

Date

Subtheme

Start Time: Choose a start time. End Time: Choose an end time.	Curriculum Area: Conceptual Knowledge-Numeracy Conceptual Knowledge-Numeracy	Materials: <ul style="list-style-type: none">Rubber elephantsTwenty-One Elephants bookAdapted number linePreviously built student bridgesCamera for picturesGraph/frequency tableVisuals
Objective(s): Students will apply and extend previous understanding of addition and subtraction. Students will construct and analyze data using a frequency table. Students will acquire and use accurately general academic and theme-related words and phrases.		
Introduction: <ul style="list-style-type: none">Teacher will review the theme 'Over the Bridge' and the story <i>Twenty-One Elephants</i> with students.Teacher will bring out the bridges that students made previously."Today we are going to test how strong our bridges are! We are going to see how many elephants each bridge will hold."Students will get back into their small groups and teacher/TA will distribute elephants.		
Body: <ul style="list-style-type: none">One group at a time, students will take turns placing toy elephants on the bridge.When there is no more room for elephants on the bridge OR when the bridge collapses, have students count the total number of elephants that they were able to fit on their bridge.Have a student record the total on the classroom graph/frequency table.Have students practice...<ul style="list-style-type: none">rote countingtouching the elephants as others countidentifying the correct number from a field of _____Repeat with each group/bridge.*TAKE PICTURES ☺After all groups have gone, bring students together and begin to analyze the group data.<ul style="list-style-type: none">Which bridge held the most elephants? The least?How many elephants did these two bridges hold together?How many more elephants did this bridge hold than this bridge?		
Closing: <ul style="list-style-type: none">We counted so many elephants today!What was the biggest number we counted to today? Let's practice counting outloud to that number now.Use adapted number line, communication systems, numbered puzzle, etc.Tomorrow we will _____ with our bridges.		

Accommodations:

Objects/manipulatives
Picture supports
Adapted text
Leveled prompting
Communication system
Differentiated materials
Adapted number line

Multiple Intelligences:

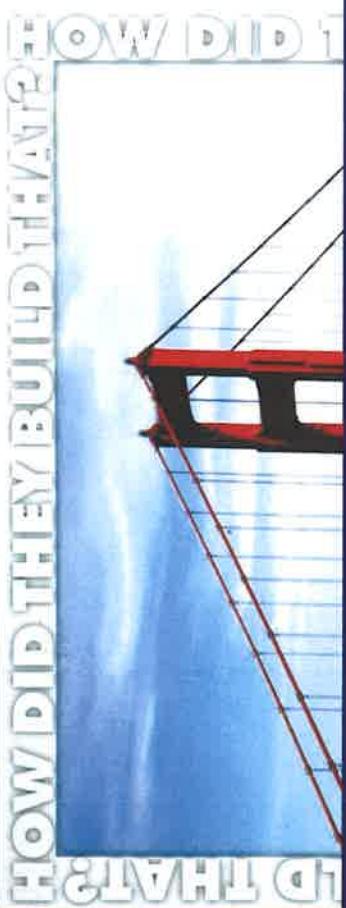
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|--|--|--|
| <input checked="" type="checkbox"/> Linguistic | <input checked="" type="checkbox"/> Bodily Kinesthetic | <input checked="" type="checkbox"/> Logical-Mathematical |
| <input checked="" type="checkbox"/> Visual-Spatial | <input type="checkbox"/> Musical | <input checked="" type="checkbox"/> Interpersonal |
| <input type="checkbox"/> Intrapersonal | <input checked="" type="checkbox"/> Naturalist | |

Common Core Standards (<http://www.corestandards.org/read-the-standards/>) :

[CCSS.MATH.CONTENT.7.NS.A.1](#)
[CCSS.MATH.CONTENT.7.NS.A.3](#)

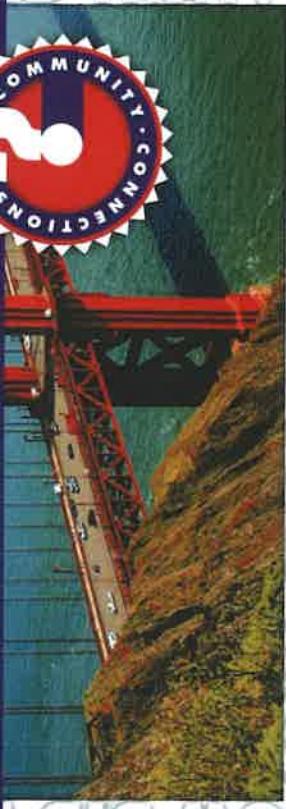
LCCE Competencies (Link to LCCE Competencies):

Link lesson appropriately to LCCE competencies. Click on the link above to view competencies.



HOW DID THEY
BUILD THAT?
BRIDGE

BY VICKY FRANCHINO



HOW DID THEY
BUILD THAT?

HOW DID THEY BUILD THAT?

