



# KIDS NAME OUR ROBOTIC EXPLORERS!

What would YOU name a Mars rover?

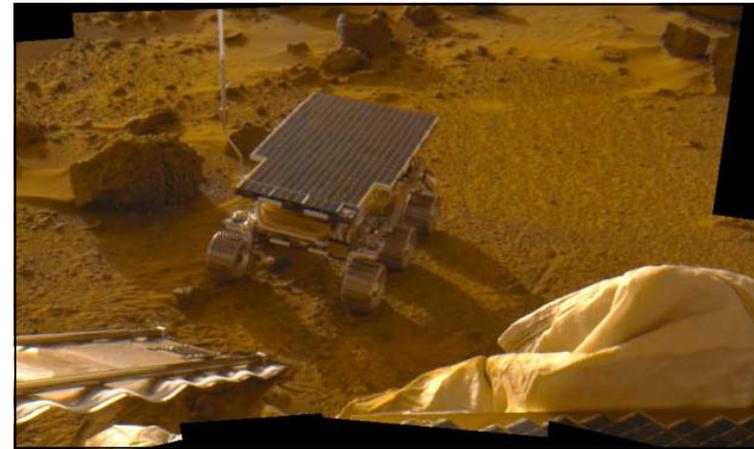


How do the robot adventurers we send to Mars get their names?

For the **Pathfinder** mission of 1997, NASA and the Planetary Society held an essay contest for kids 5 to 18 years old to name the little rover\* that would scoot around the surface of Mars. Students from all over the world submitted essays about a woman from history whom they considered to be a heroine.

12-year-old Valerie Ambrose of Bridgeport, Connecticut wrote the winning essay about Sojourner Truth, an African-American woman who devoted her life to ending slavery in America - and later, to women's rights. NASA named the Pathfinder rover **Sojourner**.

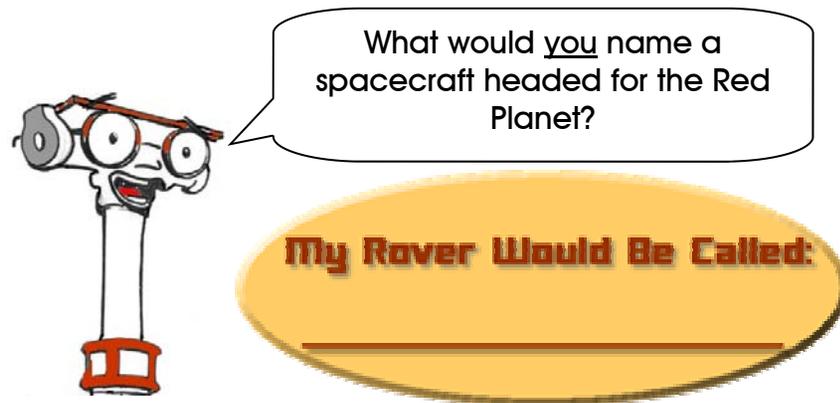
In 2003, NASA launched two rovers to the Red Planet. Sofi Collis, a 9-year-old from Scottsdale, Arizona submitted the winning essay. She chose the names **Spirit** and **Opportunity** for the robots.



The **Sojourner** rover rolls down its ramp to begin exploring in 1997. This is a REAL picture from the surface of Mars!



An artist's impression of one of the 2003 rovers, which are named **Spirit** and **Opportunity**.



# THE TECHNOLOGY OF MARS EXPLORATION

Telescopes, orbiters, rovers, landers, airplanes, balloons...



1.

Four of the seven machines shown on these two pages have explored Mars. Three of them have not yet been used. Can you tell which is which?



**EARTH ORBITING TELESCOPE**



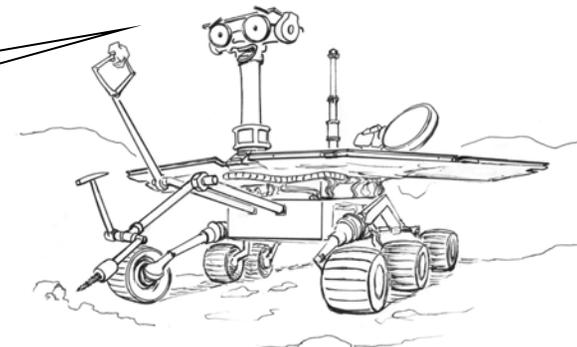
2.

**ORBITER (MARS SATELLITE)**

Powerful observatories like the Hubble Space Telescope can observe the Red Planet from Earth orbit. Every couple of years — when Mars is close to Earth — we can send spacecraft to orbit the planet, land on it, and roll around on the surface (like Rocky!)

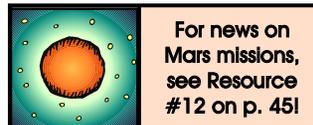
In the future, NASA hopes to send other types of missions, like balloons, airplanes, and even a mission that will gather a sample of Mars and blast it back to Earth so that scientists can study it up close in a laboratory.

Wow! All these machines are my relatives! Would you like to create your own Mars explorer? Look on page 24 to build a Mars Rover you can eat!



