Name: _____ Date: _____

The Pantheon's Dome of Roman Concrete

Circle group

In Rome stands a building with a huge dome. The dome is made of concrete. It has no steel bars inside. It is still the largest dome of its kind in the world. The building is the Pantheon. It was built almost two thousand years ago. Roman concrete made it strong.

Roman concrete was a mix of lime, water, volcanic ash, and pieces of stone or broken brick. When it dried, it became hard as rock. Some Roman concrete even hardened underwater. So builders used it for harbors and docks, too.

To make the dome, workers built a wooden frame shaped like a big bowl. They poured layers of concrete over it. The builders thought about weight. Near the bottom, they used heavy stone in the mix. Higher up, they used lighter things. The walls were thicker at the bottom and thinner at the top. This kept the dome from pressing too hard on what was under it.

At the top is a round opening called an oculus. It lets in light. A bright circle of light moves around the walls as the sun moves. The Pantheon still stands today.

Questions

1. How long ago was the Pantheon built?

_____

_____

2. What was Roman concrete made of?

_____

_____

3. What special thing could some Roman concrete do?

_____

_____

4. How did workers shape the dome?

_____

_____

5. Why did the builders use lighter things higher up?

_____

_____

6. What is the oculus?

_____

_____

Words to know

concrete: a hard building material made from a mix of lime and stone
dome: a round roof shaped like half of a ball
volcanic: coming from a volcano
harbors: safe places along a coast where ships can stay
oculus: a round opening at the top of a dome

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: _____

The Pantheon's Dome of Roman Concrete

Triangle group

In the city of Rome stands a building with a huge dome made of concrete and no steel bars inside it. It is still the largest dome of its kind in the world. The building is called the Pantheon, and it was built almost two thousand years ago. The secret of its strength was Roman concrete.

Roman concrete was a mix of lime, water, volcanic ash, and chunks of stone or broken brick. When the mixture dried, it became as hard as rock. Some Roman concrete even hardened underwater, so builders used it for harbors and docks as well as for buildings.

To raise the dome, workers built a wooden frame shaped like a giant bowl and poured layers of concrete over it. The builders were careful about weight. Near the bottom of the dome, they used heavy stone in the mix, and higher up they used lighter materials. The walls were also thicker at the base and thinner toward the top, so the dome would not press too hard on the structure beneath it.

At the very top is a round opening called an oculus. It lets in light, and as the sun moves across the sky, a bright circle of light travels slowly around the inside walls. After all these centuries, the Pantheon still stands.

Questions

1. How long ago was the Pantheon built?

_____

_____

2. What was Roman concrete made of?

_____

_____

3. What special thing could some Roman concrete do?

_____

_____

4. How did workers shape the dome?

_____

_____

5. Why did the builders use lighter materials higher in the dome?

_____

_____

6. What is the oculus, and what does it do?

_____

_____

Words to know

concrete: a hard building material made from a mix of lime and stone
dome: a round roof shaped like half of a ball
volcanic: coming from a volcano
harbors: safe places along a coast where ships can stay
oculus: a round opening at the top of a dome

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: _____

The Pantheon's Dome of Roman Concrete

Square group

In the city of Rome stands a magnificent building crowned by an enormous dome made of concrete, with no steel bars hidden inside it. It remains the largest dome of its kind anywhere in the world. The building is called the Pantheon, and it was constructed almost two thousand years ago. The secret of its remarkable durability was Roman concrete.

Roman concrete was a blend of lime, water, volcanic ash, and chunks of stone or broken brick. Once the mixture dried, it became as hard as natural rock. Certain types of Roman concrete even hardened underwater, so builders employed it for harbors and docks as well as for ordinary buildings.

To raise the dome, workers assembled a wooden frame in the shape of a gigantic bowl and poured successive layers of concrete over it. The builders paid careful attention to weight. Near the bottom of the dome, they used heavy stone in the mixture, while higher up they chose lighter materials. The walls were also thicker at the base and thinner toward the summit, so that the dome would not press too heavily on the structure beneath it.

At the very top is a circular opening called an oculus. It admits daylight, and as the sun travels across the sky, a bright circle of light glides slowly around the inside walls. After all these centuries, the Pantheon continues to stand.

Questions

1. How long ago was the Pantheon constructed?

_____

_____

2. What ingredients made up Roman concrete?

_____

_____

3. What remarkable thing could some types of Roman concrete do?

_____

_____

4. How did the workers form the shape of the dome?

_____

_____

5. Why did the builders choose lighter materials higher in the dome?

_____

_____

6. What is the oculus, and what does it do?

_____

_____

Words to know

concrete: a hard building material made from a mix of lime and stone
dome: a round roof shaped like half of a ball
volcanic: coming from a volcano
harbors: safe places along a coast where ships can stay
oculus: a round opening at the top of a dome

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: The Pantheon's Dome of Roman Concrete

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

Circle: The Pantheon's Dome of Roman Concrete

Easier · 190 words · Flesch-Kincaid grade 2.8

1. Almost two thousand years ago.
2. Lime, water, volcanic ash, and pieces of stone or broken brick.
3. It could harden underwater.
4. They built a wooden frame like a bowl and poured concrete over it.
5. So the dome would not press too hard on what was under it.
6. A round opening at the top that lets in light.

Triangle: The Pantheon's Dome of Roman Concrete

This passage · 217 words · Flesch-Kincaid grade 6

1. Almost two thousand years ago.
2. Lime, water, volcanic ash, and chunks of stone or broken brick.
3. It could harden underwater.
4. They built a wooden frame like a bowl and poured layers of concrete over it.
5. To keep the dome from being too heavy for the structure beneath it.
6. It is a round opening at the top that lets in light.

Square: The Pantheon's Dome of Roman Concrete

Harder · 230 words · Flesch-Kincaid grade 8.3

1. Almost two thousand years ago.
2. Lime, water, volcanic ash, and chunks of stone or broken brick.
3. They could harden underwater.
4. They assembled a wooden frame like a bowl and poured layers of concrete over it.
5. To keep the dome from pressing too heavily on the structure beneath it.
6. It is a circular opening at the top that admits daylight.