

Activity

MAKE A ROBOTIC LANDER

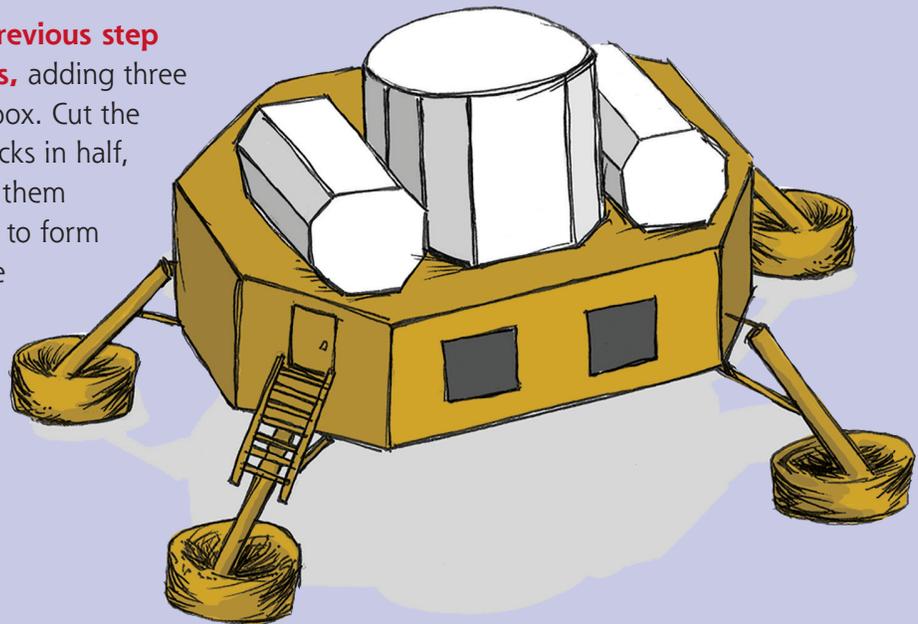
Build a model of the *Apollo 11 Lunar Module Eagle*. Do you think that you could have landed the *Eagle* on the moon? Test your pilot skills and your model's landing gear in this activity.

➤ **Take a small cardboard box and cut four diagonal slits in the top and bottom of the box at the four corners, about a third of the way along each side.** Cut one slit in each side, connecting one of the pairs of top and bottom slits. You should now have four corners that are only connected at one side. Fold these into the box, and tape in place, creating an **octagonal** box.

➤ **Cover the box, four drinking straws, four bottle caps,** and about three dozen toothpicks individually with gold Mylar film.

➤ **Build a landing leg with a straw and bottle cap.** Use toothpicks to make the leg stick out at an angle. What could you use instead of bottle caps and straws that would absorb the shock of landing on the moon?

➤ **Repeat the previous step three more times,** adding three more legs to the box. Cut the remaining toothpicks in half, and glue a few of them horizontally along to form a ladder. You have now finished the descent stage of the lunar module.



WORDS TO KNOW

octagonal: eight-sided.

Activity

- **Use the ascent templates to make the ascent stage from some white cardboard. You can find the templates at NomadPress.net/Templates.** Cover the ascent pieces in aluminum foil. Secure the ascent module on top of the descent module with glue.
- **With a black marker, add details to your lander.** You could draw the ingress/egress port (the NASA term for a door) above the ladder.
- **After building your new landing gear, drop your lander from a height no greater than one foot.** Does your lander stay upright? Record your results in your science journal.

Think About It

You have built a model of the *Eagle* lander. If NASA asked you to build a lander today, what would it look like? Sketch your ideas in your science journal. Explain why you created this design.

Lunar Reflectors

Astronauts with the *Apollo 11*, *14*, and *15* missions left behind reflectors on the surface of the moon. The reflectors look like cube-shaped prisms. Each reflector has 100 mirrors. Astronauts positioned the reflectors to face Earth. From time to time, astronomers bounce laser beams off these reflectors from the earth. By measuring the time that it takes the beam to return, they can precisely measure the distance from the earth to the moon.