

Model Bridge Building Handout

INTRODUCTION

With bridges all around us we tend to take bridges for granted. This project will make us more aware of the usefulness of bridges and the many types in our world. We will learn about historic bridge building and the four basic designs that have developed along with their varied uses. We will begin with some famous bridges including the collapse of the Tacoma Narrows bridge (Galloping Gertie) in 1940.

OBJECTIVES

*To provide students with an understanding of:

- 1.The technological development of bridges throughout history and their contribution to society (transportation).
- 2.The principles that apply to the physical science of bridge building.
- 3.The construction techniques and creative skills that are necessary for a winning design.

RESEARCH

*Write a paper of 300-500 words from at least 3 **Internet** sites.

*Topics will include:

- 1.Purpose and history of bridges.
- 2.Description of different types of bridges with an explanation of what makes a bridge strong.
- 3.The type of bridge he/she plans to build.

VOCABULARY

1. CAISSON

2. TRUSS

3. TRESTLE

4. PIER

5. CABLE

DISCUSSION QUESTIONS

What engineering principles apply to each of the following type of bridge listed and where can examples of each be found in nature?

1. BEAM
2. ARCH
3. SUSPENSION
4. CANTILEVER
5. PONTOON

Answer the following as completely as possible:

6. WHAT DID EARLY CIVILIZATIONS USE FOR BRIDGES?
7. WHAT WERE THE ADVANTAGES AND DISADVANTAGES OF COVERED BRIDGES?
8. WHY WERE BRIDGES (AND TUNNELS) IMPORTANT TO RAILROADS?
9. WHAT ARE THE MOST COMMON MATERIALS USED IN BRIDGE CONSTRUCTION?

10. WHAT WAS THE PROBLEM WITH IRON BRIDGES?

11. NAME AND LOCATE THE FIRST STEEL BRIDGE IN THE WORLD.

12. WHAT CAUSED THE TACOMA NARROWS BRIDGE TO COLLAPSE?

13. NAME AND LOCATE 4 FAMOUS BRIDGES IN THE UNITED STATES...IN THE WORLD?

14. IDENTIFY SOME BOOKS, SONGS, OR MOVIES THAT HAVE BRIDGE IN THE TITLE

15. WHEN DID CONSTRUCTION BEGIN ON THE 4-LANE INTERSTATE HIGHWAY SYSTEM?

16. COMPARED TO BRIDGES, WHAT ADVANTAGES DO FERRY BOATS HAVE? (VICE-VERSA)

17. BRIDGES HELP TO TRANSPORT A VARIETY OF THINGS. NAME AS MANY AS YOU CAN:

18. LOCATE AND IDENTIFY AS MANY BRIDGES AS YOU CAN IN YOUR COMMUNITY...TOWN...CITY...STATE: