

Name:

Date:

Class:

Race to the Top! Post-Activity Quiz **Answer Key**

1. Why is it important for engineers to use models? (2 points)

To save time and money to evaluate designs and structures.

2. List two shapes that are used by engineers to build towers. (2 points)

A. rectangles

B. triangles

3. Why are plans and sketches important in the engineering design process? (3 points)

Plans and sketches represent how a design will look when it is constructed. They provide sizes and shapes of the design so that structures can be built correctly. They also tell builders the types of materials that are needed for the structure and how much is needed. This informs the builders so they know how much money they will need to spend to build the structure.

4. What design worked best to reach the tallest height? Include the shapes used when stacking the Kapla blocks. (3 points)

Answers will vary by students. Expect a good answer to include reference to the designs documented on their worksheets and describe the look and layout of their towers. *Example answer:* "The best tower used six blocks for each level and had 12 levels for a total of 72 blocks. We used a triangle base (horizontal members) and stacked the blocks (vertical members) to make rectangles for each level as we increased the height. The final height reached 57 inches."

5. List three factors engineers consider when building tall structures. (3 points)

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- A. The structure must be free-standing _____
- B. The structure must be weight-bearing _____
- C. Use the smallest amount of materials necessary to build the structure _____

Circle the correct answer: (1 point each)

6. What is a member?

- a. A window or door in a structure
- b. A bolt or screw in a structure
- c. A beam or column of a structure

7. What does weight-bearing mean?

- a. A structure that is able to support itself without assistance from other structures or supports.
- b. A structure that is able to support additional weight besides the weight of its members.
- c. A structure that is able to support bears.

8. A structure that is able to support itself without assistance from other structures or supports is _____.

- a. weight-bearing
- b. free-standing
- c. free weight