Bridge Model Clues

Read how engineers use a small bridge model.

3.2.A "identify advantages and limitations of models such as their size, scale, properties, and materials;"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline advantages of the model and circle its limitations. Number words or sentences that tell about the model's size, scale, or materials.

A Bridge Before Building

1. Engineers planned a safer playground bridge over a shallow ditch. Before building the real bridge, they made a model from craft sticks, string, and glue. The model was small enough to hold on a table. Its parts could show where the rails, deck, and supports would go. The team could move a support and test a new idea quickly.

2. The small model had advantages, but it also had limits. Craft sticks are not steel, so they do not have the same strength or bend in the same way. Glue joints may fail differently from real bolts. A toy car can roll across the model, but a real school bus cannot fit on it. The team must not use the model alone to decide whether the bridge is safe.

3. Scale tells how a measurement on the model compares with a measurement on the real bridge. For example, a model deck that is 1 inch long might stand for a real deck that is 1 foot long. The model helps the team see the bridge shape and placement of parts. It cannot show every effect of heavy traffic, rain, wind, or years of use.

2 ANSWER WITH EVIDENCE

Use the passage

1. What is one advantage of making the bridge model small?

2. Why might craft sticks give different results from a real steel bridge?

3. What does the toy car and school bus example show about the model's size?

4. Name one thing the model can help the team see and one effect it cannot show.

3 YOUR TURN

Your own words

Choose a real object, such as a bus stop, a birdhouse, or a ramp. Draw a small model of it, label its material and scale, then write two sentences that tell one advantage and one limitation of your model.

ANSWER KEY

Bridge Model Clues

GRADE 3 · TEKS 3.2.A

PART 1 · READ AND MARK

Underline advantages of the model and circle its limitations. Number words or sentences that tell about the model's size, scale, or materials. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What is one advantage of making the bridge model small?	**It fits on a table, and the team can move a support and test a new idea quickly.**
2	Why might craft sticks give different results from a real steel bridge?	**Craft sticks are not steel, so they do not have the same strength or bend in the same way.**
3	What does the toy car and school bus example show about the model's size?	**The model is much smaller than the real bridge. A toy car fits on it, but a real school bus does not.**
4	Name one thing the model can help the team see and one effect it cannot show.	**It can help the team see the bridge shape or placement of parts. It cannot show every effect of heavy traffic, rain, wind, or years of use.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My sketch shows a cardboard model of a bus stop, labeled "1 inch = 1 foot." Its advantage is that I can move the bench to test a new spot, but its limitation is that cardboard does not act like metal in rain.

Accept equivalent advantages and limitations stated in the passage. For Your Turn, accept any reasonable real object if the student identifies a material, a scale, one advantage, and one limitation.