

WHAT ARE WE INVESTIGATING?

Does the number of sticks in your raft affect how it floats?

MATERIALS:

- Sticks
- String or Yarn
- Paper
- Markers
- Scissors
- Tape
- Tub of Water
- Strive Academy's Engineering Design Process Handout (found at www.striveacademy.org)
- Pencil or Pen

EXTENSION:

- * Try this variable - build a raft out of different materials and see which materials float the best.
- * Try this variable - add some weight to your raft and see how much weight it can hold before it sinks.
- * Check out this video about How Massive Cruise Ships Float:
<https://www.youtube.com/watch?v=vvCLsY2IFB4>

DIRECTIONS:

1. Gather all of your materials. Our materials are just suggestions - feel free to add other things too!
2. On your handout (found at www.striveacademy.org), fill in the title of your experiment (Stick Rafts).
3. On your handout, fill in your hypothesis. You want to answer the question: How does the number of sticks in my raft affect how it floats?
4. On your handout, sketch a design of your experimental setup. You will be building a raft out of sticks and string/yarn. Feel free to use color and label the materials that you will be using!
5. Walk around your yard and collect some small sticks. Have a parent help if you need to break some bigger sticks.
6. Tie 5 sticks together using the string or yarn.
7. To make your mast, take your piece of paper and cut part of it off so it is a square shape. Then fold it in half to make a triangle. Feel free to be creative and decorate your triangle. Then use tape to connect it to a stick that is not part of your raft.
8. Take your mast and put the bottom of the stick in between the raft so it is sticking straight up.
9. Under "Data Collection/Observation", draw a picture of what your finished raft looks like. Feel free to use color!
10. Put your raft into the tub of water. Under "Results", record your observations about how well it floats.
11. Add another stick to your raft (for a total of 6) and repeat steps 8-10. Continue repeating for as many sticks as you want in your raft.
12. Answer the "Analysis" questions on your handout:
 - How did the number of sticks in your raft affect how it floated in the water?
 - Did the mast on your raft help it float? How?
 - How do you think the amount of wind would affect how well the raft floated?

**** Try the extension activities on the first page for more fun! ****