

Name: \_\_\_\_\_

# Bridge Mechanics

By Lydia Lukidis

Bridges are built over obstacles like roads, rivers, or railroad tracks. They allow people or vehicles to cross from one side to another. Without them, we would have a hard time moving around.



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support their weight, but also the weight of the people and vehicles that go over them.



**The Golden Gate Bridge in San Francisco is an example of a suspension bridge.**

Think about this: the Golden Gate Bridge in San Francisco weighs 887,000 tons. Then imagine the weight of hundreds of people and cars. That's pretty heavy!

Bridges need to have a solid foundation and must last a long time. They must also be built in a way that protects them from earthquakes, strong winds, and freezing. Bridges are very safe. Partial or total collapses are very rare.

There are various types of bridges.

The three main types of bridges are arch, suspension, and beam. Let's take a closer look at each one.

Arch bridges were invented a long time ago by the Romans. They were built out of stone or brick, and rested on support structures in the shape of arches. Arch bridges built today are built with concrete and steel.

Beam bridges are horizontal beams supported by columns. The columns take the weight of the people and vehicles passing on the beam. These bridges are very old as well, and people

used stone and trees to build them. Today, they can be built out of concrete and steel.

Suspension bridges have two main pillars on either side of the deck. The pillars are



**The Maslenica Bridge in Croatia is a beautiful arch bridge.**



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**The Seven Mile Bridge in the Florida Keys is an example of a beam bridge.**

Zhaozhou Bridge. It's an arch bridge made out of stone that was built in 605 A.D. Believe it or not, it's still standing and being used today! But if you're looking for one of the most beautiful and famous bridges, it would be the Golden Gate Bridge in San Francisco. It's a suspension bridge that was finished in 1937. It has a total length of

8,981 feet. If you think that's long, you should see the Danyang–Kunshan Grand Bridge in China. It's just over 541,339 feet long! It's the world's longest bridge. It took 4 years to build, with the help of 10,000 workers, and cost about \$8.5 billion.

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1. Based on the information in the article, which option best describes how long the oldest bridges have been around?
  - a. more than five decades
  - b. more than five hundred years



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3. The oldest bridge in China, the Zhaozhou Bridge, is an example of a(n) \_\_\_\_\_ bridge.
4. The Golden Gate Bridge in San Francisco is an example of a(n) \_\_\_\_\_ bridge.
5. If you see a bridge that looks like a horizontal structure being held up by columns, you are looking at a(n) \_\_\_\_\_ bridge.

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Match each vocabulary word from the article with the correct definition.

1. \_\_\_\_\_ columns

a. the design and construction of buildings,



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5. \_\_\_\_\_ obstacles

e. able to withstand difficult conditions

6. \_\_\_\_\_ engineers

f. pillars that stand upright and support a structure

7. \_\_\_\_\_ foundation

g. occurring in recent times rather than in the past

8. \_\_\_\_\_ vertical

h. things that block your path or prevent you from moving forward

9. \_\_\_\_\_ horizontal

i. strong, thick ropes used to support suspension bridges

10. \_\_\_\_\_ modern

j. parallel to the horizon

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In the article, "Bridge Mechanics," you learned about the three main types of bridges: arch, beam, and suspension. You also learned some interesting facts about world-famous bridges and why they're unique.

Choose a famous bridge not mentioned in the article. With an adult's permission, use



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4. The Golden Gate Bridge in San Francisco is an example of a(n) suspension bridge.

5. If you see a bridge that looks like a horizontal structure being held up by columns, you are looking at a(n) beam bridge.

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9. j. horizontal

i. strong, thick ropes used to support suspension bridges

10. g. modern

j. parallel to the horizon