It's frigid outside, so we'll get snow, right?

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Rob Vitale and his son, Lucas, go sledding at Windmill Hill Park in Alexandria, Virginia, January 13, 2019. Photo by; Matt McClain/The Washington Post

One of the best things about winter is playing in the snow. You do not always see snow when it gets colder, though. Instead, you often see icy rain. Sometimes you see just plain ice.

Here is a reminder of how rain works. As the sun warms it up, water from the ocean evaporates. That means it turns from liquid into gas. The gas rises into the sky. The air around it gets colder the higher up it goes. Eventually, the water is cold enough to turn back into liquid. It clumps together with other drops of water. Then these drops fall back down as rain. Rain, snow and sleet are also called precipitation.

Does rain turn to snow when it is cold on Earth, too? Not exactly. Getting snow is a bit more complicated.

Predicting Snow Is Difficult

Jaclyn Whittal is a meteorologist. She studies the weather for the Weather Network. Snow is the hardest form of precipitation to predict, she says. It all depends on the temperature of the air.

When precipitation falls, it passes through a column of air. This air is not always cold at the top and warm at the bottom. Currents of warm and cold air move around through the atmosphere. That means the air is divided into layers. Sometimes there is a warm layer between two cold layers. The air is like a sandwich made of frozen bread and warm butter.

All precipitation begins way up in the clouds. It starts out as snow. If the snow passes through a layer of warm air on the way down, it can melt. Then it turns into rain. The air must be completely cold for the snow to remain snow.

From Sky To Ground, Cold Air Needed For Snow

That explains why we sometimes see ice even when it is very chilly. Snow needs cold air all the way down. Warm air causes it to melt. When the snow melts, it loses its crystal structure. That is what makes a snowflake a snowflake. The melted snow can become frozen again. It will turn into ice, though, not snow.

Not all snow is made equal, either. The temperature affects whether it will be light or heavy.

Warmer temperatures mean heavier snow, Whittal says. The reason is warmer air holds more water. It creates bigger snowflakes. Colder temperatures make the snow lighter and fluffier.

Quiz

1 What is evaporation?

(A) water freezing

(B) rain falling in the ocean

(C) water turning from a liquid to a gas

(D) water turning from a solid to a liquid

2 Which sentence from the section "Predicting Snow Is Difficult" explains how snow can become rain?

(A) When precipitation falls, it passes through a column of air.

(B) Currents of warm and cold air move around through the atmosphere.

(C) All precipitation begins way up in the clouds.

(D) If the snow passes through a layer of warm air on the way down, it can melt.

3 What happens to snow if it falls through a warm layer of air?

(A) it melts

(B) it rises

(C) it freezes

(D) it evaporates

4 Read the paragraph from the section "From Sky To Ground, Cold Air Needed For Snow."

> *Warmer temperatures mean heavier snow, Whittal says. The reason is warmer air holds more water. It creates bigger snowflakes. Colder temperatures make the snow lighter and fluffier.*

Which question is answered in this paragraph?

(A) Where does heavy snow fall most often?

(B) How do meteorologists predict lighter snow?

(C) Why are some snowflakes bigger than others?

(D) What type of snow is best for making snowballs?

5 What factor makes snow heavy or light?

(A) cloud type

(B) evaporation

(C) humidity

(D) temperature

6 How does air temperature affect snow?

(A) The air needs to have layers of different temperatures in order for it to snow.

(B) The air needs to be completely cold in order for it to snow.

(C) The air needs to be warm at the top and cold at the bottom in order for it to snow.

(D) The air needs to change temperatures quickly in order for it to snow.

7 If melted snow is cooled as it falls, it cannot turn into snow again, so it will turn into ice.

Why does it turn to ice instead of snow?

(A) the air is too warm for snow to form again

(B) when snow melts the snowflakes lose their shape

(C) when snow melts the snowflakes stick together to make hail

(D) warm air at the surface will push the snowflakes back up into the air

8 According to the article, why does snow sometimes turn to ice?

(A) because the crystal structure melts

(B) because the snowflakes are heavy

(C) because the water evaporates

(D) because the air turns colder