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bridge



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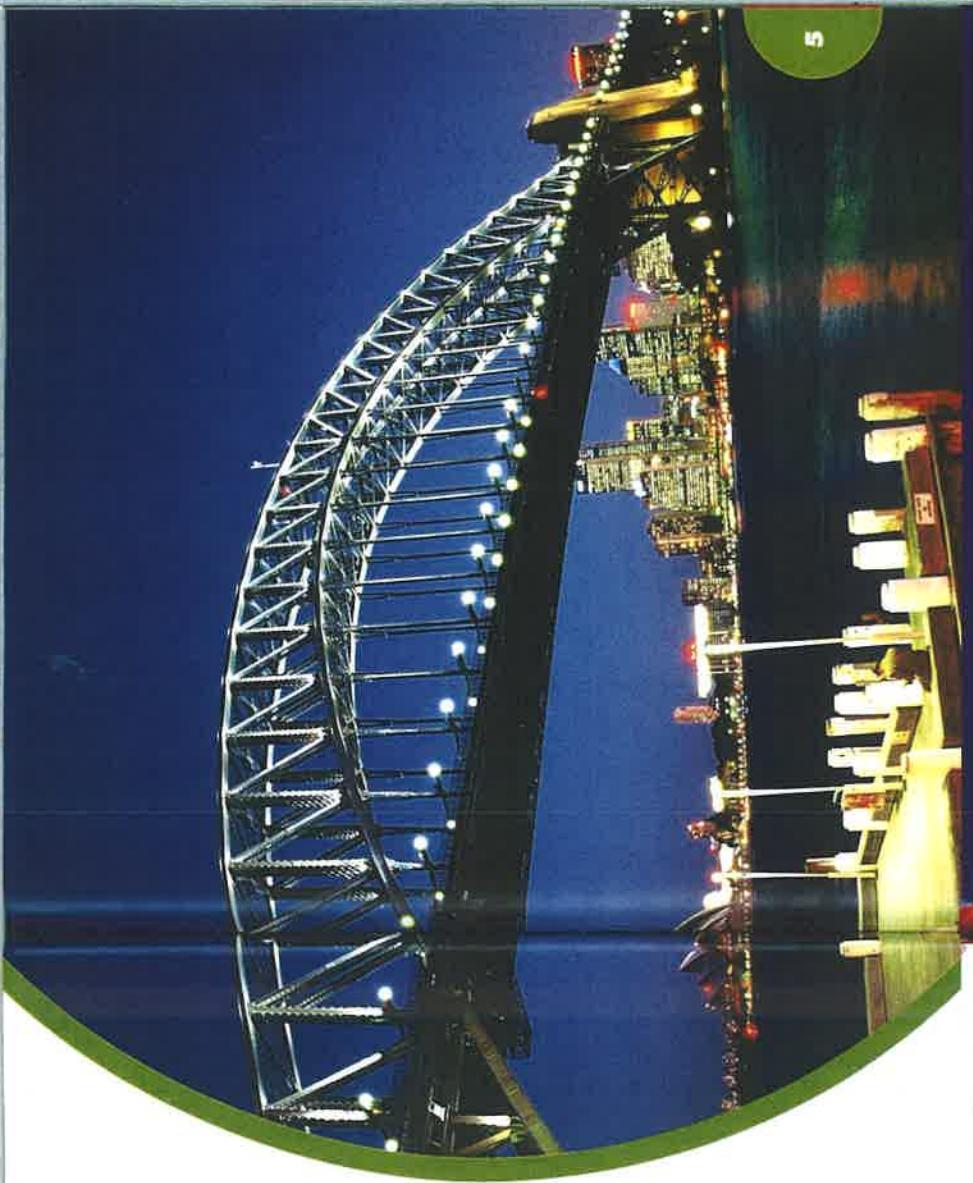
HOW DO BRIDGES HELP US?

A bridge helps us get from one place to another. A bridge can go over land or water. Sometimes they go over roads and train tracks. Big bridges go over rivers. Do you know how bridges are made? Let's learn more about bridges.

5

The Sydney Harbor Bridge is in Australia.

4



Some bridges are small. Others are large. Many old bridges were made of wood and stone. Today, bridges are often made of concrete and steel. These are very strong materials. They will last for a long time.

LOOK!



Look for different types of bridges near your house. Do any of the bridges have interesting designs? Are all of them for cars? Sometimes you might find a bridge in a surprising place. Look in a park or a garden.

TYPES OF BRIDGES

A beam bridge is often a simple bridge. It is held up by the ground or by strong supports called **piers**. Beam bridges are often made for people to walk over.

Drawbridges are bridges that lift up to let large boats pass through. These bridges lower again to let cars or people cross over the water.

Tower Bridge in London is a famous drawbridge.

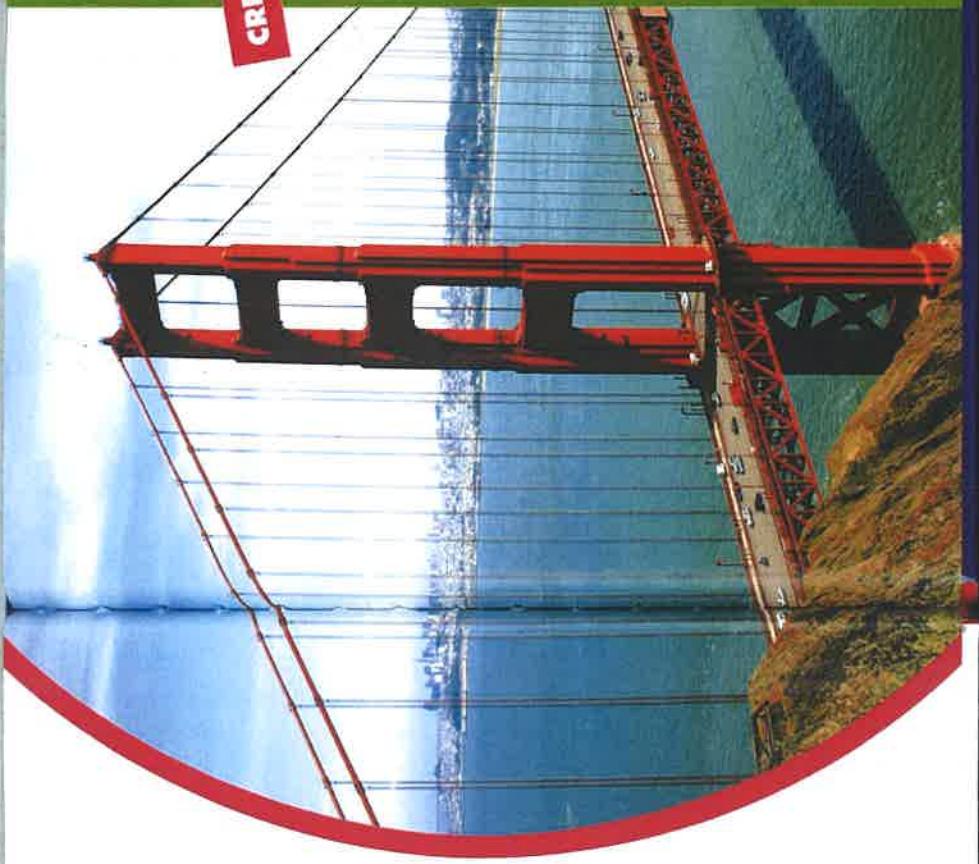


Some of the most famous bridges are **suspension bridges**.

