

# How Hail Happens

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## WORDS TO KNOW

As you read, look inside, around, and beyond this word to figure out what it means.

### • conditions

- 1 A soft rain is falling on the roof. You smile. Suddenly, the sound gets louder. It sounds like golf balls are bouncing off the roof. You race to the window. Outside, round balls of ice cover the ground. It is hailing! How did rain turn into hard hail in a matter of seconds?

### Inside a Storm Cloud

- 2 It actually takes longer than a few seconds for hail to form. It all starts with a storm cloud. Storm clouds are made of water droplets. Large storm clouds are both very wide and very tall. At the top, air is much colder than it is lower down. Raindrops start to form at the bottom of the cloud, where it is warmer.

### Journey of a Raindrop

- 3 As wind moves the storm cloud, it also moves some of the raindrops inside of it. Some of the raindrops move toward the top of the cloud. If the raindrops meet the very cold air there, then they turn to ice. These new “ice drops” get heavier. As a result, they fall to the ground as hailstones.

1



Wind blows raindrops up into a colder level of the cloud.

2



Raindrops freeze and become hailstones.

**Clear and Cloudy Hail**

- 4 Some hail is very clear. Other hail looks like pieces of white chalk. When the hailstone is clear, it is because there is little air in it. That happens when the raindrops freeze slowly. Then the air bubbles in the water have time to escape. Milky looking hailstones have many small air bubbles. That happens when the air at the top of the cloud is super cold. That cold air turns the raindrops into ice right away. The air bubbles are trapped inside.

**Hailstones of Every Shape and Size**

- 5 Sometimes, strong winds move up through a cloud. The wind can pick up the falling hailstones and push them back up. At the top, the hailstones meet the cold air again. There they get a new coat of ice. In a strong thunderstorm, that can happen several times. When you look carefully at a hailstone, you may see some rings. Each ring is one layer of ice. If you count the rings, then you will know how many times the hailstone has made the trip to the top of the cloud. This up-and-down movement causes hailstones to have very unusual shapes. It also makes the hailstones bigger. Some hailstones can be the size of a pebble. Other hailstones can be larger than a baseball!
- 6 Next time you see hail on your lawn, pick some up and look at it closely. It may have quite a story to tell!

**3**

Hailstones become larger and heavier.

**4**

Hail falls to the ground.

 **Think** Use what you learned from reading the selection to respond to these questions.

**1** This question has two parts. First, answer Part A. Then answer Part B.

**Part A**

How do raindrops become hailstones?

- A** Warm clouds form hailstones.
- B** Raindrops in the cold air become ice.
- C** The wind makes hailstones.
- D** The soft rain makes hailstones.

**Part B**

Which sentence from the text **best** explains what causes raindrops to turn into hail?

- A** "If the raindrops meet the very cold air there, then they turn to ice."
- B** "As wind moves the storm cloud, it also moves some of the raindrops inside of it."
- C** "Raindrops start to form at the bottom of the cloud, where it is warmer."
- D** "At the top, air is much colder than it is lower down."

**2** Match each cause to an effect. Write the letter from the second column on the correct line in the first column.

| Cause                                                    | Effect                                             |
|----------------------------------------------------------|----------------------------------------------------|
| _____ Wind moves the storm clouds.                       | <b>A</b> The raindrops turn to ice.                |
| _____ Air bubbles are trapped inside the freezing water. | <b>B</b> They fall to the ground as hailstones.    |
| _____ Hailstones move up and down in the cloud.          | <b>C</b> Raindrops inside the cloud begin to move. |
| _____ Raindrops meet cold air.                           | <b>D</b> The hailstones are milky white.           |
| _____ The ice drops become heavier.                      | <b>E</b> Layers of ice are added.                  |

- 3** Read this sentence from the article.

**Storm clouds are made of water droplets.**

Notice the word with the ending *-let*. That ending means “a small type of something.” According to the sentence, what are storm clouds made of?

- A** smaller clouds
- B** warm drops of water
- C** tiny drops of water
- D** heavy drops of water

- 4** What are **three** effects of hailstones moving up and down in the cloud?

- A** The hailstones break apart.
- B** The hailstones add layers of ice.
- C** The hailstones get stuck in a storm cloud and never fall.
- D** The hailstones warm up and turn back into raindrops.
- E** The hailstones grow larger.
- F** The hailstones may take on unusual shapes.
- G** The hailstones fill with air bubbles.

- 5** What causes rings to form in a hailstone?

- A** the hail’s up-and-down movement in the clouds
- B** escaping air bubbles
- C** the warm air at the bottom of the cloud
- D** the cold air at the top of the cloud

6

- A** Air bubbles get caught inside the hailstones.
- B** There is almost no air inside the hailstones.
- C** The temperature inside the cloud is very cold.
- D** There are strong winds inside the cloud.



**Write** Hailstones can be as small as pebbles or as large as baseballs. Some also have very unusual shapes. How does that happen? Reread the text. Draw a box around the section that tells why hailstones can be different shapes and sizes.

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## Learning Target

**You've seen that knowing about cause and effect can help you understand connections between ideas. Explain why looking for causes and effects is especially important when you are reading science texts.**

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