



Name: _____ Date: _____ Group: _____

Sand Castles

PBL Entry Document

Are you ready for a spirited competition on the beautiful beaches of California? Welcome to the Annual Sand Castle Days Competition.



Every year during the Sand Castle Competition, there are teams whose castles are destroyed before they are finished, due to water and wind. You will be a part of a design team of experts who will design a barrier system to protect the sand castles from the natural forces of wind and water and the erosional destruction they could cause during the competition. The design team will include: a project manager, an architect, an engineer, and a designer. The barrier system protecting your sand castle must be made from any appropriate materials that are free and recyclable and can be brought from home.

Your team will need to make a poster-sized design sketch before building the actual sand castle and barrier system. The sketch must show how you plan to keep water and wind from destroying your castle during the competition. Your team will then build and test the prototype – redesigning and testing as necessary to meet the criteria. Finally, your team must prepare a presentation for the Sand Castle Days Competition judges that includes photos of the different models that were built and tested, the reasoning used in choosing the barrier system you did, and why you believe it will work.

Your presentation is limited to 10 minutes. In that time, you are to demonstrate how your barrier system protects your castle. Be sure your presentation shares the appropriate and sufficient information and data to convince the judges that you understand the forces of wind and water and how to prevent erosion. Be enthusiastic so you can sway the representative to select your design.

As you watch videos of Water Erosion and Sand Castle Destruction, be thinking of innovative ways you could build a barrier that could protect a sand castle and keep it from being destroyed.



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PBL Expert Roles

These experts include: a project manager, an engineer, an architect, and a designer. Each of these roles may need assistants to be able to complete the tasks in the allotted time.

Project Manager

As the Project Manager you are responsible for seeing the project through to completion. You will need to constantly assess where team members need help and assist them. You will need to keep the rubric in hand and constantly refer back to it to make sure that your team is meeting the criteria. You will be the lead communicator, making sure that feedback is understood and evaluated. You will work with the team to develop and present your sand castle and barrier system and explain how and why it works.

Engineer

You are responsible for investigating which types of forces are likely to cause erosion and destruction of your sand castle. You will be the consultant for your team in knowing how to build a barrier which will resist these forces. You will share your findings along with your team, in the final presentation.

Architect

You are responsible for researching and drawing the sketches for the design of the barrier system to protect the castle. You will include in your sketch the type of barrier system chosen and innovations that were added as you tested your model. Also, you will clearly mark on the sketch where the different forces are occurring and how the barrier system prevents erosion. This information should help you make decisions about construction of the prototype. You will share your findings along with your team in the final presentation.

Designer

You are responsible for designing and testing the barrier system. You will record data with each test to determine if changes are required. You will help with the preparation of the presentation and share your design during the final presentation.