Strong **cables** hold them up.

The cables are attached to towers and to blocks called

anchorages. The towers and anchorages keep the bridge from falling.



CREATE!

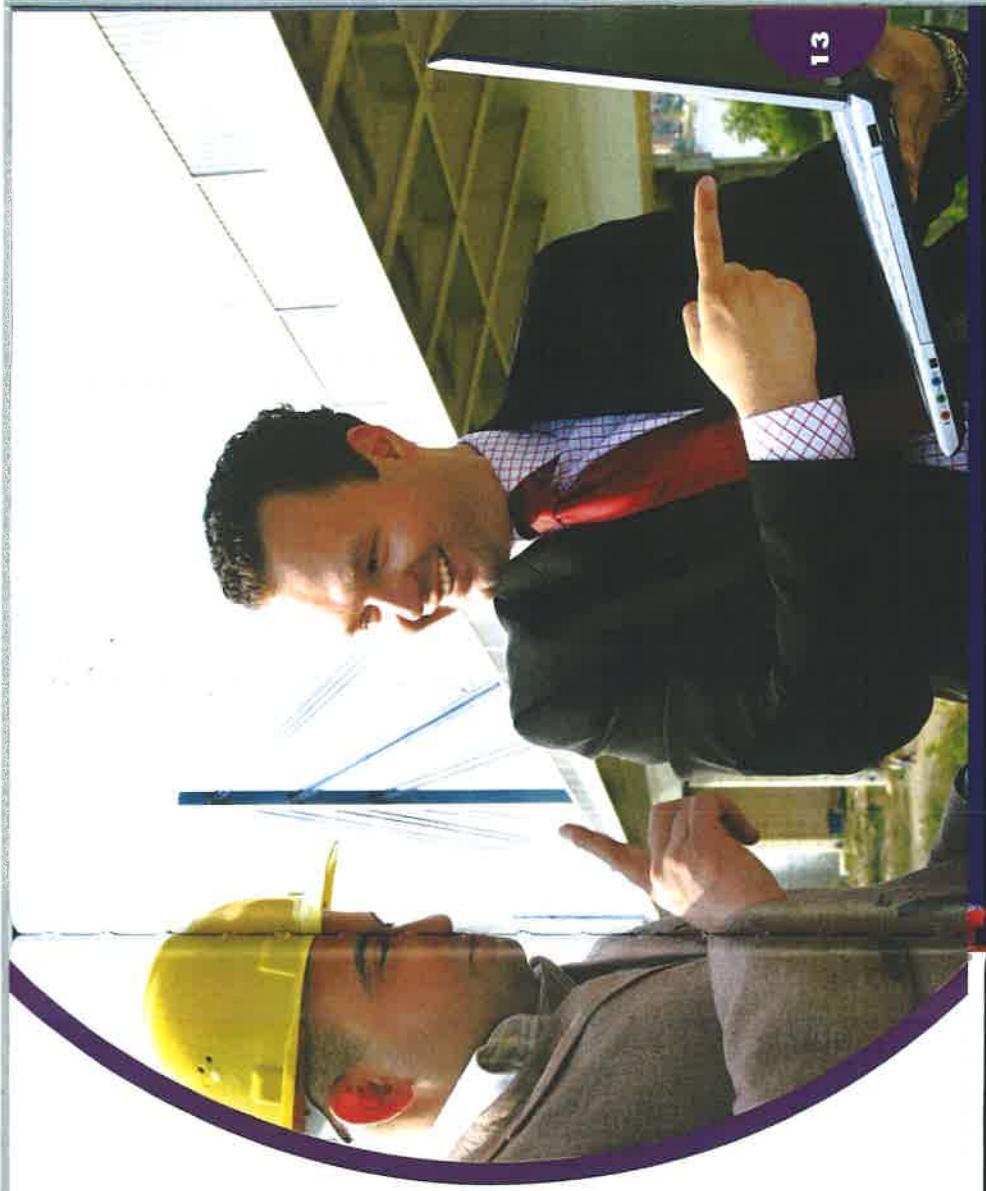
Get a box of wooden craft sticks and some glue. Try building your own bridge. Wait a day or two to be sure the glue is dry. Then see how much your bridge will hold. Was your design strong or weak?

GETTING READY TO BUILD

City planners figure out how many people and cars will use a bridge.

An **engineer** decides what type of bridge will work best. Sometimes engineers work with **architects** to design bridges. Architects often help decide what the bridge will look like.

Building a bridge takes careful planning.



Engineers make sure the bridge will be strong. They learn about wind and earthquakes. They find out how heavy the bridge will be. Engineers decide what the bridge will be made of. They decide how the pieces will go together.

THINK!

Inspectors are important members of the bridge building team. They make sure everyone's work is done right. Why do you think it is important for someone to check the work before a bridge is used?



In 2007, a bridge in Minneapolis collapsed because it was not built correctly.

