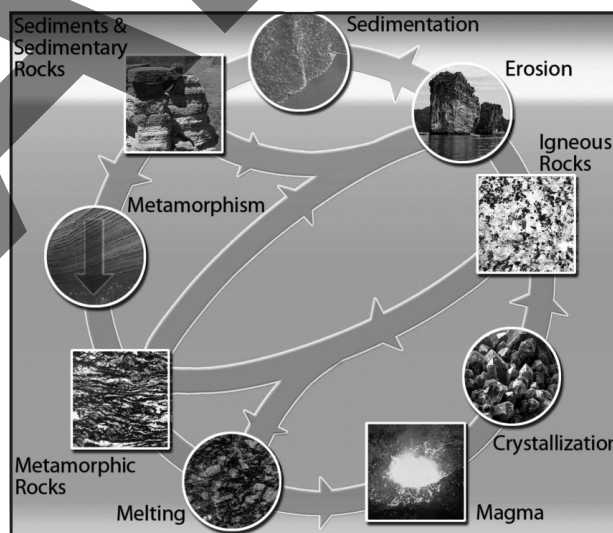


# ROCK-SOLID

- 1 What could be more rock-solid—or unlikely to change—than a rock? The truth is, rocks do change in a gradual yet continuous process called the rock cycle. Not all rocks complete the cycle, and those that do take thousands and even millions of years to transform into each of the three types of rocks—igneous, sedimentary, and metamorphic.
- 2 The rock cycle begins with the formation of igneous rocks. Igneous means “heat” or “fire.” These rocks form when magma cools and solidifies. How quickly the magma cools and whether the cooling happens on or beneath Earth’s surface determine the characteristics of the new rock. Glass-like obsidian is an example of magma that erupted from a volcano, and then cooled rapidly. Granite forms when magma slowly cools beneath Earth’s surface.
- 3 Volcanoes, earthquakes, and movement of Earth’s crust (or tectonic plates) build mountains, while weathering and erosion tear them down. Over time, wind, rain, and ice blast small pieces off exposed rocks. Wind, water, and gravity transport some of the loose pieces and deposit them into lakes and seas. The rock particles, called sediments, build up layer by layer. Eventually, the pressure compacts the sediments and cements them together, forming sedimentary rocks. Because plants and dead animals also settle into the layers of sediments, sedimentary rocks often contain fossils. Sedimentary means “formed by deposited particles.” Sandstone, limestone, and coal are common types of sedimentary rocks.
- 4 Metamorphic means “changed in form.” Metamorphic rocks form when intense heat and pressure rearrange the mineral and chemical elements of the original rocks. Shale evolves into slate and limestone into marble. Some metamorphic rocks, such as slate, have layers or bands, while others, like marble, appear smooth. Most of these rocks form deep below Earth’s surface. If buried deep enough, some of the rocks’ minerals partially melt into magma. Then, the rock cycle starts over.



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- 5 The rock cycle is not a set formula; conditions influence each rock's journey. But rocks do form, erode, and reform in an endless cycle. Igneous, sedimentary, and metamorphic rocks can erode and form into new sedimentary rocks. All three types of rocks can melt, creating new igneous rocks. All rocks under intense stress can become metamorphic rocks. However, the original material that makes up the rocks remains—it simply takes on a new form. The “rock recycle” is probably a better name for the rock cycle.
- 6 Create your own representation of the rock cycle by trying the experiment below.

### Candy Rock Cycle

#### Ingredients and Materials

• 1 x 1 $\frac{1}{2}$ -foot wax paper	• 2 pie tins
• 2 squares of heavy-duty aluminum foil (at least 6 x 8 inches each)	• 2 cups boiling water
• $\frac{1}{2}$ ounce milk-chocolate candy bar	• 2 cups iced water
• $\frac{1}{2}$ ounce white-chocolate candy bar	• potholder
• $\frac{1}{2}$ ounce peanut butter chips	• plastic knife
	• notebook and pen or pencil

#### Directions

1. Lay the wax paper flat on a table. Place two squares of foil on the wax paper.
2. Hold the milk-chocolate candy bar at an angle over one square of foil. Scrape off pieces of the chocolate with the knife.
3. Pile the shavings in the center of the foil.
4. Fold the foil in half. Press down with the palm of your hand.
5. Repeat steps 2 through 4 with the white-chocolate candy bar and the second square of foil.
6. Unfold both pieces of foil. Remove the white chocolate from its foil and place on top of the milk chocolate.
7. Chop the peanut butter chips into tiny pieces. Sprinkle over the white chocolate.

Figure 1

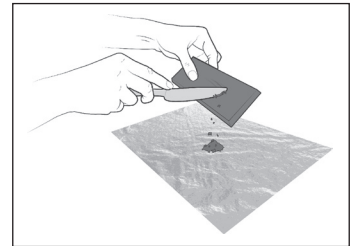
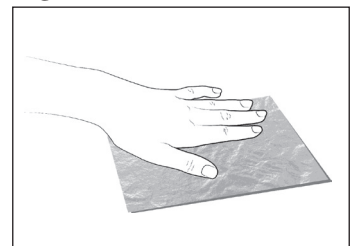


Figure 2



8. Fold the foil around the candy.
9. Hold the foil packet between your hands and press hard for two minutes. While pressing, rub the packet with circular motions. Be careful not to rip the foil.
10. Open the foil packet and remove the candy. Cut the candy into smaller pieces.
11. Shape the foil into a small boat. Place the candy pieces back in the foil.
12. With an adult’s help, pour boiling water into a pie tin. Float the foil boat in the water until the candy melts.
13. Pour ice water into a pie tin. Using the potholder, carefully transfer the foil boat from the hot water to the ice water. Allow the candy to cool.
14. Record your observations in a notebook. Explain how the effects on the candy demonstrate the rock cycle. Note which steps represent weathering and erosion, rock sediments, magma, and the forming of sedimentary, metamorphic, and igneous rocks.

