

Physical Properties of Mars - Activities (Ages 12-15)



Today we are going to investigate:

- Surface conditions on Mars
- How Mars rotates on its axis
- Features on the Martian surface
- The internal structure of Mars

Activities

- 1 Mars is 50% further from the Sun than Earth. Its diameter is slightly more than half of Earth's. In the past Mars had a dense atmosphere and substantial surface water. Today Mars has a dry surface and an atmosphere only 1% as dense as Earth's.

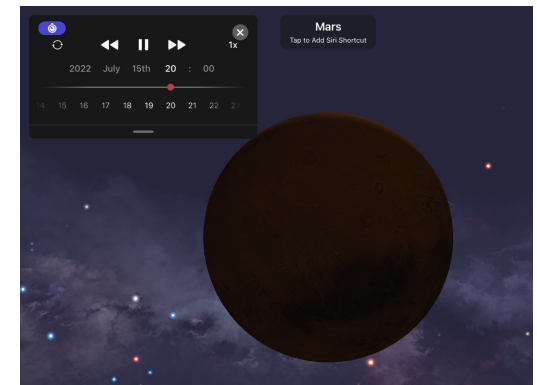
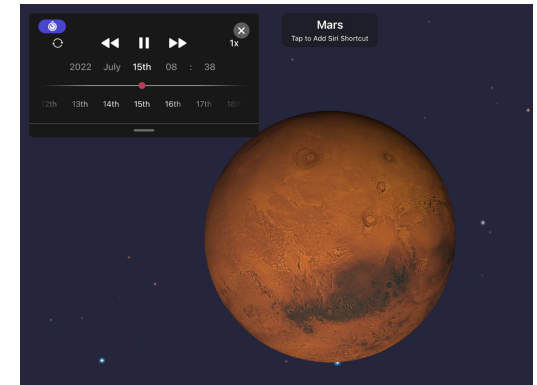
Question: Do you think simple life could exist on its surface?

- 2 Start up Night Sky and find Mars, double tap on it to bring up a 3D view of the planet. Rotate the planet, note how one side of it is in daylight while the other is in darkness. Use the Space Travel tile to advance time, watch how the surface moves. Astronomers measured the rotation period of Mars by observing how long it took for a surface feature to return to its starting position.

Question: Use this technique to estimate the planet's rotation period. Is it similar to Earth's?

- 3 Examine the planet's terrain. You will see the planet's polar ice caps. There are two other distinct terrain types. One terrain type is relatively smooth while the other type is rougher.

Question: Which of these regions are low lying plains and which are elevated areas?




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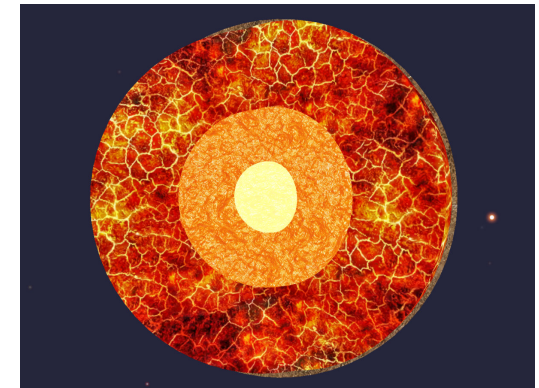


- 4 Over its history many asteroids have collided with Mars. This occurred in two phases. There was a violent “Heavy Bombardment” period that ended approximately 4.1 to 3.8 billion years ago. Since then there has been a much slower background impact rate.

Question: Examine the Martian surface, are impact craters evenly distributed? What does your answer tell you about the relative ages of regions of Mars ?

- 5 Tap on  to see that the internal structure of Mars is very similar to Earth. Both planets have thin rocky crusts, thick mantles and metallic cores. However Mars is just over 10% as massive as Earth. This size difference means that even though the two planets’ cores were roughly the same temperature when they formed, this is no longer the case.

Question: Do you think the inner cores of Mars and Earth are at similar temperatures? Why do you think this?



What we have discovered:

- The conditions on the Martian surface are harsh
- The surface features a variety of terrain types
- Mars and Earth have similar internal structures
- The planet’s rotation rate can be measured by observing the movement of its surface features.