Plastic Baggie Challenge

WHAT ARE WE INVESTIGATING?

Can you stick a pencil through a bag of water and keep the water from draining out?

MATERIALS:

- Ziplock Baggies
- Water
- Sharpened Pencils
- Strive Academy's Engineering Design Process Handout (found at www.striveacademy.org)
- Pencil or Pen

EXTENSION:

* Try this variable - use different sizes of plastic baggies.

* Try this variable - use different brands of plastic baggies.

* Try this variable - use different liquids besides water.

* Try this variable - use pencils of different shapes (round or flat edges).

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DIRECTIONS:

1. Gather all 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 (Plastic Baggie Challenge).

3. On your handout, fill in your hypothesis. You want to answer the question: How many pencils can I stick through a bag of water without the water draining?

4. On your handout, draw a sketch of what you think will happen when you push pencils through your bag filled with water.

5. Sharpen your pencils. The sharper, the better!

6. Fill the baggie half full with water and then seal the bag closed.

7. Hold the bag over a sink or bowl in one hand, and hold a pencil in the other hand. Push one pencil through one side of the bag and out of the other. Do not push the pencil all the way through (you do not want any open holes).

8. Repeat step 7 for as many pencils as you want to stick through the bag.

9. Under "Data Collection/Observation", draw a picture of what your bag looks like with all of the pencils through it. Feel free to use color!

10. Under "Results", record how many pencils you were able to stick through your bag.

11. When finished, hold the bag over the sink as you remove the pencils - water will drain out!

12. Answer the "Analysis" questions on your handout:
    - How did your results compare to your hypothesis?
    - Water's chemical formula is H_2O. What does the H stand for? What does the O stand for?
    - The plastic bag that you used is made up of a polymer called LDPE. Do you think companies use LDPE in plastic baggies because it is flexible or not very flexible? How did this experiment help support your answer?

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