

**Fifth Grade
Blizzard Bag**

Day 1



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Direction Page

Day 1

Science, Reading and Writing – Read the article, These big rocks leave tracks, but how do they do it? Answer questions 1-4.

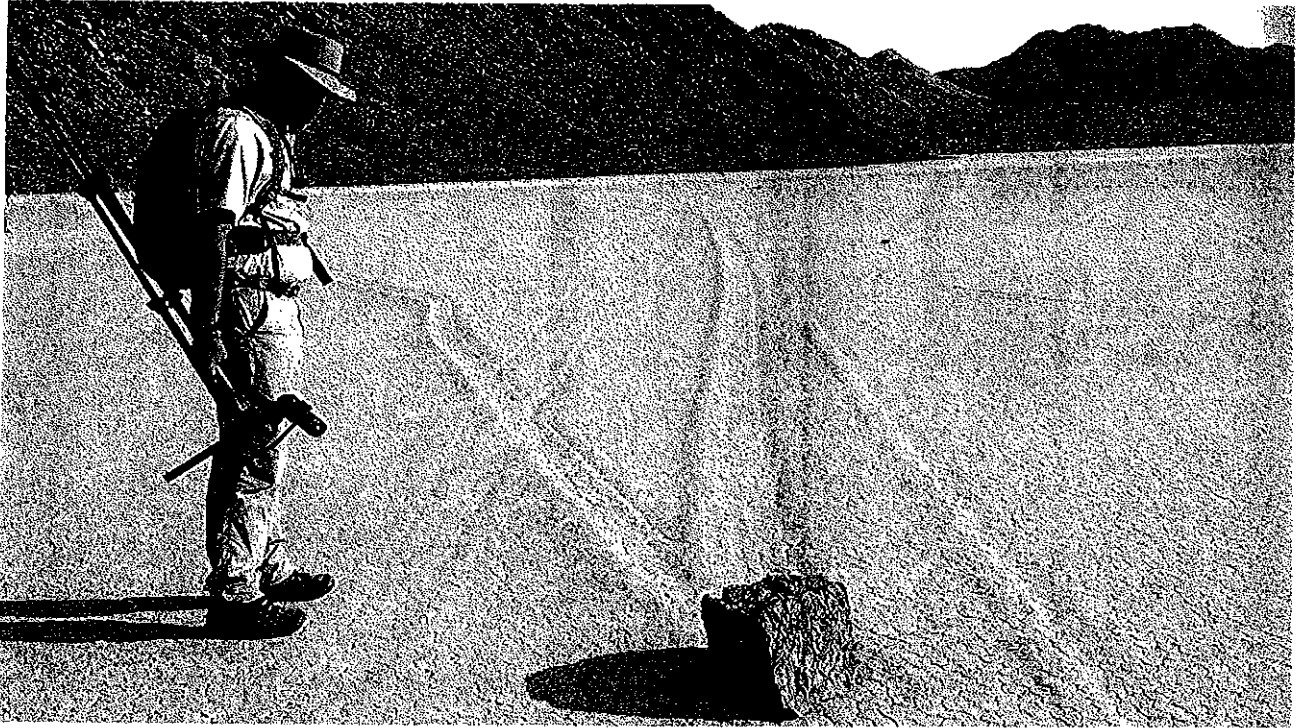
Math – Complete Number patterns worksheets 1, 2, and 3.

Read silently for 45 minutes.

These big rocks leave tracks, but how do they do it?

By Los Angeles Times, adapted by Newsela staff

Sep. 04, 2014 1:00 AM



Scientist Richard Norris surveys one of several hundred rocks that have left trails as they moved across the surface of the Racetrack Playa in California's Death Valley National Park, Aug. 18, 2014.

DEATH VALLEY NATIONAL PARK, Calif.—The cracking sounds were loud as an ankle-deep, frozen lake broke apart under sunny skies.

The normally dry lake bed here in Death Valley National Park is known as “the Racetrack Playa.” A playa is an area of flat dried-up land. On most days, Death Valley is the hottest, driest place on Earth. On this day though, the playa was anything but dry.

As cousins Richard Norris and James Norris watched, a light wind began moving huge sheets of ice across the surface of the water. Soon, that ice was ramming into large rocks. Pushed by the ice, the rocks began to slide across the lake's slick, muddy bottom.

“Oh my, Jim, it's happening,” Richard Norris yelled, as his cousin grabbed a camera.

Rock Trails In The Dirt

Their photos, taken last Dec. 21, solved a mystery that has long puzzled scientists: What is it that moves rocks across the flat dirt of the Racetrack Playa?

The rocks that dot the playa's surface are not small. Some weigh 600 pounds or more.

The proof that the rocks are moving is what they leave behind: trails in the dirt. The trails are cut sharply into the ground—but no other tracks are visible.