# THE TECHNOLOGY OF MARS EXPLORATION

Artists' conceptions - See p.49 for information about each numbered image.



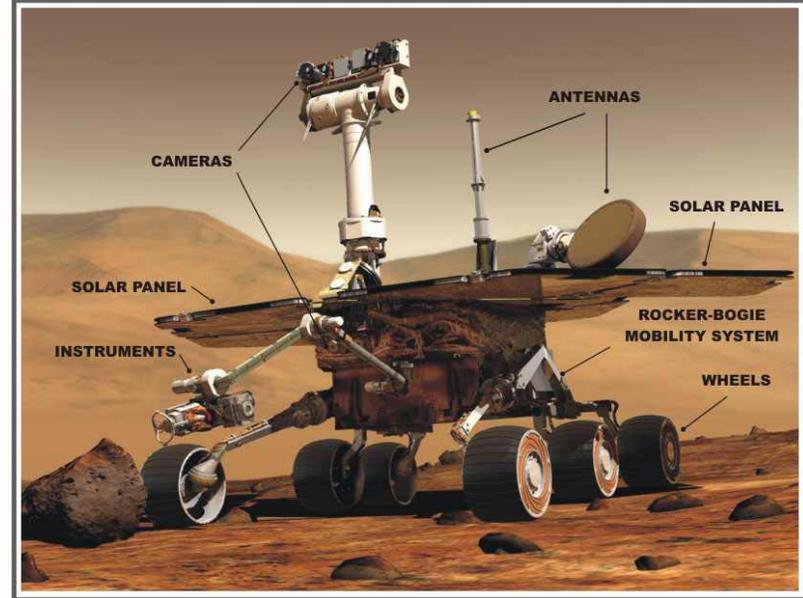
# BUILD A MARS ROVER YOU CAN EAT!

C. Morrow's adaptation of "Edible Mars Spacecraft" by Sheri Klug

## Suggested Materials to Build Your Edible Rover\*

- 3 graham crackers
- 1 roll of Smarties®
- 6 creme wafer cookies
- 1-2 large marshmallows
- 1 snack-size Kit Kat®
- 1 straw
- 1 container of frosting (to help glue components together)
- 1 peppermint patty
- 6 Rolo® candies or peanut butter cups
- 7 toothpicks
- 1-2 gumdrops
- scissors
- 1 plastic knife
- 1 sturdy paper plate or cardboard sheet for building platform
- paper towels

## MARS EXPLORATION ROVER



Use the rover diagram to fill in the components the rover will need to complete its mission.

ROVER CAPABILITY	NEEDED TECHNOLOGY OR INSTRUMENT	WHAT PIECE OF CANDY WILL YOU USE?
a. Rolls on a hard surface		
b. Receives commands from Earth. Sends data and images back to Earth		
c. Makes panoramic images of the environment		
d. Makes scientific measurements of rocks or soil (What do you want to know?)		
e. Powers itself using the light of the Sun		

What other things could you use to make a Mars rover like me?



# BUILD A MARS ROVER YOU CAN EAT!



**Draw and Label a Picture of the Rover You Built!**

# ACKNOWLEDGEMENTS

— *Images from Technology of Exploration, pp. 18-19* —

Find out about all the past missions to Mars at:  
<http://mars.jpl.nasa.gov/missions/>

1. Earth Orbiting Telescope: The Hubble Space Telescope was launched in 1990 and has made many incredible discoveries, as well as the best images of Mars ever taken from Earth. Visit [www.hubblesite.org](http://www.hubblesite.org) for images and info.

2. Orbiter: The Mars Global Surveyor spacecraft has been orbiting Mars since 1997 and has produced incredibly detailed images of the Martian surface. See the home page for this mission at <http://mars.jpl.nasa.gov/mgs/>.

3. Rover: Follow the exploits of the twin Mars Exploration Rovers, NASA's latest robotic Mars explorers. Visit <http://marsrovers.jpl.nasa.gov/home>.

4. Lander: NASA successfully landed two Viking landers on Mars in 1976. This is an artist's rendering of an upcoming mission called Phoenix Scout. In 2008, it will land in the water-ice-rich northern polar region, dig with a robotic arm into arctic terrain for clues on the history of water, and search for environments suitable for microbes. See <http://phoenix.lpl.arizona.edu/>

5. Mars Airplane: NASA selected the ARES Mars airplane for study as a potential mission for 2007-8. The Phoenix Scout mission was selected instead of ARES, but this mission or one like it could still fly at a later date. Visit <http://marsairplane.larc.nasa.gov/> and <http://mars.jpl.nasa.gov/missions/airplanes.html>

6. Sample Return Mission: NASA envisions sending a Sample Return Mission to Mars after 2014. Scientists expect to learn a great deal about the Mars by examining samples of its rocks and soil in laboratories on Earth. Visit <http://mars.jpl.nasa.gov/missions/samplereturns.html> for more information.

7. Balloon: This is an artist's impression of a Future Mars Balloon mission. Balloons can fly one hundred times closer to the surface of Mars than orbiters and can travel a thousand times further than rovers in a comparable period, thus providing views of much broader areas of the surface. See: <http://mars.jpl.nasa.gov/missions/balloons.html> for more.