BUILDING THE BRIDGE

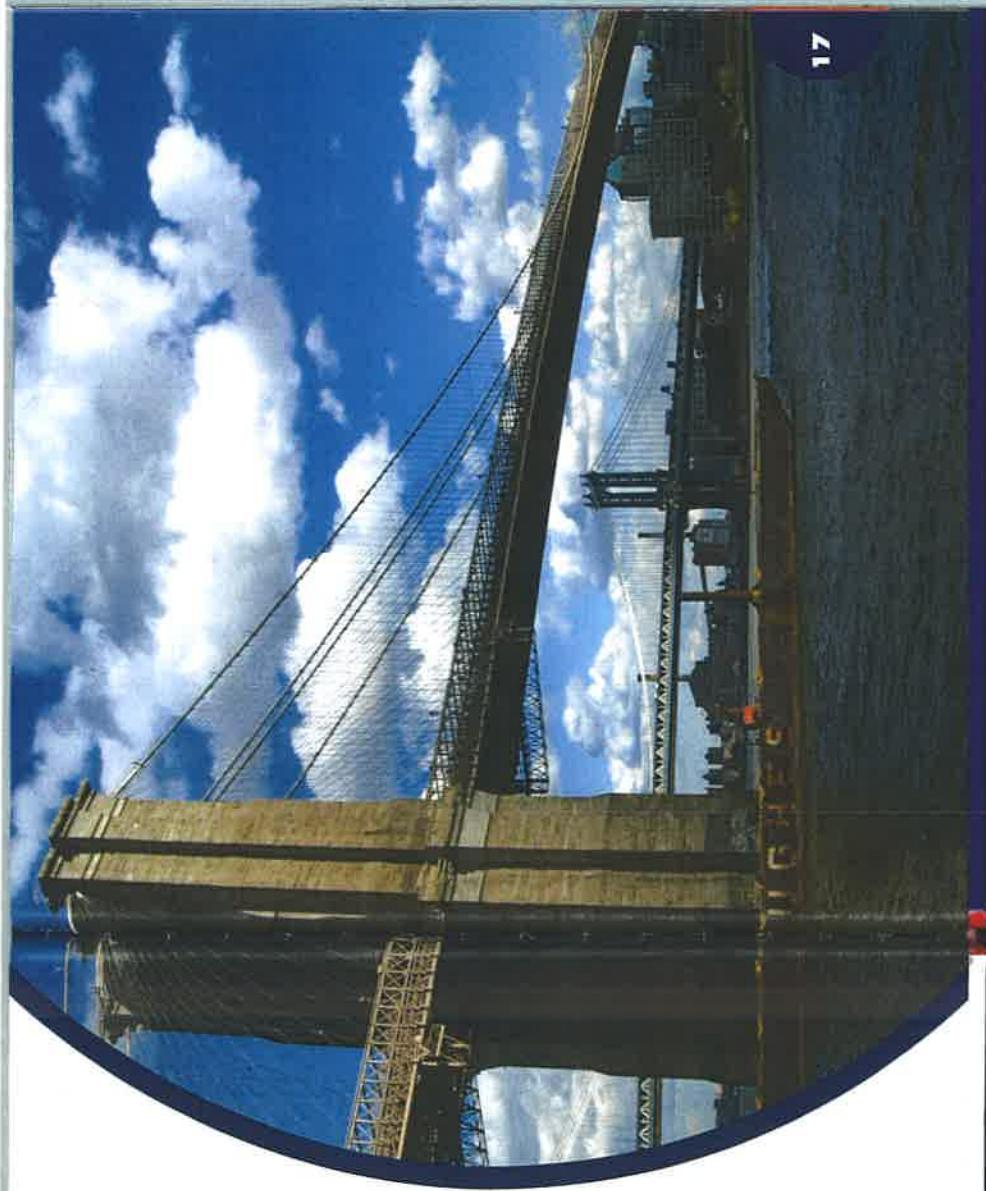
Construction begins with the base. Then the piers are built. If the piers are in water, workers might use a **caisson**.

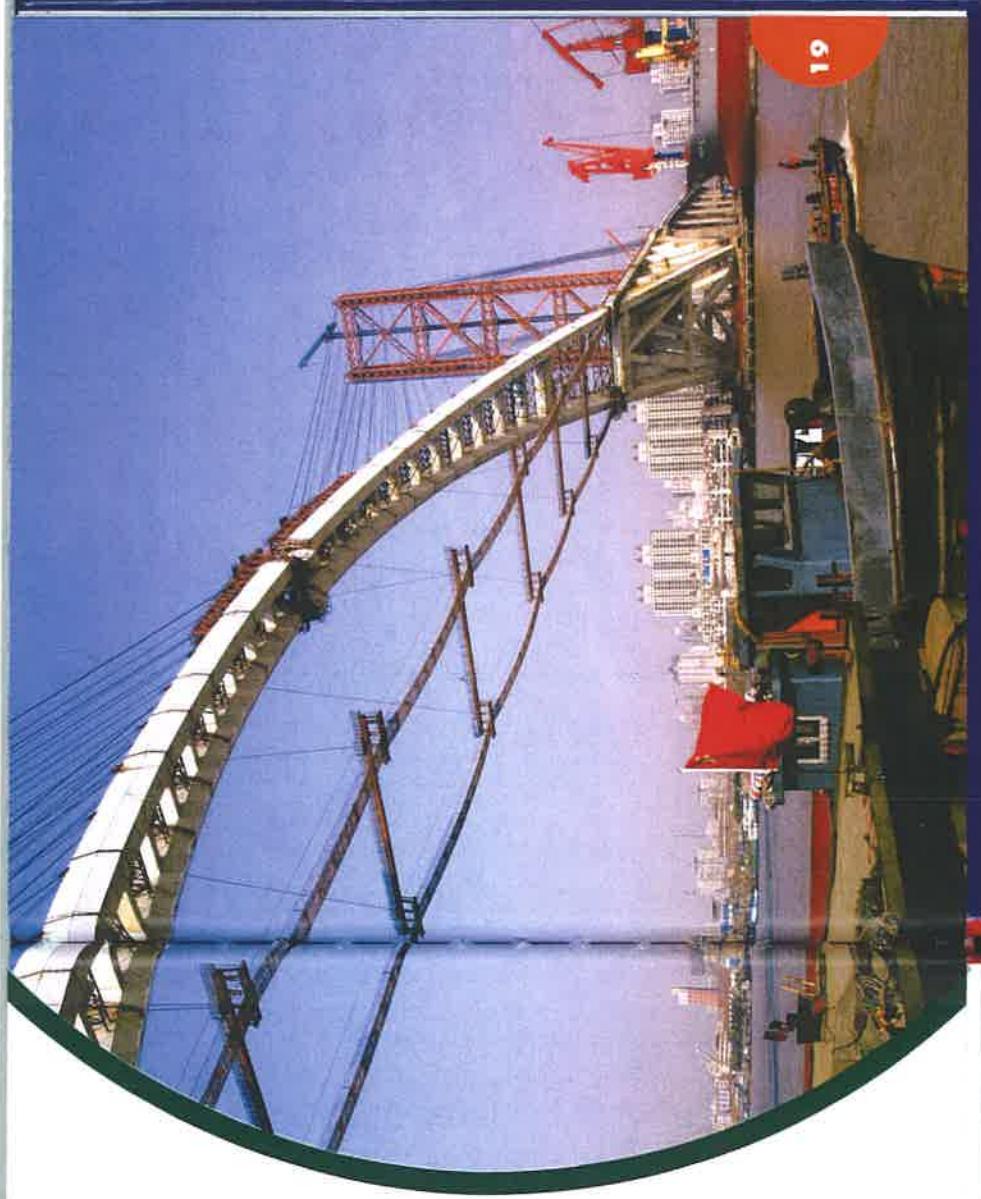
Caissons sit on the bottom of the lake or river. They stick out of the water. Workers go inside to build the part of the bridge that is underwater.

