion and Stability: Forces and Interactions

INSTRUCTIONS:

1. Challenge your students to create a parachute that will float through the air!
2. Optional: Use a range of challenges suitable for the grade level(s) to guide their design:
 - Highest drop: use tape measures to see how high your parachute can float from
 - Safest drop: use real or chocolate eggs as the load to test a safe landing
 - Longest drop: use stopwatches to compare how long it takes for a parachute to travel from the drop to the ground
3. Students will use the engineering design process to plan, design, build, and test their parachute designs. Allow them to create original designs, or feel free to provide templates and instructions.
4. For each challenge, have students make predictions for what will happen with their parachute and allow them to change their designs, make more predictions, and continue testing.
5. **Extra challenge:** Assign costs to each material and provide students with a strict budget so they have to decide which materials they can afford to make the best design possible. Example:
 - Budget is \$5.00. Coffee filter = \$1.00, Pipe cleaners = \$.50 each, Foil sheet = \$1.00, Cup = \$2.50, Paper clips = \$.25, 12" of String = \$.25

REFLECTION:

- *How did your predictions change with each experiment?*
- *What are the forces acting on a parachute floating in the atmosphere?*

