Rockets to the Rescue
Facilitator Outline

Materials:

Hoola hoops (3 sizes)	raisins	packing tape	cellophane tape
2 liter soda bottles (Coke products work best)	tissue paper	straws	cotton balls
Duct tape	card stock	protractor	rubber corks
Paper	safety goggles	wipes to sanitize the goggles	
Scissors	pencils	markers	

Do	Say	Materials	Time
Welcome & Introduction Break the students into groups of 3. Review the scenario	"Your team has an important job. A hurricane has hit the island of Ceres. It has been cut off from all contact. Ships, airplanes, and helicopters cannot get to the island. The people need food and fresh water." "Your team has been asked to design a rocket propulsion system to deliver a payload of food. It needs to arrive intact and fresh." (Refer to page 5&6 in the Youth Guide)		5 min

Part 1: Design Distribute the handout packet, one to each team. Have them turn to page 11. Pick a team name. Pick a name for their Food Transportation Device (FTD). On page 11, have the group discuss the best design and draw a sketch on the graph paper. Note: younger students struggle collaborating. They may each need their own piece of graph paper to draw an FTD.	"Engineers work in teams to discuss and evaluate the best possible designs. Come up with a design for your rocket. Think about what will help it fly best."	Handout packets (1 per group) Pencils	10-15 min

Part 2:Build This part can take a long time. Try to help the process along so there is plenty of time to launch. Help each group construct their payload container as needed. (This is the cardstock tube and rubber cork.) Make sure it will slide easily off the launching tube. After the tube is constructed, the students will insert and secure the payload, and decorate it to their tastes.	"Now it is time to build your Food Transportation Device. You will receive 5 raisins that must be delivered safely by the FTD. You may use whatever materials are available to you."	Raisins Tissue Paper Cardstock Tape Markers Straws	15 min

Part 3: Launch Note: we always wear protective eyewear at the launch site. Have helpers set up the launch site outside while the students are building their FTDs. The rubber corks will need to be re-used for other sessions, so collect the rockets and remove the corks. If students want to keep the FTDs after the corks are removed, that is fine. Using 2 launchers makes the experiment go faster. Try to get each team to complete at least three launches for more relevant data.	"Your goal is to hit the island and get the food to the hungry people. If you land in the middle, your team earns 5 points. If you land in the first ring, you earn 3 and the second ring, 1. On page 12, we will record your launch particulars and results. Each time we launch, measure the angle of the launcher, and record it. Also note who the jumper is. Record your result."	Launching system Duct tape Soda bottles Hoola hopes or string (for target) googles FTDs Data Table and Pencil	20 min.
Conclusion Take the students back inside, compare results.	"What did you find out from your launches? What worked? What didn't work?"		5 min