16

17

The Brooklyn Bridge in New York was built using caissons.





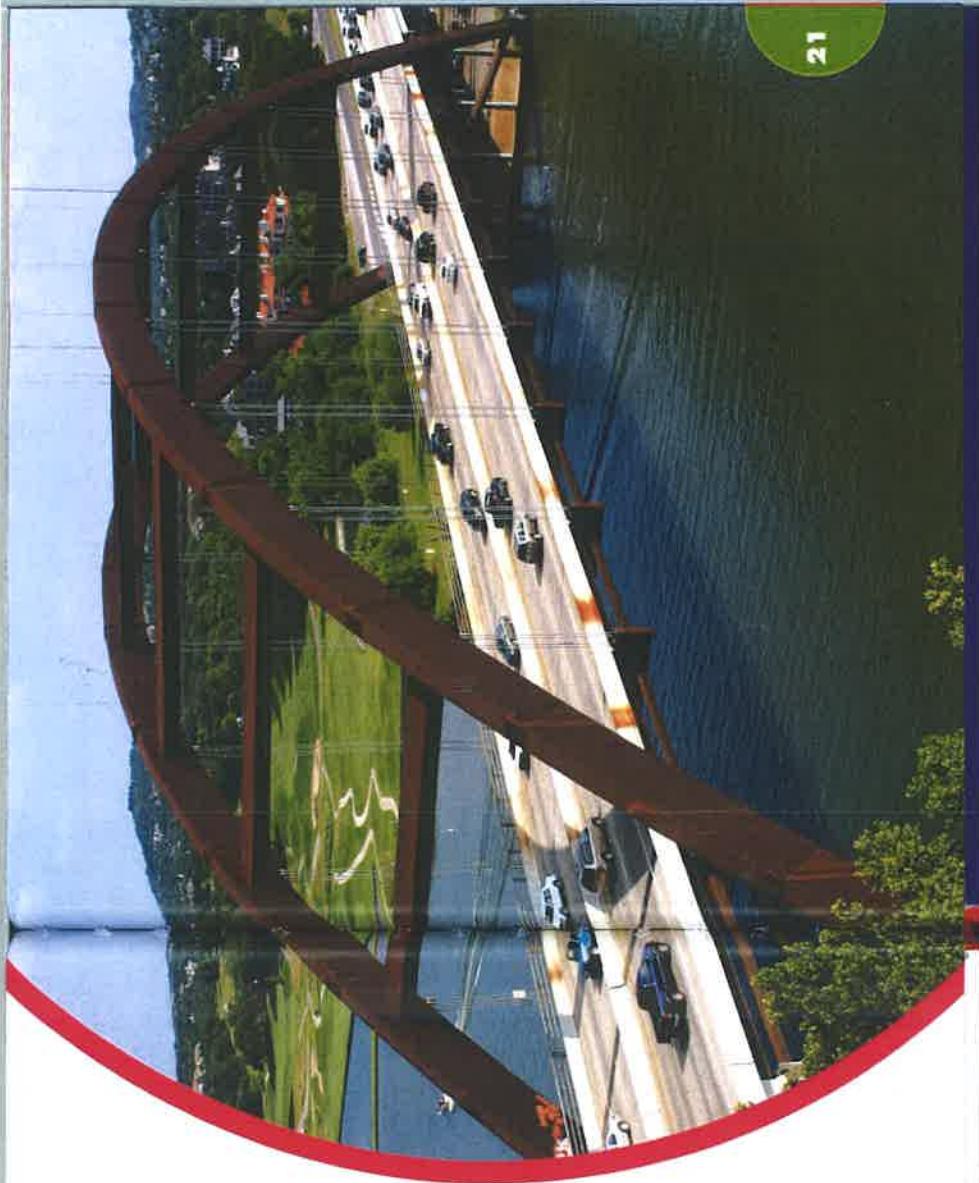
19

A beam bridge is usually made of pieces of concrete and steel. Workers use cranes to lift the pieces into the right place.

