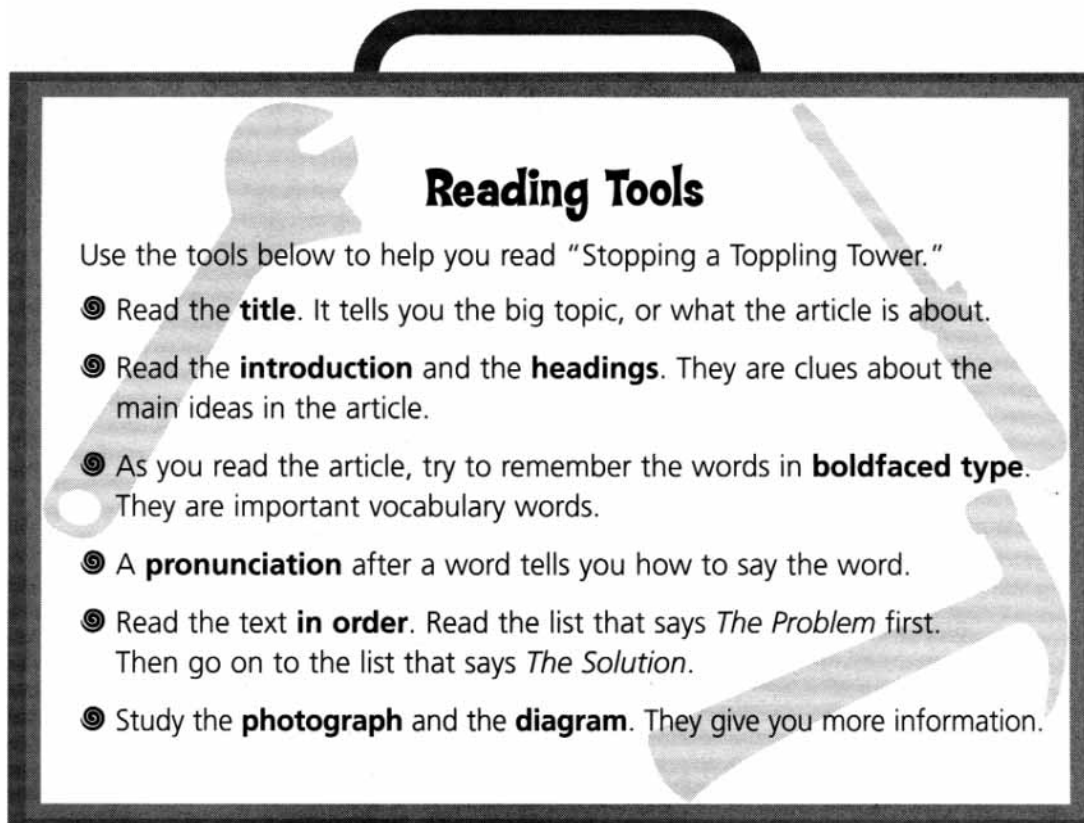


Nonfiction Text

When you read **nonfiction**, you learn information. Science and social studies articles are one kind of nonfiction. They give you information about a topic like wolves or great explorers.

Take a look at the following nonfiction article. You can see that it looks very different from a storybook. How? You see a title, headings, and numbers—all in different sizes. There are also special features, such as the photograph, diagram, and box at the bottom of the page. And instead of reading across the page from left to right, you have to read two columns.

All of this stuff may be very confusing. However, each feature is a tool, just like a hammer or a can opener. A tool helps you do your work. Nonfiction tools help you understand what you are reading. But first you have to learn how to use them.



Reading Tools

Use the tools below to help you read "Stopping a Toppling Tower."

- ① Read the **title**. It tells you the big topic, or what the article is about.
- ② Read the **introduction** and the **headings**. They are clues about the main ideas in the article.
- ③ As you read the article, try to remember the words in **boldfaced type**. They are important vocabulary words.
- ④ A **pronunciation** after a word tells you how to say the word.
- ⑤ Read the text **in order**. Read the list that says *The Problem* first. Then go on to the list that says *The Solution*.
- ⑥ Study the **photograph** and the **diagram**. They give you more information.

Remember to use these Reading Tools when you read any nonfiction.

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Stopping A Toppling Tower

by Mary Kay Carson

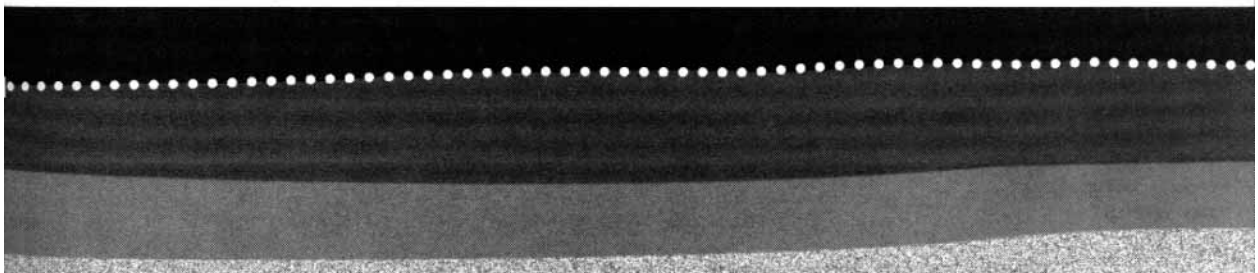
Every year, the Leaning Tower of Pisa (PEA-zuh) tilts a fraction of an inch farther! If it tilts too far, this famous Italian building could topple or crash to the ground. Scientists had to find a way to save the tower—without making it a “Straight Tower of Pisa.”

