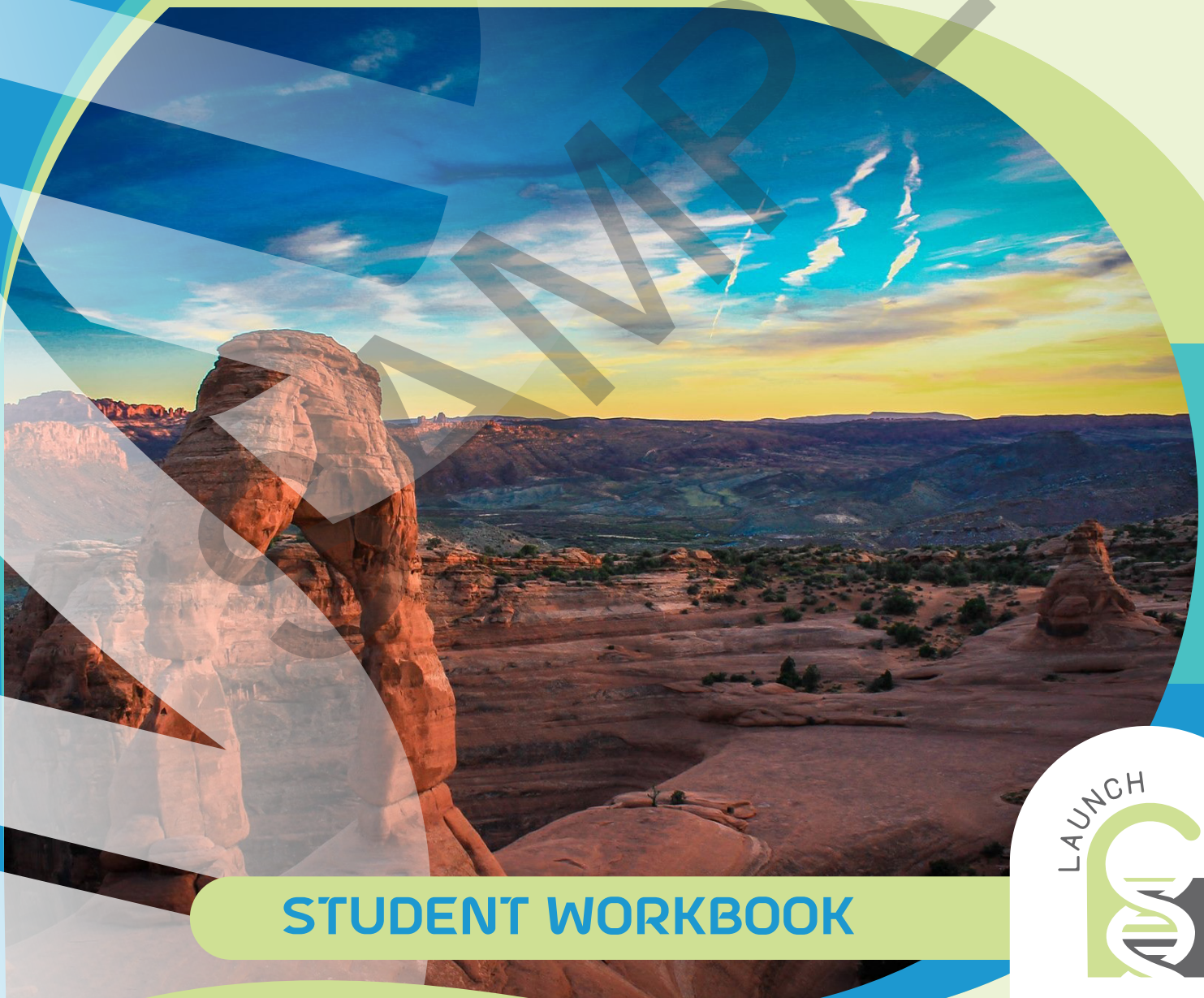
UNUSUAL STRUCTURES



STUDENT WORKBOOK

LAUNCH

ACTIVITY 1

ODD LANDSCAPES

Have you ever looked at a rock tower in the middle of the desert and wondered how it got there? Have you ever felt a rock with a rough side and a smooth side? Have you ever seen sand dunes shifting and moving, where a dune may be there one day, but not the next? In this activity, you will observe, wonder, and attempt to explain these unusual, natural structures, and more structures you have experienced.

I DISCOVERING THE UNUSUAL

We make statues, buildings, bridges, and other structures. Often, these structures are designed after what we see in nature. Those natural structures are built by powerful – but often, slow – processes.

Thor's Hammer at Bryce Canyon National Park in Utah

Metro Cave at Paparoa National Park in New Zealand

Perito Moreno at Los Glaciares National Park in Argentina

Holei Sea Arch at Hawai'i Volcanoes National Park on the island of Hawai'i

PREDICT:

1. What observations did you make about each sample?

Peat moss:

Sand:

Pebbles:

2. In the next step, you are going to shake the bottle to mix the samples and then let it sit so the samples can settle. Based on your findings in the previous experiment, what will the bottle look like after 30 minutes?

3. Put your hand over the opening of the bottle. Shake the bottle and invert it to mix the water and samples.

4. Set the bottle down with the opening face-up.

5. Let the samples settle for 30 minutes. Then, return and answer the Reflect questions.

Water

In nature, as in your experiment, broken down particles are moved with the help of water. Over time, water levels have risen and fallen in different places around the world. The **flow rate** of water, or the volume of fluid that passes in a unit of time, has changed throughout time too.

The water level is high because of flooding.

When the water level and flow rate are high, the largest amounts of sediment are moved downstream. Larger pieces of sediments, such as pieces of cobble, can be moved, along with smaller sediments like sand and silt. When you poured more water through the bore in your experiment, more substrate moved. Additionally, for the pebbles to be moved, you needed a high flow rate and volume.

When water levels and flow rate are low, very little sediment is moved. Only the smallest sediments, like clay and silt, are moved. As a result, layers of sediment build up based on flow rate and water level.

This is a factor in the occurrence of mudslides. When areas with little to no moisture receive huge rainstorms, massive flooding can occur, bringing with the rush of water huge amounts of substrate, plants, and even houses. If you think back to your erosion trays, the peat moss may have looked like a mudslide. You can even repeat the experiment with something representing a tree or house in it to get the full effect.

Gravity

The second mechanism of erosion that you observed in your erosion trays was gravity. Your erosion trays were built on a slope, with one end higher than the other. Therefore, naturally, gravity pulls the sediments down the slope to the pie plate.

Gravity is a driving force of erosion throughout the world. Thor's Hammer (which you saw in Activity 1), along with many other structures in Bryce Canyon, are formed on the sides of the canyon. As a result, the slope of the sides of the canyon acts similarly to the slope of the erosion trays. Gravity pulls the broken-up rock pieces down to the base of the canyon, where they will later be moved away with another mechanism of erosion.

LAUNCH

SCIENCE UNLOCKED

Contact us at: www.homesciencetools.com/customer-service/

A Product of Homesciencetools.com

Kit	SU-UNSTRUC
Instructions	IN-UNSTRUCS
Revision Date	3/2022