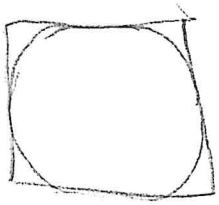
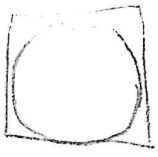
Project Title



Foil Boat Float

Project Question

Which shape of aluminum foil boat holds the most pennies before sinking.



Project Research

Research Your Topic

Spend some time learning more about your topic. Use reliable internet sources, books from the library, or other resources. Not only do you want to be an expert on your topic, but you want to teach others about your topic.

Science Terms-locate at least 3 key science words related to your topic. Make sure that the words you choose are directly related to your topic and are needed to know/ understand your topic better. Provide a definition of each key work IN YOUR OWN WORDS, not the dictionaries.

Term	Definition
aluminum foil	a thin, flexible sheet of metle that is an element made from the element aluminum
material	the substance that an object is made from.
pennies	Zinc with a thin outer layer of copper
copper	copper is made from the element copper
weight	Pennies weighs 3.11 grams or 2.5 grams.

how much do pennies weigh

Project Research

A paragraph describing the science behind your project - after you have completed your research give us, your audience, some background information on your topic in a complete and well-written paragraph. Give us specific facts, rather than general information. Use the space provided to write a draft. You will edit this to make a final copy to place on your display board. Remember at least 5 sentences with a topic and ending sentences.

The round shape or a wide rectangular shape with a flat bottom. a standrd 1000 ft roll might around 30 sq ft could weigh about 12 ounces to stop an aluminum foil boat from sinking you need to shape it to trap air and increase its volume which lowers its overall density and creates a stronger buoyant force a wide, shallow and stable shape like a flat bottomed bowl or a box work best because it displaces a large volume of water effectively Spreading out the aluminum's mass a boat with a wide base and high sides is more stable and can hold more pennies than a narrower compact shape.

Project Hypothesis

State Your Hypothesis

Based on your research, decide what you think the outcome of the project will be and make a good guess as to what you think the answer to your question will be. **Also explain WHY you think that will be the outcome.** Remember, it is ok if you don't have the right answer; that is how scientists make discoveries. Make sure that your hypothesis is written in a complete sentence.

Start by listing some possible outcomes or answers to your question.

Decide which outcome is most likely. This will be your hypothesis. Clearly write your hypothesis in a If _____ then _____ because _____ statement.

If we design a foil boat with a flat wide base and a foil boat with a narrower compact shape then the foil boat with then the foil boat with more pennies before sinking because the boat with the flat wide base is more stable due to stronger buoyant force.

Project Experiment

Design Your Experiment

Clearly write out the procedure you are going to follow. Remember that your experiment needs to follow the scientific process and that you need to have one variable that you are going to change (independent variable). There are three variables in a scientific experiment: Independent, dependent, and controlled. The *independent variable* is the one, and only one variable you will change. The *dependent variable* are those being observed and measured throughout the experiment.
The *controlled variables* are those that remain constant and allows you, the scientist, to understand how the experiment would react under normal circumstances.

Independent Variable:

shape of the boat

Dependent Variable:

The nuber of pennies each boat holds

Controlled Variable:

Size of the foil sheets, Same kind of pennies, Same amount of water, Same type of container.

Project Experiment

Materials

List *all* materials needed to complete the experiment. Be specific about the type, size, brand, amount, etc.

1. bowl.
2. mesuring cup
3. water
4. pennies
5. foil
6. log

Project Experiment

Procedure

Write out each STEP (listing 1-?) of your experiment. Remember to number each step and clearly explain what to do. Other scientists should be able to follow the same steps and get similar results. Use complete clear sentences.

1. fill a bowl with ten cups of water
2. cut two equal peaces of aluminum foil
3. fold each peac into a diffrent boat shape (wide and flat bottom, round and curved sides.
4. carefuly place one boat into the water
5. slowly add pennies into the boat, one at a tim
6. stop counting when the boats sink sortie over
7. record the number of pennies in the data tal
8. repeat steps four though seven
9. compair results

Project Experiment

Conduct experiment

Scientists conduct an experiment many times in order to get the most accurate data, so make sure you also conduct your experiment multiple times. During your experiment you need to collect data and make observations. You will record these in your Experiment Log. After you have completed the experiment use your log to write down the data and observations below. In your log you will need to:

Collect Data- you will need to collect numerical data, that means you need to take measurements during the experiment. Measurements can be temperature, distance, height, etc. Creating a chart/ table is a helpful way to organize your data. You will analyze the data later to determine the results of your experiment.

