

# STEM Labs Project Pack

Science Technology Engineering & Mathematics



## Clay Pack

**MISSION:** What Floats Your Boat I

**BRIEF:**

You and your team have been selected to design a clay boat that can hold the most paperclips without sinking.

**MISSION RULES:**

1. You will design a boat from a block of clay to be placed in water.
2. The boat must float. You will be given 3 chances to see if it floats prior to the real testing. It is recommended that you towel it off afterward, to keep your clay from getting too wet and slimy.
3. You will work with on or two partners. Teams may be of no more than 3 people.
4. After putting your floating boat into the water for the actual test, paperclips will be added until it sinks.



**QUIZ GRADE:**

A blueprint design of your idea

- Sketch 25%
- Sketch is labeled 25%
- Explanation of strategy 25%
- Conclusions and reflections based on your results 25%

**TEST GRADE:**

Your completed design and the results of the test.

- Project Completed = 50% for successfully floating.
- 50% of your grade depends on how much weight the boat holds. The more it holds in comparison to the other teams, the better you do.
- You will be awarded these points in 10% increments. The boat that holds the most clips automatically gets 100%

**NOTES:**

**CATEGORIES:**

Boats, Buoyancy, Clay, Water

**MISSION:** Claymore Tower

**BRIEF:**

You and your team have been selected to make a the tallest tower possible from clay.

**MISSION RULES:**

1. You will design a tower.
2. Your device may be any dimensions, but it must be as tall as possible. It must have its own base.
3. You will work with one or two partners. Teams may not be of more than 3 people.
4. You may use any shaping tools you need, but you will only get a specific amount of clay.
5. The tower may not be braced against or attached to any other objects, except for whatever table surface it is built on. Otherwise, it must be completely freestanding.



**QUIZ GRADE:**

A blueprint design of your idea

- Sketch 25%
- Sketch is labeled 25%
- Explanation of strategy 25%
- Conclusions and reflections based on your results 25%

**TEST GRADE:**

Your completed design and the results of the test.

- Project Completed = 50%
- 50% of your grade depends on how tall your project is compared to the other group's projects. The projects that do best will get more points.

**NOTES:**

**CATEGORIES:** Clay, Height, Towers

**MISSION:** Golden Arches VI - Clay**BRIEF:**

You and your team have been selected to design an arch that is as tall and wide as possible.

**MISSION RULES:**

1. You will design an arch that is as tall and as wide as possible.
2. Your finished project must be built of only clay.
3. Your project must be completely freestanding and may not be attached to the floor or a table surface.
4. Your teacher will determine your materials limit for the arch.
5. You will work with one or two partners. Teams may be of no more than 3 people.
6. While a perfect curve is hard to attain, some semblance of an arch must be created. A simple V or single-pitched roof is not acceptable.

**QUIZ GRADE:**

Create a blueprint design for your ideas

- Sketch 25%
- Sketch is labeled 25%
- Explanation of strategies 25%
- Conclusions and reflections based on your results 25%

**TEST GRADE:**

Your completed design and the results of the test.

- Project Completed = 50%
- 50% of your project's score depends on the height and width of your project as compared to other projects.
- A formula of width X height will be used. Width is at the widest part near the base, and height is as the peak of the arch.
- *NOTE: The arch with the highest score will automatically get 100%*

**NOTES:****CATEGORIES:** Arches, Clay, Height