

BRIDGE PROJECT

In the next few weeks you will work on a new project. This project will help you become familiar with physics and engineering concepts and terminology.

Read all the instructions before you begin.

REPORT

Materials

- ❖ report folder with plastic cover and three brackets
- ❖ Computer
- ❖ books/maps/encyclopedias/internet
- ❖ Paper

1. Select a river in the United States or any other country that you wish to build a bridge over. You are the engineer that has been chosen for this project.
2. Find as much information about the river as possible (name of river, location, history, width, length, depth, important cities, valleys, lakes, and mountains around it, its importance in economy, transportation, etc. the source, and the mouth of the river).
3. Decide where the best location to build the bridge is by examining the geography of the area, the width, and depth of the river. Explain why you chose this particular location and type of bridge.
4. Explain how the bridge is going to affect the given area. Consider how it will affect the ecology, the economy, and the sociology of the area. (You may ask your social studies teacher for guidelines).
5. Type the Report and include the following:
 - a) A map of the state or country with your river.
 - b) Label the site at which bridge is to be built.
 - c) Information about the river as described above in 1-3.
 - d) A paragraph of what you learned from this project, including building the bridge.
 - e) A Bibliography with all the sources you used. (Use encyclopedias, books, maps, the Internet).

BRIDGE BLUE PRINT

Materials

- ❖ graph paper (provided by teacher)
- ❖ metric ruler
- ❖ bridge diagram handout

❖ pencil/eraser

1. Choose one of the types of bridges we have studied in class and design your bridge on graph paper provided.
2. Use measurements to scale (use metric measurements). Do not exceed 50 centimeters of length. This part will be done in class so there will be more guidelines from the teacher.

BRIDGE

Materials for Bridge

- ❖ graph paper
- ❖ 2-3 boxes of flat toothpicks
- ❖ ruler
- ❖ tape
- ❖ pencil
- ❖ white / wood glue I glue gun
- ❖ wax paper
- ❖ eraser

1. Toothpicks should not overlap each other more than 1/3 at any time.
2. Test different glues on samples and decide on the one that works best for you. Glue-gun may be used under supervision.
3. The bridge should not be laminated with glue because it will be excluded from competition and will lower the grade. (Laminated means covered completely with a layer of glue).
4. There will be a contest for the “Best Design”, “The Strongest Bridge”, “Most Original”, etc.
5. Parents are welcome to help with this project and give architectural advise to the students.

In your Report, which should be typed, include the following:

- a) A map of the state or country with your river.
- b) Label the site at which bridge is to be built.
- c) Information about the river as described above in 1-3.
- d) A paragraph of what you learned from this project, including building the bridge. e) A Bibliography with all the sources you used. (Use encyclopedias, books, maps, the Internet).

JOURNAL

Materials

- ❖ Blank sheets of white paper 8 1/2" by 11" folded in half
- ❖ glue
- ❖ Cardboard
- ❖ Needle and thread

Make a small journal by using folded blank sheets of paper (5 1/2" x 8 1/2") and cardboard or thicker paper for a cover. Sew it down the middle, decorate the cover. Samples are available in class for better understanding.

Keep a daily journal of the building of your bridge and include the following:

- 1) Date of each day you work on the bridge and length of time.
- 2) What part of bridge you work on.
- 3) Problems encountered each day and how you solved them, other observations.
- 4) Photos of each stage.
- 5) Use captions under photos.

GRADE

There will be four grades for this project:

- ❖ Blue print
- ❖ Bridge
- ❖ River Report
- ❖ Journal.

1. The grade for the blue print of the bridge will be based on the design, measurements, and proportions.
2. The bridge grade will be based on the strength, design, appearance, on following the building instructions, and on using the suggested materials.
3. The grade for the report will be based on your research of the river and on whether you have included all the points mentioned on the outline or not.
4. The grade for the journal will be based on daily entry (every time you build), on pictures of the different stages of building, photo captions, stating problems encountered, solutions to the problems, and other observations.

BRIDGE/RIVER REPORT GRADING

1. Name of river	/5
2. Location of river (state or country)	/5
3. Width; length; depth or volume of water (flow rate)	/5
4. Source and mouth of river	/5
5. Important cities	/5
6. Valleys	/5
7. Lakes /Tributaries	/5
8. Mountains/Canyons	/5
9. History of river or area	/5
10. Importance of river on the economy of the area	/5
11. Importance of river on transportation	/5
12. Location of your bridge	/5
13. Width of river at bridge location	/5
14. Effect of bridge on the ecology	/5
15. Effect of bridge on the economy of the area	/5
16. Effect of bridge on transportation and sociology	/5
17. Map	/5
18. Location of bridge on map	/5
19. Paragraph on what you learned	/5
20. Bibliography	/5
21. Number of days late (minus 5% per day)	
TOTAL POINTS /100	

BRIDGE GRADING

1. Bridge length to scale	/5
2. 1/3 overlap	/15
3. No Lamination	/10
4. Design	/15
5. Within building rules and instructions	/20
6. Overall appearance	/15
7. Strength	/20
8. Number of days late (5% off per day)	
9. Contest results:	Category
	Place
TOTAL POINTS	/100