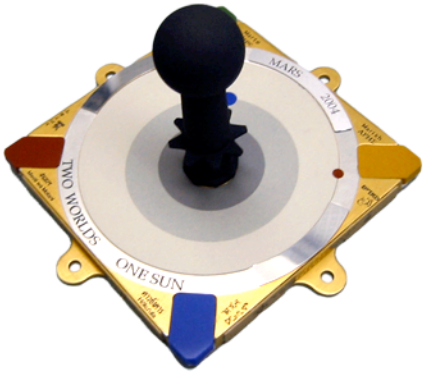
Make Your Own MarsDial!

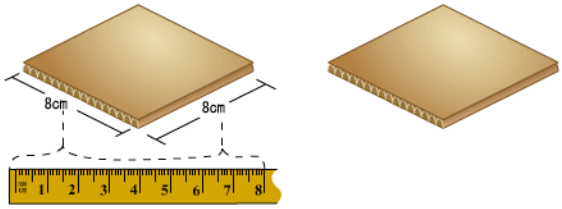
INSTRUCTIONS: Page 1 of 2

Here's what you'll need: Scissors, glue, some cardboard, a short pencil, some foil (optional) and a bit of clay. You can explore two worlds!

1. Cut the pattern out from page two of these instructions. It's the same size and shape as the sundials on Mars! For thousands of years, humans have been measuring time with sundials. You can, too. North of the equators of both Earth and Mars, the spins of the planets make the shadows cast by sundials go in the same direction as the hands on a clock… clock-wise.



2. Glue the pattern to two pieces of cardboard 80 mm (3.15 inches) square.



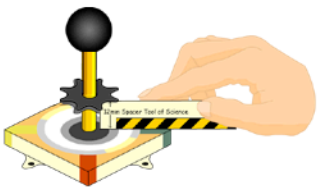
3. On a sundial, the post that casts the shadow is called the "gnomon" [NOE-munn]. It has two features that help you find the center of the shadow. Each one is called a "nodus" [NOE-duss], more than one, "nodi" [NOE-dee]. The upper one is a ball. The lower one is a flower shape. You can make your gnomon and nodi out of anything you'd like. Try a pencil, a ball of clay, and the daisy-shaped pattern here.

4. Poke a hole in the cross-mark big enough for a pencil.

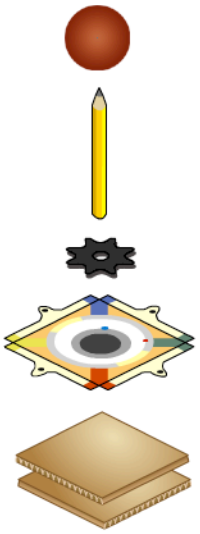
5. Cut a pencil so that it sticks through the cardboard, then sticks up 45 mm (1.75 inches).

6. Make a ball of clay that is 20mm in diameter (0.79 inch). Color it black, if you like.

7. Cut out the Lower Nodus and the Lower Nodus Spacer Tool of Science. Mount the Lower Nodus 12 mm. above the dial face using the Spacer Tool. Glue it in place.



Exploded View



8. Use the ruler on the edge of page 2 to make your gnomon (clay ball and all) 54 mm high, just like the ones on Mars!

9. You can add mini-mirrors like the ones on the real MarsDials. Cut out the mini-mirror pattern on Page 2. Trace the pattern twice on foil. Cut out the foil pieces, and glue them onto the matching curved areas. The mini-mirrors let us see up at the sky, while we look down at the dial.

10. You've got your own MarsDial. Put it in the sun, and watch the shadow move. Mark the hours, and see how the shadows change with the time of day and the time of year.

MarsDial created by: J. Bell, L. Friedman, J. Lomberg, T. Nordgren,W. Nye, S. Squyres, & W. Sullivan.