For an **arch** bridge, workers start on both sides. They work toward the middle. The arch will not be strong until the two sides come together. Cables or **scaffolds** hold up the pieces while people are working.

This picture was taken when Lupu Bridge in China was being built. It is the longest steel arch bridge in the world.

18



The towers of suspension bridges are built first. Then workers add cables that are made of many wires. When the cables are in place, they can support the deck. That is the part of the bridge you drive or walk on. Then workers can pave the roadway. They add lights. Finally, the bridge is painted.

Now the bridge is ready for travelers. Enjoy the trip!

Many cars travel across bridges every day.

GLOSSARY

- anchorage** (ANG-kur-i-jz) heavy blocks of concrete that the cables of a suspension bridge are attached to
- arch** (ARCH) a curved structure that often helps support a bridge or building
- architects** (AR-ki-tekt(s)) people who design bridges and other structures
- cables** (KAY-buhlz) thick wires or ropes
- caisson** (KAY-sahn) an underwater chamber that people work in while building a bridge
- engineer** (en-yuh-NIHR) a person who helps to plan and build a bridge
- piers** (PAIRZ) strong supports for bridges
- scaffolds** (SKAФ-uhldз) structures that hold up part of a bridge or other building while it's being built
- suspension bridges** (suh-SPEН-shun BRU-es) bridges that are hung from cables attached to towers

FIND OUT MORE

BOOKS

Simon, Seymour. *Bridges*. San Francisco: SeaStar Books, 2005.
Treich, Sarah. *Brooklyn Bridge*. Edina, MN: ABDO Publishing Company, 2008.

WEB SITES

Building Big: Bridge Basics
www.pbs.org/wgbh/buildingbig/bridge/basics.html
Learn more about how different kinds of bridges are built

Science Rocks! Suspension Bridge
pbskids.org/zoom/activities/sci/suspensionbridge.html
Try out this fun activity and build your own suspension bridge

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ABOUT THE AUTHOR

Vicky Franchino has crossed some of the most interesting bridges in the United States including the Brooklyn Bridge (where you can walk above the cars!) and the Golden Gate Bridge. Vicky lives with her husband and three daughters in Madison, Wisconsin.

LEVELED BOOK • B

Bridges

Written by Elizabeth Jane Pustilnik

www.readinga-z.com

Bridges

A Reading A-Z Level B Leveled Book • Word Count: 40

Connections

Writing and Art

Design your own bridge to go across a body of water.

Draw it and write about the details of your bridge.

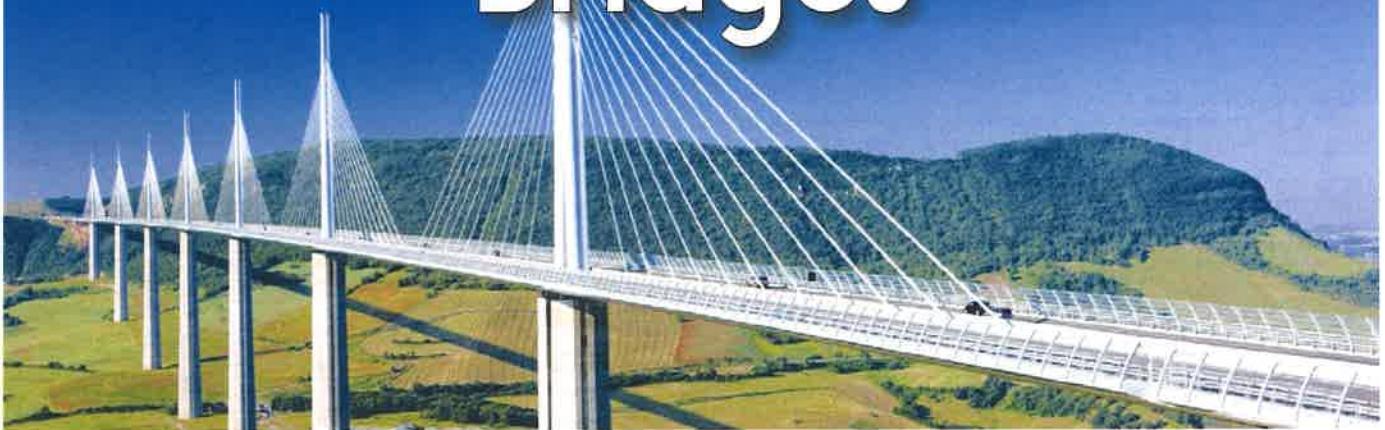
Math

Count the bridges in this book. Sort the bridges into groups based on their color, size, what they are made of, and so on.

Reading A-Z

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Bridges



Written by Elizabeth Jane Pustilnik

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Focus Question

How are bridges the same and different?

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Bridges

Level B Leveled Book

Written by Elizabeth Jane Pustilnik

Correlation	LEVEL B	Fountas & Pinneell	B	Reading Recovery	2	DRA	2
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metal
wood
made
stone
rope
bridges

Words to Know



Some bridges are big.

Bridges • Level B

3

4

Some bridges are small.