Make Observations- as you conduct your experiment you will use your senses (sight, smell, touch, etc.) and write down any observations you make during the process.

Observation

Project Experiment

Data

Type of Boat	Trial 1	Trial 2	Trial 3
Flat Bottom	> 48	48	> 48
Curved Sides	31	45 (no sink)	35

Number of pennies

Project Conclusions

Draw Conclusions

Analyze the results and determine how the results helps you answer your project question. Write your answer in a complete sentence using the question to begin your answer. You also need to tell whether your hypothesis was supported or if the results contradict the hypothesis. If it was not supported, explain why you think so. End this paragraph by saying how you would change or improve your experiment in the future.

Answer to your project question: The boat with the flat bottom was the one that didn't sink.

Did the results support or contradict the hypothesis? Explain. The hypothesis was correct! The boat with the flat bottom did not sink and it hold all the pennies

How would you improve or change the experiment? The way the experiment changed was when one of the curved side boat did not sink when we put in all the pennies.

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Foil Boat Float

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Term	Definition
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material	The substance that an object is made from
pennies	mostly zinc with a thin copper plating.
copper	a reddish-orange, soft metal that is found in nature and is very useful.
weigh	

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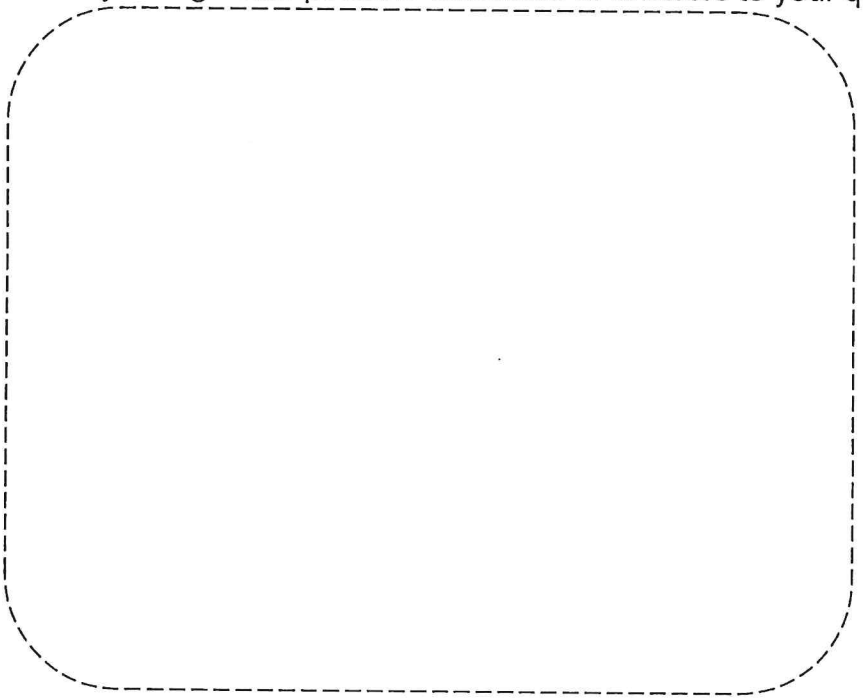

Decide which outcome is most likely. This will be your hypothesis. Clearly write your hypothesis in a statement. **If** _____ **then** _____ **because** _____

If we design a foil boat with a foil boat with a narrower compact shape then the foil boat with flat wide base will hold more pennies before sinking because the boat with the flat wide base is more stable to carry the weight

Project Experiment

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The number of pennies each boat holds

Controlled Variable:

size of the foil sheets same kind of pennies same amount of water, same type of contain

Project Experiment

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4) pennies

5) foil

6) log

Project Experiment

Procedure

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1. Fill a bowl with 10 cups of water
2. Cut to equal pieces of aliminum foil
3. Fold each piece into a different boat shape (wide and felt bottom, round and curved sides
4. carefully pose one boat into the water
5. Slowy add pennies into the boat, one at a time
6. stop counting, sinks or tip over
7. record the number of pennies in the data table
8. repeat steps 4 through 7 with the other boat
9. Cupre the recause.