

Name: _____

PBS Building Big: Bridges

1. Bridge builders in ancient Rome were given the name *pontifect*. What is the meaning of this word?

2. Stone Bridge

- a. What geometric shape was the most prevalent in stone bridge construction?
- b. What was the key part in creating the force critical to maintaining stone bridges?
- c. Name three disadvantages of the use of stone in bridge construction:
- d. Name four advantages of the use of cast iron in bridge construction:

3. Cast Iron

- a. With the invention of this “new” kind of iron, cast iron, bridges are no longer constructed but:
- b. Circle the correct name of the following forces:

Pressing force:	Compression	Tension
Stretching or pulling force:	Compression	Tension
- c. What caused the failure of the “Dee” river bridge?

4. Truss

- a. How was Gustav Eiffel’s bridge able to withstand strong winds?
- b. Circle the correct answer for the forces in Eiffel’s bridge:

Compression on top and tension on the bottom

Compression on bottom and tension on top

- c. What is the major drawback to this type of bridge arrangement?

5. Suspension

- a. Circle the correct answer for the forces in these bridges:

Compression on cables and tension on towers

Compression on towers and tension on cables

- b. Name the bridge built by the Roebling's:
- c. What device was invented to dig-out the bottom of the river to secure the bridge towers?
- d. What medical problem did the workers develop from this new bridge construction invention?
- e. What were some of the natural construction challenges of the Golden Gate Bridge?
- f. What is the objective of arranging the wire cables in bundles?

6. Cable-Stayed

- a. What advantages does a cable-stayed bridge have compared to a traditional suspension bridge?
- b. What disadvantages does a cable-stayed bridge have compared to a traditional suspension bridge?