Name: _____ Date: _____

The Greek Gear Box Pulled from a Shipwreck

Circle group

In 1901, sponge divers were waiting out a storm near a small Greek island called Antikythera. There they found an ancient shipwreck on the seafloor. They brought up marble statues, pottery and coins. One find was a crusty lump of old bronze. It did not seem important at first. It sat in a museum in Athens for a while before anyone looked at it closely.

Then the lump cracked, and people saw the teeth of gears. It was about two thousand years old, so this was a big surprise. Scholars had not thought the ancient world could make a machine like it. Over the next hundred years, researchers studied it with X-rays. Later they used strong scanners that could see inside the pieces without harming them. The scans showed dozens of gears. They also showed thousands of tiny letters, mostly a kind of how-to guide.

The device is now called the Antikythera mechanism. Its makers cut every tooth by hand. The gears worked together, so turning one crank moved many dials at once. Researchers think the dials showed where the sun and moon were, the moon's phases, and when some eclipses would happen. It may have tracked calendars and other events in the sky as well.

Some parts are missing, and some facts are still not certain. Scientists still argue about how it looked and worked. But its makers clearly knew a lot about the stars and about gears. For many centuries after, no machine that survives has such careful gears. This crusty lump from the sea is a window into the past.

Questions

1. Who found the shipwreck near Antikythera?

_____

_____

2. What did people see when the lump of bronze cracked?

_____

_____

3. How did researchers look inside the pieces without harming them?

_____

_____

4. What do researchers think the dials showed?

_____

_____

5. Why was the find such a big surprise to scholars?

_____

_____

6. Why do scientists still argue about the machine?

_____

_____

Words to know

shipwreck: the remains of a ship that sank or was destroyed

eclipse: when one object in the sky blocks light from another

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 Greek Gear Box Pulled from a Shipwreck

Triangle group

In 1901, sponge divers sheltering from a storm near the small Greek island of Antikythera found an ancient shipwreck resting on the seafloor. They brought up marble statues, pottery, and coins. Among the finds was a crusted lump of corroded bronze that seemed unimportant at first. It sat in a museum in Athens for a while before anyone looked closely.

When the lump cracked, people saw the teeth of gears. For a piece of machinery that was about two thousand years old, that was astonishing. Scholars had not expected the ancient world to produce anything like it. Over the following century, researchers studied it with X-rays and later with powerful scanners that could see inside the fragments without damaging them. The scans revealed dozens of gears and thousands of tiny letters of inscription, most of it a kind of instruction manual.

The device is now called the Antikythera mechanism. Its builders cut every tooth by hand, and the gears worked together in trains so that turning a single crank moved many dials at once. Researchers believe the dials showed the positions of the sun and moon, the phases of the moon, and the time of certain eclipses. It may have tracked calendars and other events in the sky, too.

Some parts are missing, and some details remain uncertain, so scientists continue to debate exactly how the whole machine looked and worked. What is clear is that its makers understood a great deal about astronomy and about gears. For many centuries afterward, no surviving machine shows such careful gearing, which makes this crusted lump from the sea a remarkable window into the past.

Questions

1. Who found the shipwreck near Antikythera?

_____

_____

2. What did people notice when the lump of bronze cracked?

_____

_____

3. How did researchers look inside the fragments without damaging them?

_____

_____

4. What did researchers believe the dials showed?

_____

_____

5. Why was the discovery so astonishing to scholars?

_____

_____

6. Why do scientists still debate parts of the machine?

_____

_____

Words to know

shipwreck: the remains of a ship that sank or was destroyed
corroded: slowly eaten away, as metal is by water or air
inscription: words that are carved or scratched into a surface
eclipse: when one object in the sky blocks light from another
astronomy: the study of stars, planets, and space

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 Greek Gear Box Pulled from a Shipwreck

Square group

In 1901, a group of sponge divers sheltering from a storm near the small Greek island of Antikythera happened upon an ancient shipwreck resting on the seafloor. From it they recovered marble statues, pottery, and coins. Among the finds was a crusted lump of corroded bronze that appeared unremarkable at first, and it sat in a museum in Athens for some time before anyone examined it closely.

When the lump cracked open, observers noticed the unmistakable teeth of gears. For a piece of machinery roughly two thousand years old, that discovery was astonishing, because scholars had never expected the ancient world to produce anything of the kind. Over the following century, researchers studied the fragments with X-rays and later with powerful scanners capable of peering inside them without causing any damage. The scans revealed dozens of gears and thousands of tiny letters of inscription, much of it resembling an instruction manual.

The device is now called the Antikythera mechanism. Its builders cut every tooth by hand, and the gears worked together in trains, so that turning a single crank moved many dials simultaneously. Researchers believe the dials displayed the positions of the sun and moon, the phases of the moon, and the timing of certain eclipses. The machine may also have tracked calendars and other events in the sky.

Some parts are missing and some details remain uncertain, so scientists continue to debate exactly how the whole machine appeared and operated. What is clear is that its makers understood a great deal about astronomy and about gears. For many centuries afterward, no surviving machine displays such careful gearing, which makes this crusted lump from the sea a remarkable window into the past.

Questions

1. Who discovered the shipwreck near Antikythera?

_____

_____

2. What did observers notice when the lump of bronze cracked open?

_____

_____

3. How did researchers look inside the fragments without causing damage?

_____

_____

4. What do researchers believe the dials displayed?

_____

_____

5. Why was the discovery so astonishing to scholars?

_____

_____

6. Why do scientists continue to debate parts of the machine?

_____

_____

Words to know

shipwreck: the remains of a ship that sank or was destroyed
corroded: slowly eaten away, as metal is by water or air
inscription: words that are carved or scratched into a surface
eclipse: when one object in the sky blocks light from another
astronomy: the study of stars, planets, and space

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 Greek Gear Box Pulled from a Shipwreck

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

Circle: The Greek Gear Box Pulled from a Shipwreck

Easier · 264 words · Flesch-Kincaid grade 4.9

1. Sponge divers.
2. The teeth of gears.
3. They used X-rays and strong scanners.
4. Where the sun and moon were, the moon's phases, and when some eclipses would happen.
5. They had not thought the ancient world could make a machine with gears like it.
6. Some parts are missing, so some facts are not certain.

Triangle: The Greek Gear Box Pulled from a Shipwreck

This passage · 272 words · Flesch-Kincaid grade 9.1

1. A group of sponge divers.
2. They saw the teeth of gears.
3. They used X-rays and powerful scanners.
4. The positions of the sun and moon, the phases of the moon, and eclipse times.
5. They had not expected the ancient world to make such a geared machine.
6. Some parts are missing, so some details remain uncertain.

Square: The Greek Gear Box Pulled from a Shipwreck

Harder · 282 words · Flesch-Kincaid grade 11.6

1. A group of sponge divers sheltering from a storm.
2. The teeth of gears.
3. They used X-rays and powerful scanners.
4. The positions of the sun and moon, the moon's phases, and the timing of certain eclipses.
5. They had never expected the ancient world to produce a geared machine of this kind.
6. Some parts are missing, so some details remain uncertain.