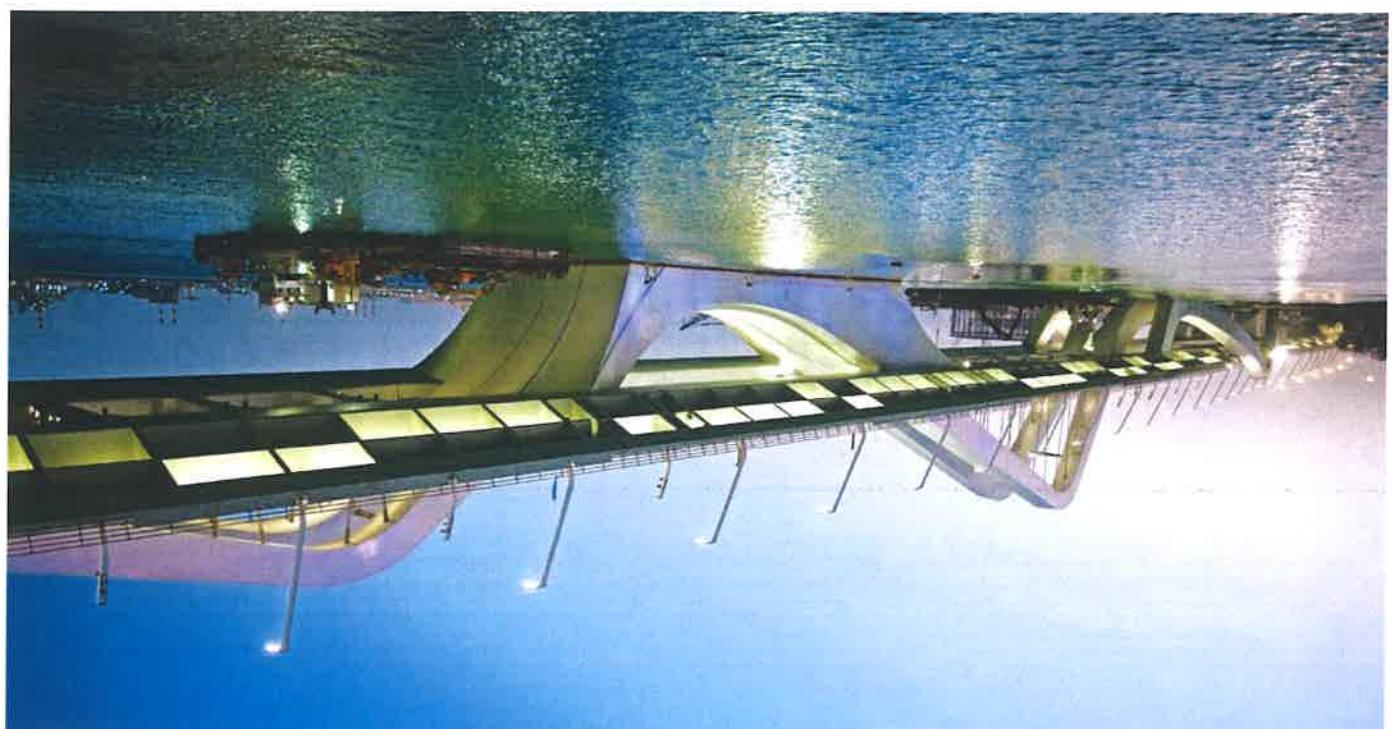
Some bridges are old.

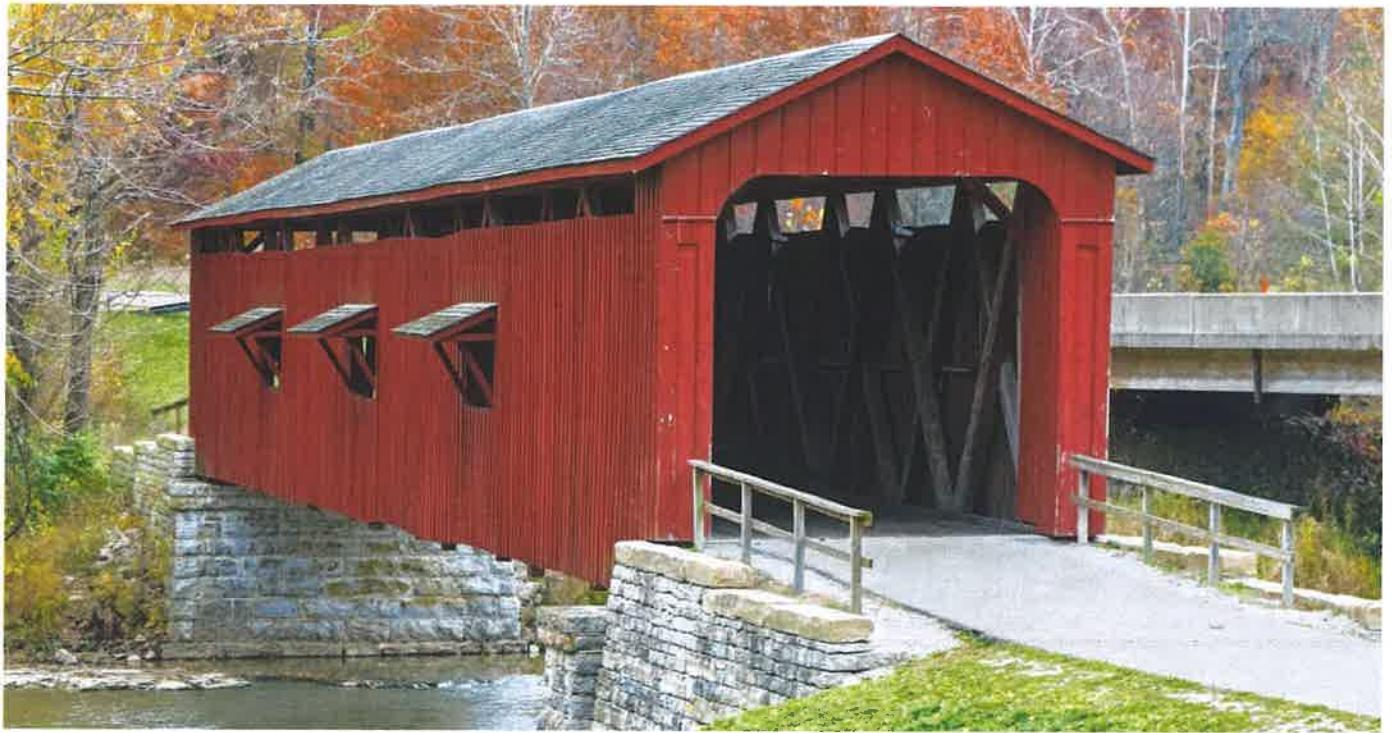
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Some bridges are new.