Figure 3

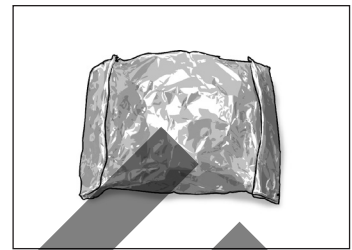
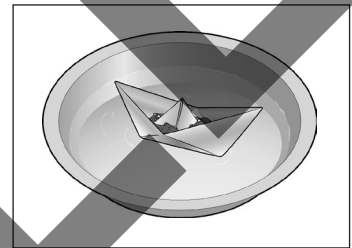


Figure 4



7.2B (Vocabulary—Context) L

1. Read the sentence from paragraph 1 of the passage.

*Not all rocks complete the cycle, and those that do take thousands and even millions of years to transform into each of the three types of rocks—igneous, sedimentary, and metamorphic.*

As used in the sentence above, transform means to—

- A change
- B move
- C shift
- D switch

7.8D.iii (Informational—Patterns) M

2. The words “rock cycle” hint that the passage will be presented using what type of organization?
  - A Sequential
  - B Order of importance
  - C Problem and solution
  - D Compare and contrast

7.5F (Comprehension—Inferences) H

5. Read the question carefully. Then, enter your answer in the box provided.

Read paragraph 13 from the passage. Why does the author conclude “Wanted: Comfortable Teeth” by mentioning George Washington again? Support your answer with evidence from the passage.

A large rectangular box intended for the student's answer. The box is currently empty, except for a large, diagonal watermark that reads "SAMPLE" in a bold, sans-serif font.

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**Read the selection and choose the best answer to each question.**

*Jill wrote the following paper about her favorite place to visit. She wrote about the Brooklyn Botanic Garden. Read Jill's paper carefully and look for any corrections and improvements that she should make. When you finish reading, answer the questions that follow.*

## Blue Garden

(1) I live in New York City which is bursting with interesting places to visit. (2) I enjoy exploring the bustling big city, however, when I want to be somewhere quiet, I go to the Brooklyn Botanic Garden. (3) I think that the Brooklyn Botanic Garden is the most peaceful place in New York City.

(4) My mom started taking me to the garden when I was only a toddler. (5) We have always treasured the time we spend together at the botanic garden. (6) She amazes me when she can name every tree and plant! (7) Just last week, my mom and I spent the afternoon at the botanic garden. (8) Since it's May, we knew the bluebells would be blooming all over one section of the garden called Bluebell Wood. (9) It was like walking on a beautiful blue carpet.

(10) "This was your grandmother's favorite place in the garden," my mom said. (11) Grandma now lives in Arizona. (12) Grandma doesn't visit Brooklyn much anymore where she doesn't like to fly. (13) However, she still mails us batches of her chocolate chip cookies. (14) I reminded my mom about that, and her expression turned thoughtful. (15) "I wish Grandma could still see the bluebells," she said. (16) "She loved this garden so much."

(17) I didn't know what to say, so I took her hand. (18) Then, I had an idea. (19) I lifted the camera hanging around my neck and snapped several photos of the bluebells. (20) "Now, we can send the bluebells to Grandma," I told her excitedly. (21) "We can write underneath the photo, 'Brooklyn is blue without you, Grandma.'" (22) Mom grinned at me.

(23) "How did you get so smart, anyway?" she asked. (24) I shrugged with a smile. (25) Their mood brightened, and we continued through the scenic garden.

## 7.10B.ii (Development) H

1. Enter your answer in the box.

In the second paragraph (sentences 6–12), sentence  is an unrelated detail and should be deleted.

## 7.10C (Revision) H

2. What is the **BEST** way to combine sentences 17 and 18?
  - A Dinosaur experts believe that the dinosaur bit into its prey, the venom ran down the teeth, and poisoned the victim.
  - B Dinosaur experts believe that the venom ran down the teeth and poisoned the victim, while the dinosaur bit into its prey.
  - C When the dinosaur bit into its prey, dinosaur experts believe that the venom ran down the teeth and poisoned the victim.
  - D Dinosaur experts believe that when the dinosaur bit into its prey, the venom ran down the teeth and poisoned the victim.

## 7.10C (Revision) H

3. Look at sentence 25. The word **predicted** does not express what Thomas was trying to say. Which word could **BEST** replace **predicted** and help Thomas improve the meaning of this sentence?
  - A accepted
  - B concluded
  - C noticed
  - D selected

## 7.10D.viii (Conventions) M

4. What changes should be made in paragraph 1 (sentences 1–5)? Select **TWO** correct answers.
  - Change **conclusions** to **conclutions** in sentence 1
  - Change **patients** to **patients'** in sentence 1
  - Change **several** to **sevrall** in sentence 2
  - Change **too** to **two** in sentence 3
  - Change **dark colored** to **dark-colored** in sentence 5

## 7.10D.v (Conventions) M

5. What change, if any, should be made in sentence 26?
  - A Change **Scientists** to **Scientist**
  - B Change **that** to **who**
  - C Change **are** to **were**
  - D Change **dental detectives** to **Dental Detectives**