Roth Middle School

Technology Grade 7

 Name: Date: Section:

**Bridge Building Webquest:** **How Bri****dges are designed**

**Use the following website to answer the questions about the basics, forces, loads, materials and shapes of bridge design. Please answer in complete sentences using proper grammar and spelling!**

**[www.pbs.org/wgbh/buildingbig/](http://www.pbs.org/wgbh/buildingbig/)**

**Use the Bridge “BASICS” section for these questions.**

1. How many bridges are there in the United States?
2. What must be considered before engineers can determine the size, shape and overall look of a bridge?
3. What are the three major types of bridges?
4. What type of bridge rarely spans more than 250 feet in length?
5. Arch bridges can span up to how many feet?
6. What materials did Romans use to build arch bridges?
7. What two materials are most of today’s bridges made of?
8. How far can a suspension bridge span?
9. The truss bridge consists mainly of what shape?
10. What is the truss system beneath the roadway of most suspension bridges used to resist?
11. What was the name of the suspension bridge that collapsed because it had a solid deck beneath the roadway?
12. If the average cost of a bridge is between 50 and 70 dollars a square foot. How much would a 10’ x 100’ bridge cost if the cost per square foot was 50 dollars? Show your work!!!
13. What does the roadway of a suspension bridge hang from?
14. What part of the suspension bridge supports the most weight?

**Use the “FORCES” lab for these questions.**

1. What force squeezes a material together?
2. What does a material in compression tend to become?
3. What force stretches a material apart?
4. What does a material under tension tend to become?
5. What force turns a straight material into a curved one?
6. What force causes parts of a material to slide past one another in opposite directions?
7. What force twists a material?

**Use the “LOADS lab” for these questions**

1. The weight of a structure itself is called?
2. The weight of the stuff on the structure is called?
3. What is the uneven settling of the soil beneath a structure called?
4. Loads the change over time from wind gusts to pounding objects creates vibrations that can become bigger and more dangerous over time are called?
5. The expanding and shrinking of a structure due to temperature is called?

**Use the “SHAPES lab” for these questions**

1. Its shape affects the strength of a structure? True or false
2. The three most common shapes used to build big structures are?
3. When used properly, the most stable and rigid shape used for building structures is?

**Use the “MATERIALS lab” for these questions**

1. What material is added to reinforce concrete to make it stronger?
2. What are the two weaknesses of wood as a bridge material?
3. What is the strongest material used for bridge building?
4. What is the weakness of plastic as a bridge material?
5. What are the two strengths of concrete as a bridge material?
6. What causes cracks in concrete?
7. What are the ingredients in concrete?