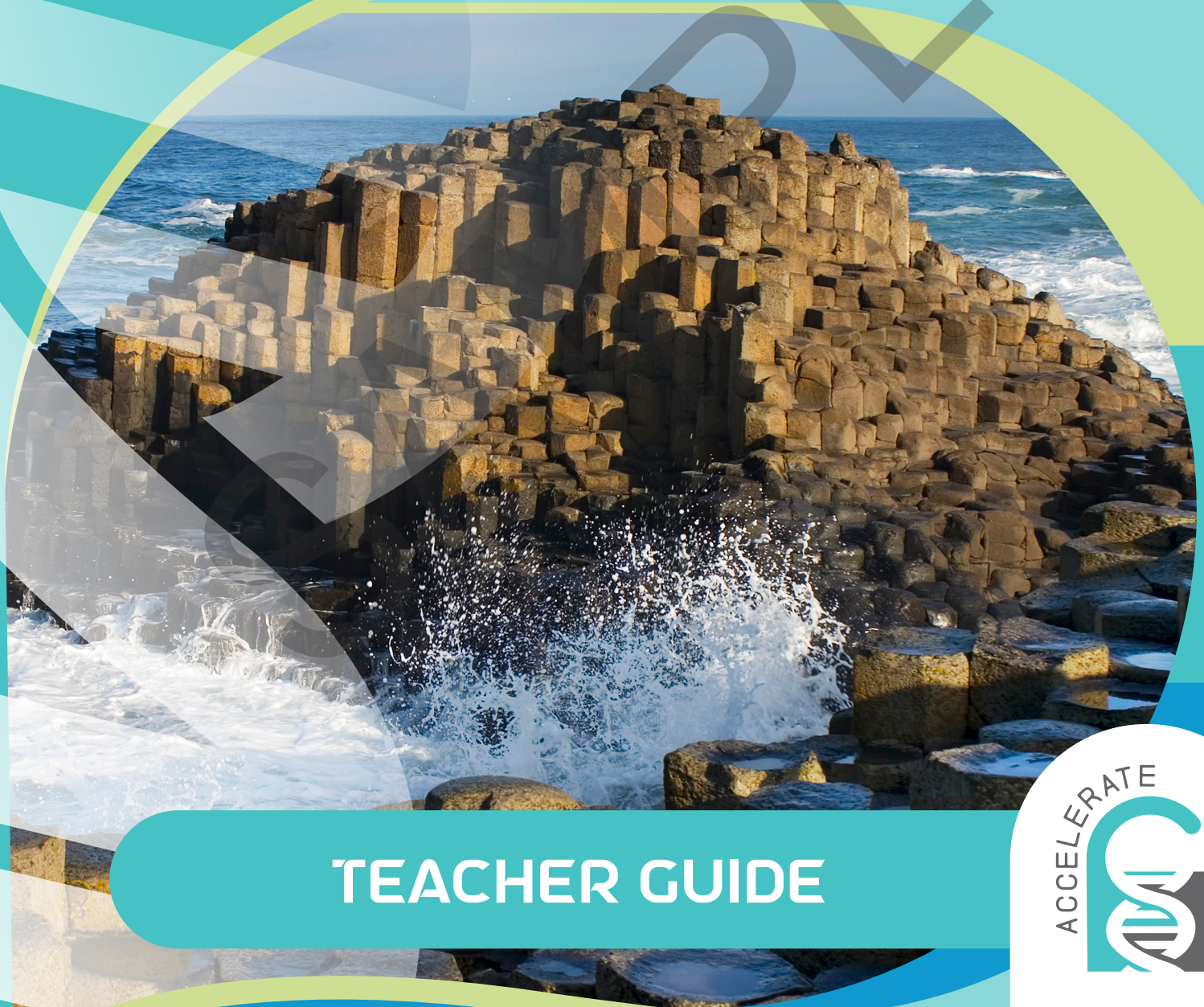


# ROCKS AND RESOURCES



TEACHER GUIDE



# PLANNING

Here's a suggested schedule for this kit! The activities should be completed in order, but you can choose when the lessons take place over time.

ACTIVITY INFORMATION	SECTION (S)	TIME REQUIRED	DAY/ LESSON
<b>ACTIVITY 1: SHAKING THE SOIL</b>  Explore what's inside the earth right around your house.  <b>Time required: 45 min</b>	<input type="checkbox"/> What' in the Tube?	45 minutes	Day 1
<b>ACTIVITY 2: SETTLE DOWN</b>  Learn where soil comes from and how sedimentary rocks are formed.  <b>Time required: 1h 30 min</b>	<input type="checkbox"/> Break It Down	90 minutes	Day 2
<b>ACTIVITY 3: DEEP UNDERGROUND</b>  Create models of igneous and metamorphic rock.  <b>Time required: 1h 30 min</b>	<input type="checkbox"/> Hot Rocks		Day 3

*Full schedule  
available with  
purchase*

# 1

## activity

# SHAKING THE SOIL

Soil is found around Earth's surface, under the grass, and even under the ocean. Your student will look closer at what components make up soil.

