Name: _____ Date: _____

How Bridges Carry the Load

Grades 5-6 | Nonfiction

1 Every bridge has the same job: to carry weight safely across a gap, whether that gap is a small creek or a wide bay. Engineers design bridges by managing two forces, compression and tension.

2 Compression is a pushing force that squeezes material together. Tension is a pulling force that stretches it apart. A strong bridge spreads these forces so that no single part is overloaded.

3 The simplest type is the beam bridge, a flat deck resting on supports. When a truck drives across, the top of the beam is squeezed while the bottom is stretched. Beam bridges work well for short distances.

4 Arch bridges curve upward. The arch carries weight outward along its curve and down into strong supports at each end, keeping the stone or concrete in compression, which those materials handle well. Some Roman arch bridges are still standing after about 2,000 years.

5 For the longest spans, engineers use suspension bridges. Huge cables hang between tall towers, and smaller cables hold up the road below. The cables are in tension, carrying the load to the towers and then to anchors in the ground. The Golden Gate Bridge in San Francisco, opened in 1937, is a famous example.

6 Choosing the right design depends on the distance, the ground, the weather and the cost. Behind every bridge you cross is a careful plan for balancing push and pull.

Draw something you learned from this text.

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Questions: How Bridges Carry the Load

Read the passage again if you need to. Circle the best answer.

1. What is compression?

(a) A pulling force
(b) A pushing force that squeezes material together
(c) A kind of cable
(d) A type of bridge

2. Which bridge type is best for short distances?

(a) Beam bridge
(b) Suspension bridge
(c) Arch bridge
(d) Rope bridge

3. In a suspension bridge, the main cables are mostly in...

(a) compression
(b) tension
(c) water
(d) the road

4. What is the main idea of the passage?

(a) Bridges are expensive
(b) Engineers design bridges by balancing forces
(c) Roman bridges are the best
(d) The Golden Gate Bridge is red

5. Compare how an arch bridge and a suspension bridge handle weight.

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Reading Comprehension: Answer Key

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1. b) A pushing force that squeezes material together
2. a) Beam bridge
3. b) tension
4. b) Engineers design bridges by balancing forces
5. Sample answer: An arch bridge carries weight along its curve into supports, keeping the material in compression. A suspension bridge uses cables in tension to carry weight to towers and anchors.