9





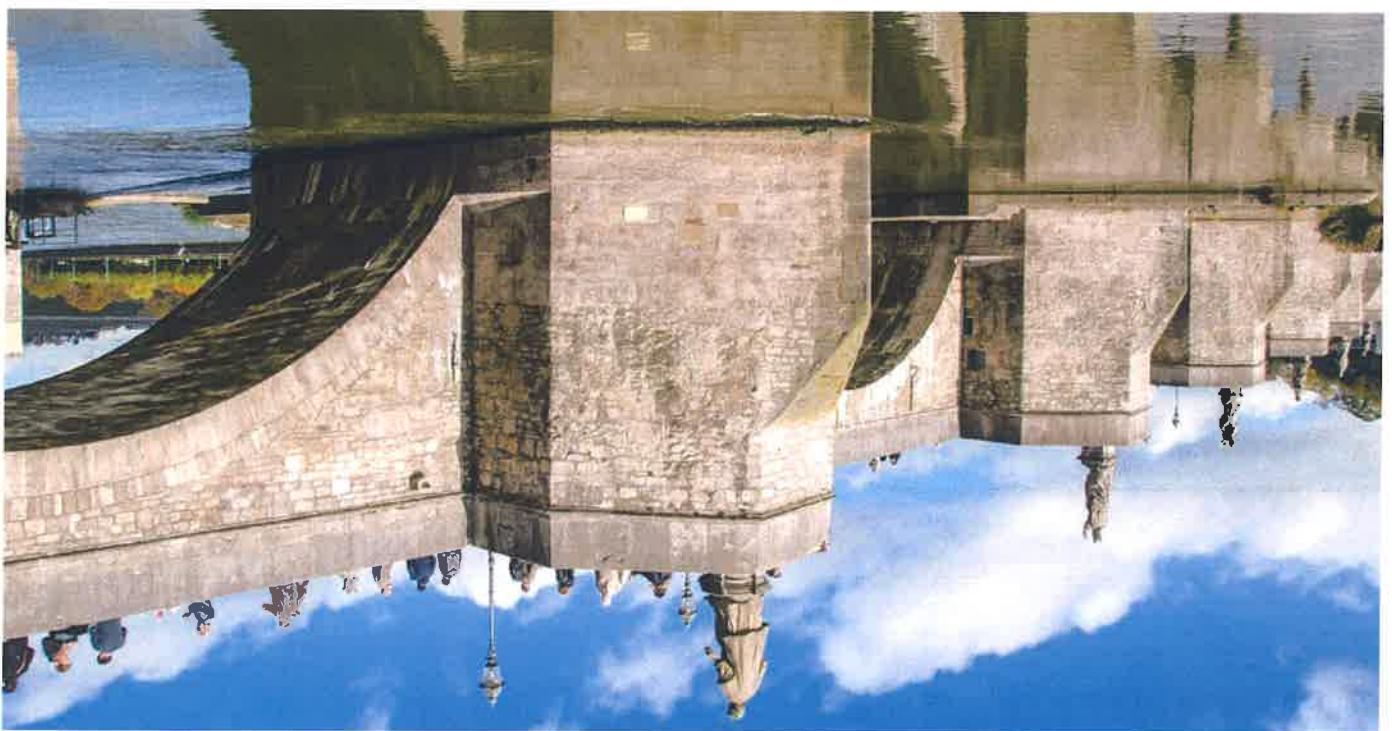
Some bridges are made from wood.

Bridges • Level B

7

Some bridges are made from stone.

8





Some bridges are made from metal.

10
Some bridges are made from rope!



A vertical scale with numerical markings from 1 to 10. The scale is marked by ten horizontal white lines, each labeled with a white number. To the left of the scale, there are nine vertical yellow tick marks, each aligned with one of the white lines. The tick marks are evenly spaced along the vertical axis.

Number
1
2
3
4
5
6
7
8
9
10



1 1 2 1 3 1 4 1 5 1 6 1 7 1 8 1 9 2021

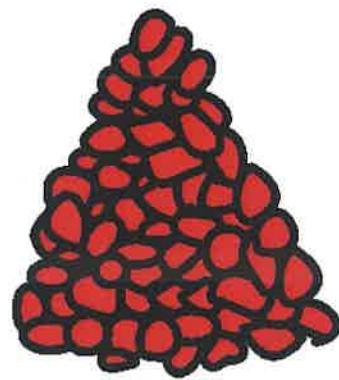
more



less



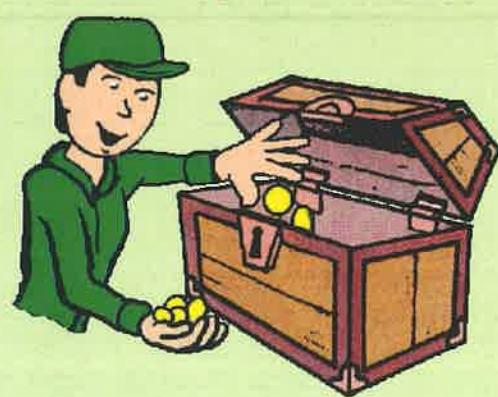
most



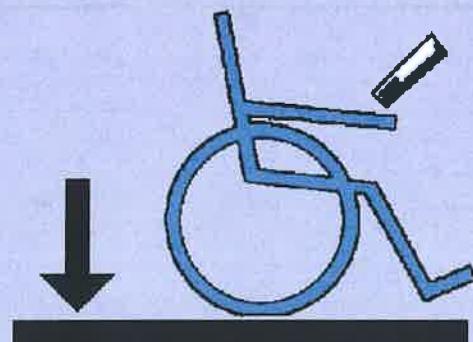
elephant



put



on



bridge

