Name: _____ Date: _____

The Bridge Test

Circle group

On Friday morning, Ms. Alvarez's class would test the toothpick bridges. Each team had built one for two weeks. A bridge had to reach thirty centimeters between two stacks of books. It also had to hold a jar of coins. Ines, Theo, and Wen had glued every lunch period. Ines was sure theirs was the best in the room.

It was not. Theo gently put the jar on the middle. The bridge groaned and sagged. Then it fell into a heap of splinters and glue. Nobody spoke. Ines stared at the mess. Her cheeks burned. She muttered that they should just hand in a report. There was no time to start over.

Theo looked at Wen. Wen had hardly said a word since the project began. He was quietly turning a broken piece over in his fingers. "The flat parts bent first," Wen said. "Look. Where the toothpicks made triangles, they stayed strong. A triangle cannot squash sideways like a rectangle can."

Ines blinked. She asked why he had not said so sooner. Wen said he thought everyone liked the plan. He had not wanted to spoil it.

Ms. Alvarez gave the team until the end of the day. They got new toothpicks. This time Ines listened while Wen drew a new design. It had a row of triangles along each side, with crossing braces underneath. Theo mixed the glue. Ines placed each toothpick. By the last bell, the new bridge stood between the books. It looked much sturdier.

Theo lowered the jar again. The bridge creaked softly, but it held. Ines grinned at her quietest teammate. "From now on," she said, "you talk first."

Questions

1. What did each team's bridge have to do?

_____

_____

2. Which part of the first bridge stayed strong?

_____

_____

3. Did the new bridge hold the jar?

_____

_____

4. Why had Wen not spoken about the problem sooner?

_____

_____

5. What did Ines learn by the end?

_____

_____

Words to know

muttered: said something quietly and not very clearly
braces: pieces that give extra support to a structure
sturdier: stronger and less likely to break

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 Bridge Test

Triangle group

On Friday morning, Ms. Alvarez's class would finally test the toothpick bridges that each team had been building for two weeks. The rules were demanding: a bridge had to span thirty centimeters between two stacks of books and hold a jar of coins without collapsing. Ines, Theo, and Wen had spent every lunch period gluing, and Ines was convinced that theirs was the most impressive design in the entire room.

It was not. When Theo gently lowered the jar onto the middle, the bridge groaned, sagged, and folded into a heap of splinters and glue. Nobody spoke for several seconds. Ines stared at the wreckage, her cheeks burning with embarrassment, and then muttered that they should simply hand in a written report because there was no time to start over.

Theo glanced toward Wen, who had hardly said a word since the project began and was quietly turning a broken piece over in his fingers. "The flat sections bent first," Wen said at last. "Look at this. Wherever the toothpicks formed triangles, they stayed strong. A triangle cannot squash sideways the way a rectangle can."

Ines blinked in surprise and asked why he had not mentioned it earlier. Wen admitted that he had assumed everyone was satisfied with the plan, and he had not wanted to ruin their excitement.

Ms. Alvarez generously gave the team until the end of the day. They gathered fresh toothpicks, and this time Ines listened carefully while Wen sketched an improved design: a row of triangles along each side, with crossing braces underneath. Theo mixed the glue while Ines carefully positioned each toothpick, and by the final bell the new bridge was standing between the stacks of books, looking far sturdier than the first one.

Theo lowered the jar once again. The bridge creaked softly, but it held. Ines grinned and turned to her quietest teammate. "From now on," she said, "you talk first."

Questions

1. What did each team's bridge have to do?

_____

_____

2. Which part of the first bridge stayed strong?

_____

_____

3. Did the second bridge hold the jar?

_____

_____

4. Why had Wen stayed quiet about the problem?

_____

_____

5. What did Ines learn by the end of the story?

_____

_____

Words to know

span: to reach across a gap from one side to the other
wreckage: the broken pieces left after something falls apart
muttered: said something quietly and not very clearly
braces: pieces that give extra support to a structure
sturdier: stronger and less likely to break

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 Bridge Test

Square group

On Friday morning, Ms. Alvarez's class would finally test the toothpick bridges that each team had been constructing for two weeks. The requirements were demanding: every bridge had to span thirty centimeters between two stacks of books and support a jar of coins without collapsing. Ines, Theo, and Wen had devoted every lunch period to gluing, and Ines was thoroughly convinced that theirs was the most impressive design in the entire room.

It was not. When Theo gently lowered the jar onto the middle, the bridge groaned, sagged, and then folded into a heap of splinters and glue. Nobody spoke for several long seconds. Ines stared at the wreckage, her cheeks burning with embarrassment, and then muttered that they should simply hand in a written report because there was no time to start over.

Theo glanced toward Wen, who had hardly said a word since the project began and was quietly turning a broken piece over in his fingers. "The flat sections bent first," Wen said at last. "Look at this. Wherever the toothpicks formed triangles, they stayed strong. A triangle cannot squash sideways the way a rectangle can."

Ines blinked in astonishment and asked why he had not mentioned it earlier. Wen confessed that he had assumed everyone was satisfied with the plan, and he had not wanted to dampen their excitement.

Ms. Alvarez generously granted the team until the end of the day. They collected fresh toothpicks, and this time Ines listened attentively while Wen sketched an improved design: a row of triangles along each side, with crossing braces underneath. Theo mixed the glue while Ines carefully positioned each toothpick, and by the final bell the new bridge was standing between the stacks of books, looking far sturdier than its predecessor.

Theo lowered the jar once again. The bridge creaked softly, but it held. Ines grinned and turned to her quietest teammate. "From now on," she said, "you talk first."

Questions

1. What requirements did each team's bridge have to meet?

_____

_____

2. Which sections of the first bridge remained strong?

_____

_____

3. How did the second bridge perform when the jar was lowered onto it?

_____

_____

4. Why had Wen kept his observation to himself for so long?

_____

_____

5. What lesson did Ines take from the experience?

_____

_____

Words to know

span: to reach across a gap from one side to the other
wreckage: the broken pieces left after something falls apart
muttered: said something quietly and not very clearly
braces: pieces that give extra support to a structure
sturdier: stronger and less likely to break

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 Bridge Test

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

Circle: The Bridge Test

Easier · 275 words · Flesch-Kincaid grade 2.3

1. Reach thirty centimeters and hold a jar of coins.
2. The places where the toothpicks made triangles.
3. Yes. It creaked softly, but it held.
4. He thought everyone liked the plan and did not want to spoil it.
5. She learned to listen to every teammate, even a quiet one.

Triangle: The Bridge Test

This passage · 319 words · Flesch-Kincaid grade 7.1

1. Span thirty centimeters and hold a jar of coins.
2. The places where the toothpicks made triangles.
3. Yes. It creaked softly, but it held.
4. He thought the others were happy with the plan and did not want to ruin it.
5. She learned to listen to every teammate, even a quiet one.

Square: The Bridge Test

Harder · 322 words · Flesch-Kincaid grade 7.8

1. It had to span thirty centimeters and support a jar of coins without collapsing.
2. The places where the toothpicks formed triangles.
3. It creaked softly, but it held.
4. He assumed everyone was satisfied with the plan and did not want to dampen their excitement.
5. That she should listen to every teammate, including the quietest one.