

## SOUTH POLE MARS BARS

### Background

Scientists believe that the South Pole on Mars may be hiding underground water and possibly microscopic Martian life! This makes Mars' south pole a scientific hot spot. Well, sort of... The red planet's south pole is still a lot colder than even the coldest spot on Earth. Consider these typical seasonal temperatures:

	South Pole: Earth	South Pole: Mars
Summer	-30° C	-75° C
Winter	-75° C	120° C

### Objective

Upon completion of this activity, students will be able to:

- color a simple bar chart comparing seasonal temperatures at the south poles of Mars and Earth.
- recognize negative numbers.
- provide examples of differences between Mars and Earth.

### Instructional Time

45 minutes

### Materials

“South Pole Mars Bars” Student Worksheet  
Pencils/Pen

### Procedure

1. Review the basics of Martian and terrestrial seasons. Mars and Earth each have four seasons: Fall, Winter, Spring and Summer. Martian seasons last longer because it takes about 2 Earth years for Mars to go around the Sun. Mars is also colder than Earth because it is farther from the Sun and does not have a substantial atmosphere to hold in the heat. The poles of Mars and Earth only have two seasons: summer and winter. During the summer, it's cold. During the winter it's colder!
2. Write the temperature data on the chalkboard or overhead projector and discuss them with students. Note that 0 degrees Celsius is the freezing point of water. All the temperatures listed are less than zero; they are negative numbers. It's always below freezing at the south poles of both planets!

## **SOUTH POLE MARS BARS**

3. Using the answer key as a guide, show the students how to color a bar chart. Emphasize that the bars go down, not up, because the temperatures are below zero on the Centigrade scale. Instruct them to color the Martian temperature bars red and the Earth temperature bars blue.

### **Rationale**

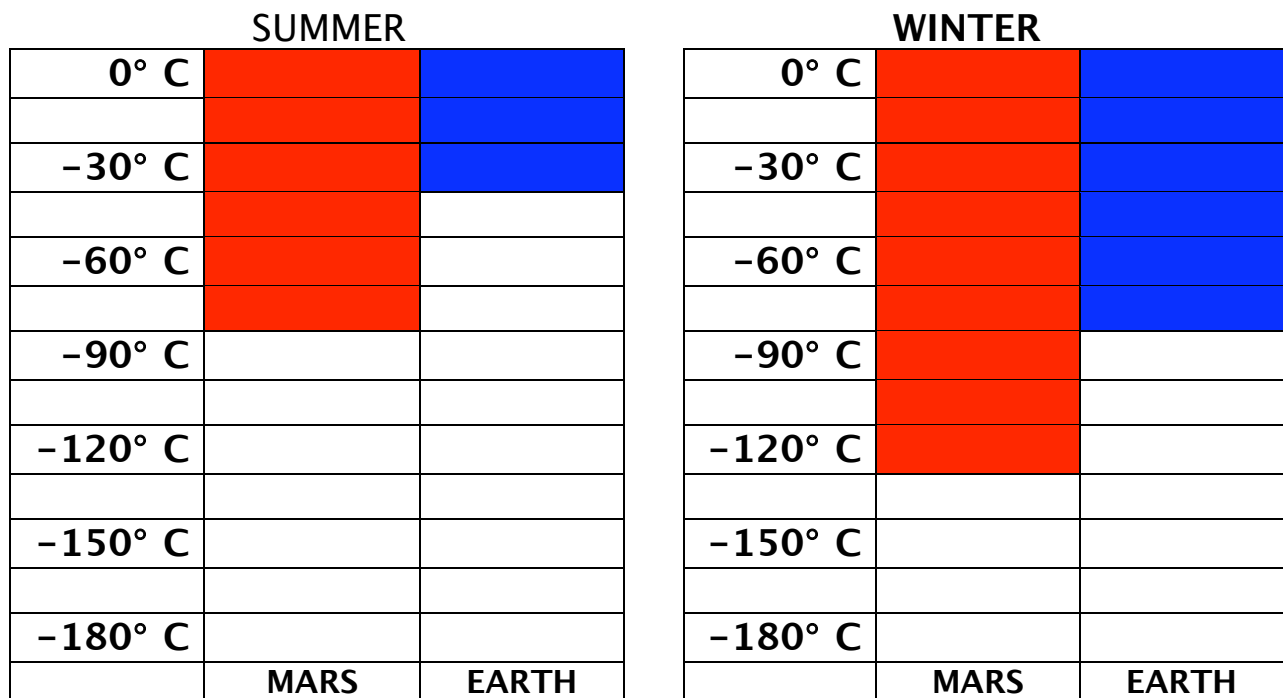
This lesson will give students experience with negative numbers and simple bar graphing, while examining conditions in an area of Mars that a NASA lander will attempt to visit.

## SOUTH POLE MARS BARS

The Earth's south pole is cold, but the south pole of Mars is even colder! Here are the temperatures of those two places during the summer and winter on each planet.

	South Pole: Earth	South Pole: Mars
Summer	-30° C	-75° C
Winter	-75° C	-120° C

DIRECTIONS. On the graph below, make colored bars showing the south pole temperature of Earth and Mars during the summer and during the winter. Use red for Mars and blue for Earth. Remember, all these numbers are less than zero because it's freezing!



Why is Mars so much colder than Earth?

**THE THINNER ATMOSPHERE DOES NOT CAPTURE AND HOLD THE HEAT AND ENERGY FROM THE SUN.**

When it's summer at the south pole, what season is it at the north pole?

**IT IS WINTER AT THE NORTH POLE, JUST LIKE ON EARTH.**

Don't forget to label your bar chart by writing "Mars" next to the red bars and "Earth" next to the blue bars.

Student Name \_\_\_\_\_ Date \_\_\_\_\_

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### SUMMER

0° C		
-30° C		
-60° C		
-90° C		
-120° C		
-150° C		
-180° C		

### WINTER

0° C		
-30° C		
-60° C		
-90° C		
-120° C		
-150° C		
-180° C		

Why is Mars so much colder than Earth?

When it's summer at the south pole, what season is it at the north pole?

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