It's amazing but true that the tower has been tilted ever since it was built more than 900 years ago. The problem is that each year it leans a tiny bit more. In 1990 **engineers** said that the tower was in danger of toppling. The building was no longer safe. It had to be closed to visitors.

For years, engineers and scientists had been thinking about how to stop the tower from falling over. After considering many ideas, they agreed on a possible solution. In 1998, engineers started work to save the **landmark**.

The Problem

1. The tower weighs 14,000 tons. Wind pushes from the sides. Sometimes there are small earthquakes that rattle the building. These forces weaken the slanted tower.
2. Tall, skinny shapes are hard to balance. A skinny tower has a small **foundation**. That makes it easy for it to tilt too far to one side. Then—TIMBER!
3. The tower is built on soft sand and clay. The heavy building squishes the soft soil beneath it. That makes the tower slowly sink. Why does it lean? The soil is softest under the tower's low side, so that side sinks more.
4. As the tower leans, more of its weight rests on the lower side. That **compression**, or squeezing, could cause the tower to tip over.

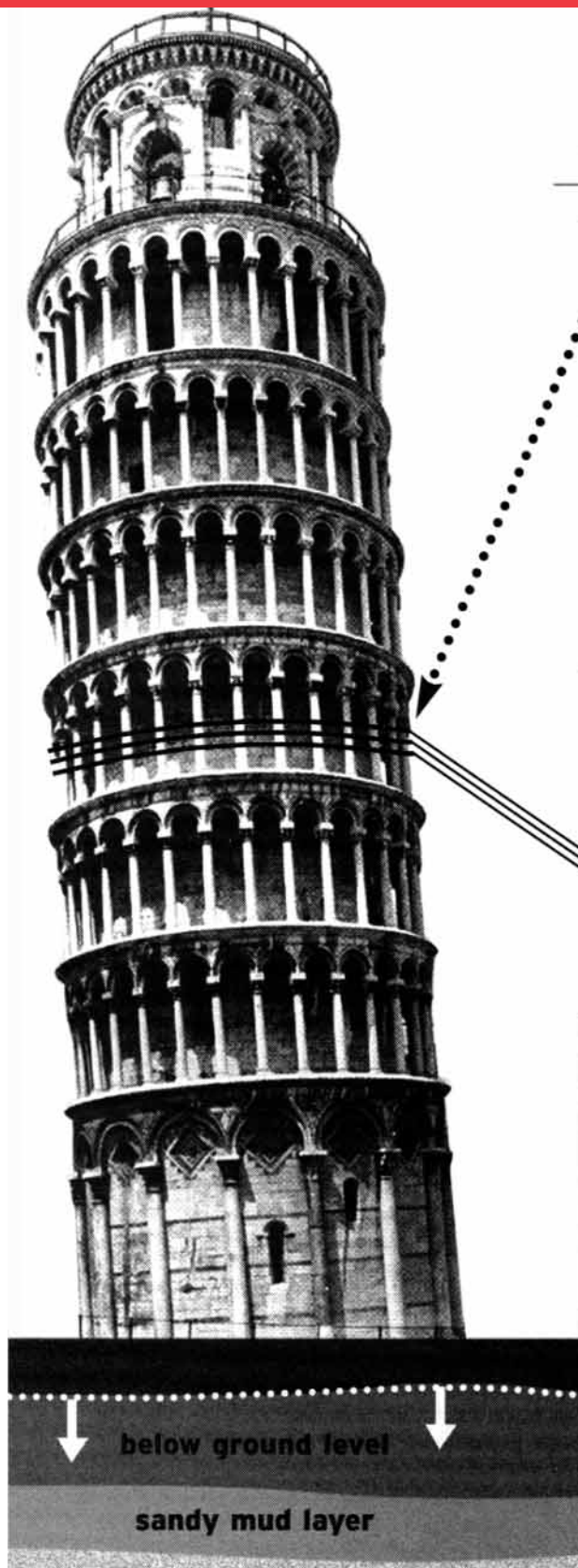


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The Solution

1. First, workers wrapped steel **cables** around the tower. The cables were heavy ropes made of steel wire. Workers hooked the ends of the cables to heavy weights. If the tower started to topple, the cables would hold it up.
2. The workers started to dig under the high side of the tower (the right side in the photo). They slowly and carefully took away some of the soil. They hoped that the tower would sink a little on that side. It did—by one inch! That may not sound like much, but it was enough to make the tower straighter.
3. No one can see the change in the tilt of the tower, but now it's safe. It was reopened in January 2002. Once again, visitors come from all over the world to see it and climb to the top. Engineers expect that the tower will stand—tilted—for centuries to come.

Thanks, But No Thanks...

People have sent hundreds of tower-fixing ideas to the Italian government. Why do you think these four ideas were rejected? What ideas do you have?

1. Freeze the ground under the tower.
2. Slice off the top to make the tower lighter.
3. Hitch a car to the tower and pull the tower straight.
4. Stuff rice and beans under the low side. When the foods absorb water, they will swell and push up the tower.

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