

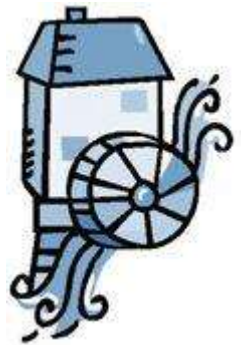
Working with Watermills

Student Worksheet: Design Your Own Watermill

You are a team of engineers who have been given the challenge to design your own watermill out of everyday items. Your wheel will need to be able to withstand a three minute water test.

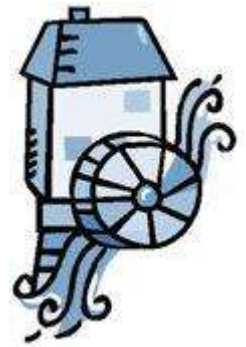
◆ Planning Stage

Meet as a team and discuss the problem you need to solve. Then develop and agree on a design for your watermill. You'll need to determine what materials you want to use -- keep in mind that all your parts will be exposed to water. Draw your design in the box below, and be sure to indicate the description and number of parts you plan to use. Present your design to the class. You may choose to revise your teams' plan after you receive feedback from class.



Materials Needed:

Working with Watermills



Student Worksheet (continued):

◆ Construction Phase

Build your watermill. During construction you may decide you need additional materials or that your design needs to change. This is ok -- just make a new sketch and revise your materials list.

◆ Testing Phase

Each team will test their watermill in a classroom basin. You'll need to time your test to make sure your watermill can operate for three minutes without falling apart. Be sure to watch the tests of the other teams and observe how their different designs worked.

◆ Evaluation Phase

Evaluate your teams' results, complete the evaluation worksheet, and present your findings to the class.

Use this worksheet to evaluate your team's results in the Engineered Music lesson:

1. Did you succeed in creating a watermill that operated for three minutes? If not, why did it fail?



2. Did you decide to revise your original design or request additional materials while in the construction phase? Why?

3. Did you negotiate any material trades with other teams? How did that process work for you?

Student Worksheet (continued):

4. If you could have had access to materials that were different than those provided, what would your team have requested? Why?
5. Do you think that engineers have to adapt their original plans during the construction of systems or products? Why might they?
6. If you had to do it all over again, how would your planned design change? Why?
7. What designs or methods did you see other teams try that you thought worked well?
8. Do you think you would have been able to complete this project easier if you were working alone? Explain...
9. What drawbacks does the watermill have as a reliable source of power?
10. What advantages does the watermill have as a renewable source of power?

