**BRIDGE BASICS**

**NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE: \_\_\_\_\_\_ CLASS: \_\_\_**

**THE BEAM BRIDGE:**

**Consists of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ supported at each end by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The weight of the beam pushes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the piers. The farther apart its piers,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ becomes. This is why beam bridges rarely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**What are the forces that act on beam bridges? (Draw and Explain)**

**What other types of beam bridges did you see?**

**1.**

**2.**

**THE TRUSS BRIDGE:**

**Consists of an assembly of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Truss bridges are commonly made from a series of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_,** [**steel**](http://www.pbs.org/wgbh/buildingbig/glossary.html#steel) **bars. The** [**Firth of Forth Bridge**](http://www.pbs.org/wgbh/buildingbig/wonder/structure/firth_of_forth.html) **in Scotland is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bridge, a complex version of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ bridge.** [**Rigid**](http://www.pbs.org/wgbh/buildingbig/glossary.html#rigid) **arms extend from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of two piers. Diagonal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, projecting from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of each** [**pier**](http://www.pbs.org/wgbh/buildingbig/glossary.html#pier)**, hold the arms in place. The arms that project \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, like really** [**strong**](http://www.pbs.org/wgbh/buildingbig/glossary.html#strong) **diving boards. These "diving boards," called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ arms, support a third, central** [**\_\_\_\_\_\_\_\_\_\_\_**](http://www.pbs.org/wgbh/buildingbig/glossary.html#span)**.**

**What are the forces that act on truss bridges? (Draw and explain)**

**THE ARCH BRIDGE:**

**Has great \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ strength. Thousands of years ago, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ built arches out of \_\_\_\_\_\_\_\_\_\_\_\_\_. Today, most arch bridges are made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and they can** [**span**](http://www.pbs.org/wgbh/buildingbig/glossary.html#span) **up to \_\_\_\_\_\_\_\_\_\_\_\_\_ feet.**

**What are the forces that act on arch bridges? (Draw and Explain)**

**How are arch bridges built?**

**THE SUSPENSION BRIDGE:**

**Can span \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ feet -- way farther than any other type of bridge! Most suspension bridges have a \_\_\_\_\_\_\_\_\_\_\_\_ system beneath the roadway to resist \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**What are the forces that act on a suspension bridge? (Draw and Explain)**

**What other types of suspension bridges did you see?**

**Test your bridge-building skills by taking the BRIDGE CHALLENGE and record your score here: \_\_\_\_\_\_\_\_\_\_\_**