Various explanations of how the rocks move have been suggested over the years. Some thought it might be hurricane-force winds blowing while the playa's surface was covered with rain water. Others suggested that perhaps small rafts of ice carried the rocks across the mud, or even that UFOs from outer space were responsible.

However, until that day last December, no one had been able to prove anything.

"I'm amazed," James Norris said. "In a place where rainfall averages 2 inches a year, rocks are being shoved around" by ice.

What Has To Happen

Scientists have been studying the moving rocks since 1948. The first study suggested they were driven by small whirlwinds, which are also called dust devils.

One reason the mystery remained is that the rocks only move occasionally. They can stay still for many years until a particular series of natural events occurs.

The first necessary step is rain falling on the playa. Next, temperatures must fall low enough to freeze the water before it evaporates. Then the sun has to come out and thaw the ice. Once the ice breaks into chunks, a wind has to spring up to move it across the shallow water. Even a light wind is enough to get the ice moving.

Richard Norris and James Norris are both scientists. The two began trying to solve the mystery of the moving stones in 2011.

Over the next two years, they placed various measuring devices around the playa. The devices were to show how much and in what direction the rocks moved.

On Dec. 20, the two cousins returned to inspect their devices. "We found the playa covered with ice," Richard Norris recalled. "We also noticed fresh rock trails."

The following afternoon, "a light wind kicked up and the ice started cracking," Richard Norris said. Suddenly, everything "unfolded before our eyes."

The Ice Does It!

The cousins later learned that a rare winter storm had occurred in late November that had dropped rain and snow on the playa.

Following that storm, the playa was transformed into a shallow lake. The new lake froze overnight when temperatures dropped. On sunny days, the ice began to break into flat blocks of ice. As light winds sprung up, the blocks of ice pushed the stones, which began to move.

James Norris' photos made everything clear: Sheets of ice hundreds of feet across and as thin as 1/4-inch thick blew into rocks. Pushed by the ice, the rocks slid along the slushy, slippery mud. Their paths were determined by the direction and force of the winds. Once the lake disappeared, those paths would remain as trails.

The Norris cousins are not only scientists themselves. Both are also the sons of well-known scientists. Both of their fathers are no longer alive.

"Wouldn't our fathers have loved to have known this?" James Norris said of their discovery.

Quiz

1. Which of the following DOES NOT help in the movement of rocks?
 - a) moving of ice
 - b) winds
 - c) rainfall
 - d) UFOs

2. Which of the following is proof that the rocks move?
 - a) The muddy bottom of the lake
 - b) The trails left behind in the dirt
 - c) The ice on the surface of the water
 - d) The small whirlwinds called dust devils

3. How long did it take the Norris cousins to solve the mystery behind the movement of rocks?
 - a) 1 year
 - b) 2 years
 - c) 4 years
 - d) 6 years

4. Circle the paragraph from the section "What Has To Happen" that describes the conditions under which the movement of rocks occurs.

Name: _____

Number Patterns

1. Examine the number pattern below.

13, 23, 33, 43, 53 ...

Write the next three numbers in the pattern.

_____, _____, _____

If the pattern continues, what will the 12th number in the sequence be?

What rule does this pattern follow?

2. Examine the number pattern below.

27, 34, 41, 48, 55 ...

Write the next three numbers in the pattern.

_____, _____, _____

If the pattern continues, what will the 10th number in the sequence be?

What rule does this pattern follow?

3. Examine the number pattern below.

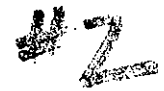
91, 88, 85, 82, 79 ...

Write the next three numbers in the pattern.

_____, _____, _____

If the pattern continues, what will the 18th number in the sequence be?

What rule does this pattern follow?



Name: _____

Number Patterns

1. Examine the number pattern below.

104, 113, 122, 131, 140 ...

Write the next three numbers in the pattern. _____, _____, _____

How do you know which numbers came next?

2. Examine the number pattern below.

331, 316, 301, 286, 271 ...

Write the next three numbers in the pattern. _____, _____, _____

How do you know which numbers came next?

3. Examine the number pattern below.

890, 780, 670, 560, 450 ...

Write the next three numbers in the pattern. _____, _____, _____

How do you know which numbers came next?

Name: _____



Number Patterns

1. Examine the number pattern below.

10, 18, 26, 34, 42 ...

Write the next three numbers in the pattern. _____, _____, _____

How do you know which numbers came next?

2. Examine the number pattern below.

61, 55, 49, 43, 37 ...

Write the next three numbers in the pattern. _____, _____, _____

How do you know which numbers came next?

3. Examine the number pattern below.

56, 67, 78, 89, 100 ...

Write the next three numbers in the pattern. _____, _____, _____

How do you know which numbers came next?