## WHAT'S IN THE TUBE?



**WARNING! Contains chemicals that may be harmful if misused. Do not eat or drink. Wash your hands after use.**

**WARNING! Inhalation Hazard - Do not inhale or eat any of the kit contents.**

**WARNING! CHOKING HAZARD - Small parts. Not for children under 3 years.**



## PREPARATION AND SUPERVISION

- In this experiment, the student will compare sedimentation using materials from the kit and soil from around their home.
- The vocabulary terms mineral, rock, and soil are defined.
- Your student may need some help filling the bottles and finding a place to collect soil from around your house. Take a sample that is about 10–15 cm deep.
  - If you live in a building that does not have a lot of soil, this activity can be done with potting soil. Potting soil takes a bit longer to separate in the sedimentation tube.
- They should observe the soils settling for at least 2 hours, or overnight for the best results.
  - The student should use the size and color of soil particles to describe the layers of soil in their observation table.
- DO NOT dump the soil in your sink, this can cause your pipes to clog. Pour the contents of the bottles outside. After most of the water is out of the bottle, then the rest of the soil can be safely disposed of in the trash.



## THINK ABOUT IT!

**? Question 1: Describe the layers and types of soil that you observed in your "SOIL" bottle. What did you see floating or sinking?**

**Answer:**

- Answers will vary based on the soil type in your local area.
- The pebbles have settled to the bottom and the sand on top of that. The smaller particles like clay, are on the top layer. There is some soil floating on top of the water that looks like bark or maybe materials from plants and roots.
- The pebbles and sand feel rough to the touch, but the clay and top layers feel very smooth.

**How to Help:**

- Your local soil is likely darker in color than the soils included in the kit. When the soil separates, there will be clearer colors between the layers.
- Encourage your student to compare the bottles side-by-side to see the particles of sand and clay. The magnifying lens will also help with observing small particles.

## Deep Underground

- In this reading, your student will learn about the complete process in the rock cycle and be introduced to metamorphic rock.
- The vocabulary term metamorphic rock is defined.
- There are additional variables that change all the rocks in the rock cycle. The diagram in the Student Workbook describes lithification to form sedimentary rocks. This is a combination of several steps that presses and cements the rock together.

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## SHOW WHAT YOU KNOW

### ? Question 1: What process do these rock types have in common?

**Answer:** Metamorphic and igneous rocks both use heat to form new rocks. Metamorphic and sedimentary rocks both use pressure to form new rocks.

**How to Help:** Have the student review the rock cycle diagram in this activity.

### ? Question 2: Granite is commonly found in the form of river rocks. Describe the processes that might change granite rock into river rock. Explain the process using the terms from the rock cycle diagram.

**Answer:** The granite is weathered into smaller rocks and smoothed by the water in the river. Other rocks rub together, removing sediment that is eroded by the river. The smooth stones are the same basic rock with a round shape.

**How to Help:** Have your student review the rock cycle diagram in this activity found on page 19.

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activity

## SPECIAL INGREDIENTS

Heat and pressure transform rocks, weathering and erosion can also change rocks. What happens if we change just one mineral ingredient? And where do these ingredients come from?

### LEARNING GOALS:

- ✓ I can use evidence to show that the rock cycle changes the characteristics and composition of rock types.
- ✓ I can use evidence to explain how the uneven distribution of Earth's mineral, energy, and groundwater resources is the result of past and current geological processes.

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## CRYSTAL INGREDIENTS



## PREPARATION AND SUPERVISION

- In this experiment, your student will crack open their geode and discover hidden crystals inside.
- A geode is formed by minerals deposits building up inside a sedimentary or igneous rock. The minerals crystallize, leaving behind a beautiful quartz or calcite structure.
  - The crystal formations inside the geode are often clear or white-colored. Very rarely, additional minerals will change color inside the geode. Calcite crystals are typically small, cloudy, and white; quartz crystals are somewhat larger and clear.
  - Some geodes may be cracked in shipping. If your geode is cracked, let the student know that the crystals formed and sealed inside the rock.





# SCIENCE UNLOCKED

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Kit	SU-ROCKRE
Instructions	IN-ROCKRET
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