

After lots of work, the Leaning Tower of Pisa is a little bit straighter

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The Leaning Tower of Pisa kept leaning more over time. Engineers were able to save it. The tower has even straightened slightly, experts said on November 21, 2018. Photo by Tiziana Fabi/AFP/Getty Images

"It's still straightening," said engineer Roberto Cela, gazing at the Leaning Tower of Pisa. "And many years will have to pass before it stops." Engineers like Cela help design and build buildings.

The 187-foot tower is leaning less, thanks to years of work. It's still leaning, though, which is great for the millions of tourists who visit every year.

The bell tower is a symbol of the power of Pisa hundreds of years ago. Pisa is a city in the north of Italy. The tower has leaned ever since it started getting built in the year 1173. The ground under the building is too soft to hold up a heavy building.

Tower Was In Danger Of Falling

The tower was closed to the public in 1990 for 11 years. By that time, it was leaning out by 15 feet, so far that the tower could fall.

"We installed a number of tubes underground, on the side that the tower leans away from," said Cela. He leads the OPA, the group that looks after Pisa's monuments, or famous buildings. "We removed soil by drilling very carefully," he said. The team was able to straighten the tower a bit.

Engineering professor Nunziante Squeglia has been studying and measuring the tower for 25 years. He said the tower straightened by 16 inches between 1990 and 2001, and another 1.5 inches since then.

Still A Mysterious Construction

To understand how the 16,000-ton building is moving, experts are taking measurements every hour. Some measurements use pendulums. Pendulums are weights that hang down. Their angle measures how much the tower is tilting. Other measurements use an optical level, a tool used to measure height.

Squeglia said the tower leans less in the summer because the stones get warm. Certain materials, such as wood and stone, get larger when they get hotter. This makes the tower straighten up a bit.

People have been measuring the tower every year since 1911. "The tower was much more mysterious when I arrived. It wasn't clear why it was leaning, and increasingly leaning," said Squeglia. The building has been studied "for over 100 years but there are still so many things to know," he said. For example, there are mysterious remains inside the tower, which look like a dome. A dome is a round roof.

The Leaning Tower Will Always Lean

Cela thinks that the tower "will never be completely straight." He said the original builders tried to straighten the tower. They added extra blocks on one side, which is why the tower is slightly banana-shaped.

Alvin is a tourist from Singapore, a country in Southeast Asia. He is taking pictures of friends pretending to hold up the tower in the background. These pictures are popular with visitors. Alvin said he didn't know the tower was leaning less.

"Oh, I didn't notice, is it because like everyone's pushing against it?" he said. Alvin joked that he would try to push the tower back if it straightens too much.

Quiz

1 Which two choices are main ideas of the article?

1. *The Leaning Tower of Pisa does not tilt as much after years of work.*
2. *Roberto Cela leads the group that takes care of Pisa's monuments.*
3. *Safety concerns caused the tower to be closed to the public for 11 years.*
4. *The tower includes mysterious remains inside that look like a dome.*

- (A) 1 and 2
- (B) 2 and 4
- (C) 1 and 3
- (D) 3 and 4

2 Read the paragraph from the section "Still A Mysterious Construction."

To understand how the 16,000-ton building is moving, experts are taking measurements every hour. Some measurements use pendulums. Pendulums are weights that hang down. Their angle measures how much the tower is tilting. Other measurements use an optical level, a tool used to measure height.

How does this paragraph support the main idea of the article?

- (A) It explains the way engineers measure how much the tower is leaning.
- (B) It shows the reason why engineers were afraid that the tower would fall over.
- (C) It describes the step-by-step process that engineers took to straighten the tower.
- (D) It highlights what engineers think the tower will look like in the future.

3 According to the section "Tower Was In Danger Of Falling," how did engineers stop the tower from falling over?

- (A) The engineers straightened the tower by putting underground tubes all around it.
- (B) The engineers placed underground tubes on one side and drilled to get rid of some dirt.
- (C) The engineers started to take away soil using the underground tubes that they installed.
- (D) The engineers used drills and pendulums to pull the tower up by 15 feet.

4 What caused the Tower of Pisa to lean in the first place?

- (A) The builders put blocks on one side to make it into a banana shape.
- (B) The builders made it on top of ground that is too soft.
- (C) The builders use pendulums to help make it lean to one side.
- (D) The builders created it during the summer when the stones were warm.