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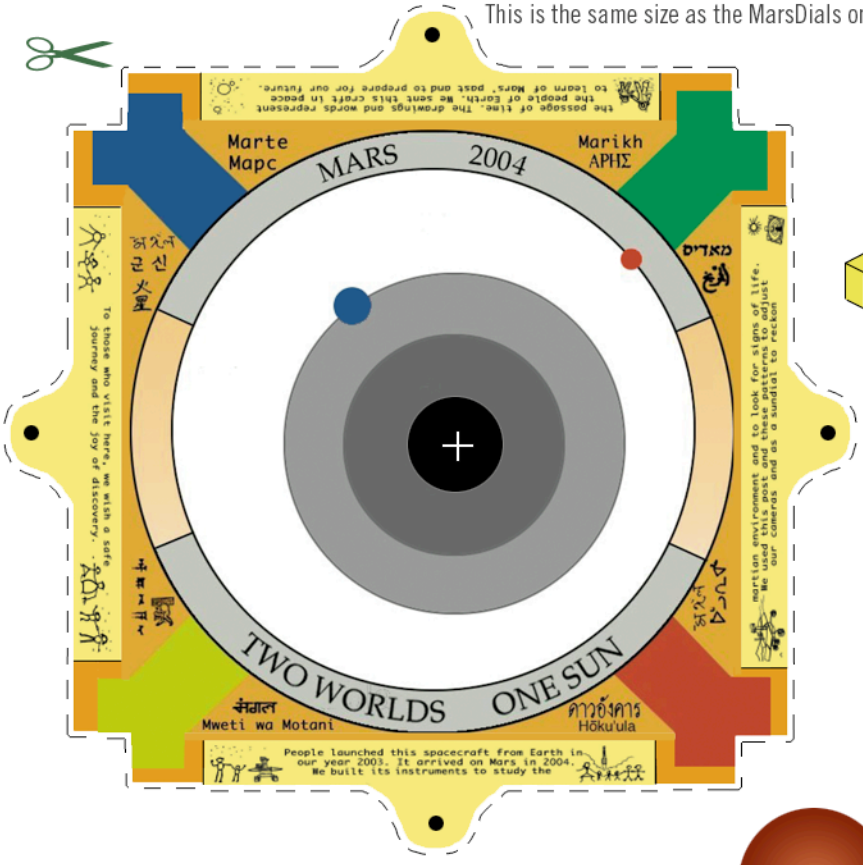
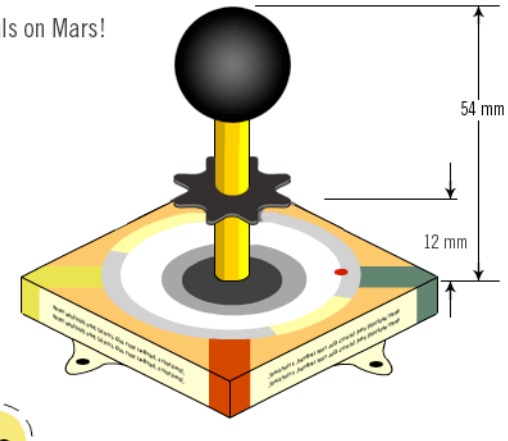
INSTRUCTIONS: Page 2 of 2

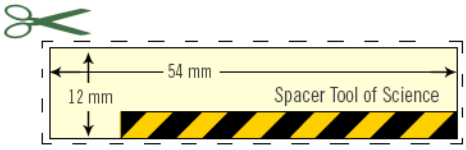
This is the same size as the MarsDials on Mars!



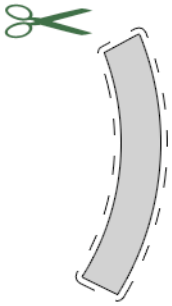
MarsDial, © Copyright NASA/JPL/Cornell

Assembled View





Ball of Clay (20mm)



Foil Mini-Mirror Pattern (Optional)

Lower Nodus

Did you know that...

- The width of the Sun makes sundial shadows fuzzy?
- The writing and symbols on a sundial are called its “furniture?”
- We had to make the MarsDial without hour lines, because the Spirit and Opportunity rovers move almost every day?
- You can see the hour lines and learn a lot more about MarsDials at **www.jpl.nasa.gov/mer**, **www.planetary.org** & **nyelabs.com**?

Now you know!

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