

NASA “Drag Race to Mars” Engineering Design Challenge

You will be designing a landing capsule, just as NASA engineers did for the Curiosity Rover, which arrived safely on Mars on Aug. 6th, 2012. As the capsule (your cup) rushes through the atmosphere, it is speeding towards the surface and is headed for a crash landing! You need to use the drag of the atmosphere to slow the capsule down and protect the payload inside (the marshmallow). Using **only** the materials listed below, design an apparatus that will create enough drag to allow the capsule to have a soft, upright landing on the surface. You may not make any alterations to the inside of the cup or make any holes in the cup as this would reduce its integrity.

Use the data sheet to record that measurement after each test trial. Also record notes on modifications to your design as you work. Enjoy the challenge of working through the engineering process!

Materials needed :

1 small paper or plastic cup (Styrofoam coffee cup works well)

3-5 index cards (3x5 and some 4x6 also)

1 regular-size marshmallow

6 miniature marshmallows

3 plastic straws

Scissors

Tape and Rubber Bands

Drag Race to Mars Trial Data Sheet

Team Name	Successfully reached the target (Y/N)	Rate of descent (R=d/t)	Upright landing (Y/N)
Trial one		Descent time : ____ ____ = ____ / ____	
Trial two		Descent time : ____ ____ = ____ / ____	
Trial three		Descent time : ____ ____ = ____ / ____	