Name: _____ Date: _____

Ice Cores: Reading Old Air in a Frozen Layer Cake

Circle group

In the coldest parts of the world, thick sheets of ice cover the land. They were built from snow that fell year after year for a very long time. Scientists use a hollow drill to read them, like a frozen library.

The drill is a long tube with sharp teeth. It spins down into the ice and cuts out a round column. This is called an ice core. The core comes up in short pieces. It is kept very cold and sent to a freezer lab so it will not melt.

An ice core is like a layer cake. Each year's snow makes a layer. Winter snow looks different from summer snow. So scientists count the layers, like the rings of a tree. Deeper pieces are older.

The ice has secrets, too. When snow was squeezed into ice, tiny bubbles of air were trapped. They are samples of air from long ago. Dust and ash from faraway volcanoes are in the layers, too. Scientists learn what the air and weather were like long ago.

Questions

1. What are the thick ice sheets built from?

_____

_____

2. What is an ice core?

_____

_____

3. Why is an ice core kept very cold and sent to a freezer lab?

_____

_____

4. How can scientists tell how many years of snow a core holds?

_____

_____

5. Why are deeper pieces older?

_____

_____

6. What do the tiny bubbles in the ice hold?

_____

_____

Words to know

sheets: wide, flat layers that cover an area
drill: a tool that spins to cut a hole
core: a long round piece cut out from the inside of something
layers: levels of something piled one above another
volcanoes: mountains that can shoot out ash and hot rock

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Ice Cores: Reading Old Air in a Frozen Layer Cake

Triangle group

In the coldest parts of the world, thick sheets of ice cover the land. These sheets were built from snow that fell year after year, for a very long time. Scientists treat them like a frozen library, and they use a hollow drill to read it.

The drill is a long tube with sharp teeth on the end. It spins down into the ice and cuts out a round column, called an ice core. The core is lifted out in short pieces, kept very cold, and sent to a freezer lab so it will not melt.

An ice core is a bit like a layer cake. Each year's snow forms a layer, and winter snow looks different from summer snow, so scientists can count the layers much as they count the rings of a tree. The deeper a piece comes from, the older it is.

The ice holds secrets, too. As snow was squeezed into ice, tiny bubbles of air were trapped inside. Those bubbles are samples of air from long ago. Dust and ash from faraway volcanoes are also stuck in the layers. By studying all of this, scientists can learn what the air and weather were like in the distant past.

Questions

1. What are the thick ice sheets built from?

_____

_____

2. What is an ice core?

_____

_____

3. Why is an ice core kept very cold and sent to a freezer lab?

_____

_____

4. How can scientists tell how many years of snow an ice core holds?

_____

_____

5. Why are pieces from deeper in the ice older?

_____

_____

6. What do the tiny bubbles in the ice hold?

_____

_____

Words to know

sheets: wide, flat layers that cover an area
drill: a tool that spins to cut a hole
core: a long round piece cut out from the inside of something
layers: levels of something piled one above another
volcanoes: mountains that can shoot out ash and hot rock

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Ice Cores: Reading Old Air in a Frozen Layer Cake

Square group

In the coldest regions of the world, thick sheets of ice blanket the land. These sheets were built from snow that fell, year after year, over an immense stretch of time. Scientists treat them like a frozen library, and they use a hollow drill to read it.

The drill is a long tube with sharp teeth at its tip. It spins down through the ice and cuts out a round column known as an ice core. The core is lifted out in short sections, kept extremely cold, and shipped to a freezer laboratory so that it will not melt.

An ice core resembles a layer cake. Each year's snowfall forms a layer, and winter snow looks different from summer snow, so scientists can count the layers much as they count the rings of a tree. The deeper a section comes from, the older it is.

The ice also holds secrets. As the snow was squeezed into ice, tiny bubbles of air were trapped inside, and those bubbles are samples of air from long ago. Dust and ash from faraway volcanoes are preserved in the layers as well. By studying all of this evidence, scientists can learn what the air and weather were like in the distant past.

Questions

1. What were the thick sheets of ice built from?

_____

_____

2. What is an ice core?

_____

_____

3. Why is the core kept extremely cold and shipped to a freezer laboratory?

_____

_____

4. How can scientists tell how many years of snow an ice core holds?

_____

_____

5. Why are sections from deeper in the ice older?

_____

_____

6. What do the tiny bubbles trapped in the ice contain?

_____

_____

Words to know

sheets: wide, flat layers that cover an area
drill: a tool that spins to cut a hole
core: a long round piece cut out from the inside of something
layers: levels of something piled one above another
volcanoes: mountains that can shoot out ash and hot rock

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Ice Cores: Reading Old Air in a Frozen Layer Cake

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Ice Cores: Reading Old Air in a Frozen Layer Cake

Easier · 174 words · Flesch-Kincaid grade 2.2

1. Snow that fell year after year for a very long time.
2. A round column of ice that a hollow drill cuts out of an ice sheet.
3. So it will not melt.
4. They count the layers, like the rings of a tree.
5. Each year's snow lands on top, so the lowest layers fell first.
6. Samples of air from long ago.

Triangle: Ice Cores: Reading Old Air in a Frozen Layer Cake

This passage · 203 words · Flesch-Kincaid grade 4.1

1. Snow that fell year after year for a very long time.
2. A round column of ice that a hollow drill cuts out of an ice sheet.
3. So that it will not melt.
4. They count the layers, much as people count the rings of a tree.
5. Each year's snow lands on top, so the lowest layers fell first.
6. Samples of air from long ago.

Square: Ice Cores: Reading Old Air in a Frozen Layer Cake

Harder · 207 words · Flesch-Kincaid grade 5.4

1. Snow that fell, year after year, over an immense stretch of time.
2. A round column of ice that a hollow drill cuts out of an ice sheet.
3. So that it will not melt.
4. They count the layers, much as people count the rings of a tree.
5. Each year's snow settles on top, so the lowest layers fell first.
6. Samples of air from long ago.