

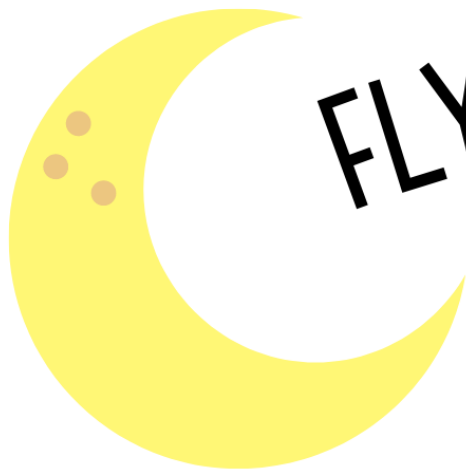


Adventures in  
**STEM**

STEM Fun for everyone

$$\textcircled{B} > \frac{1}{n} \sum_{i=1}^n x_i$$

[Begreaterthanaverage.org](http://Begreaterthanaverage.org)



# FLYING ROCKET



## SUPPLIES:

Straws Rocket Picture  
Paper Tape Scissors

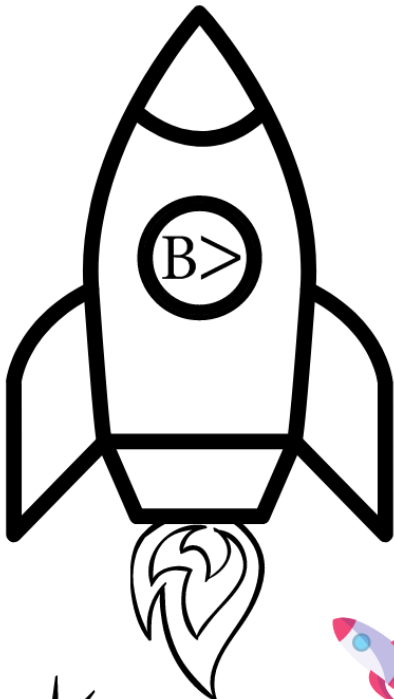


Experiment and see how far you can get your rocket to fly!  
Launch your rocket and record how far they flew!


1st flight:	2nd flight:	3rd flight:	4th flight:	5th flight:





## Make your rocket launcher



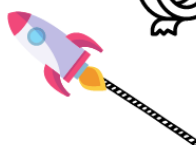
 cut out rectangle and rocket

 roll rectangle strip loosely around the straw on long end of the strip and secure with a piece of tape

 Fold down the top of your rolled strip and secure with tape (making a "cap" for your straw)

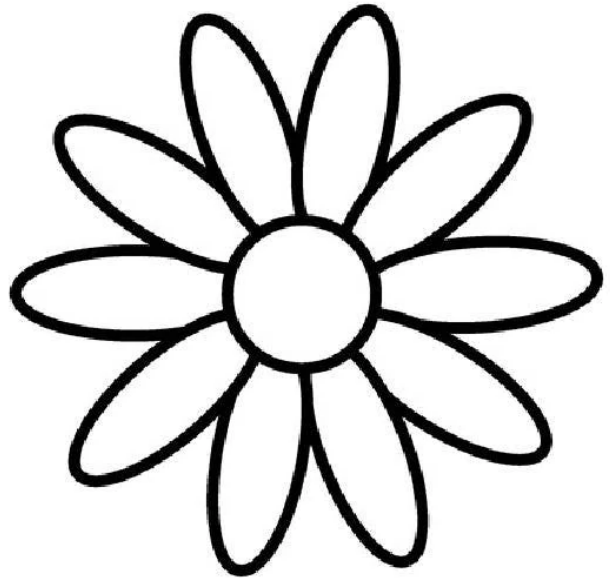
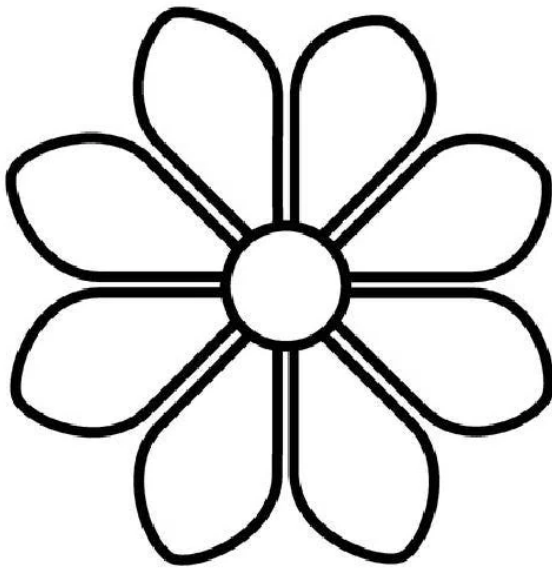
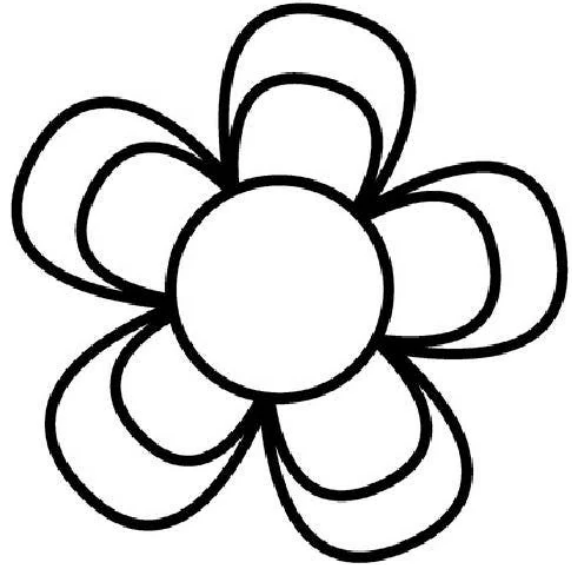
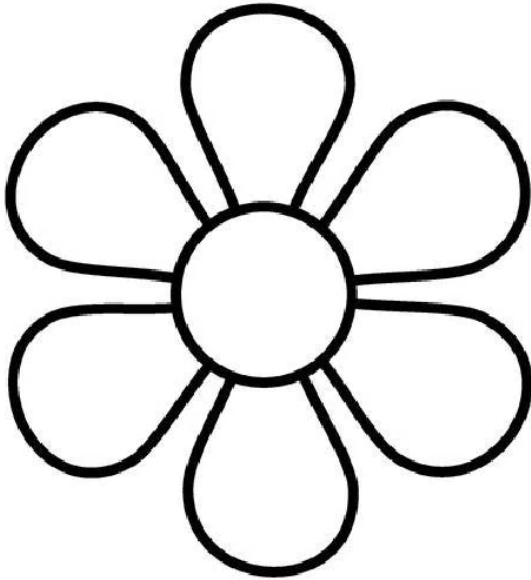
 Tape your paper tube to your rocket

Slide your straw into the "rocket cap" you have made and blow on the other end to launch your rocket



# Blooming Flowers

1. Print out the flowers template on printer paper.
2. Color and design the flowers.
3. Fold the petals one by one toward the center.
4. Pour water in a plate or container of your choice.
5. Place the paper flower into the water with the petals side up.
6. Watch the petals open up!



## How does it work?

Paper is made up of small fibers. When these fibers absorb water, they swell up and the paper expands. This makes the creases flatten out, which in turn makes the flower open.

Different types of paper soak up water at different speeds. This explains why a tissue paper flower opens almost immediately on contact with water while a cardstock flower may take a minute or so to slowly blossom.

Experiment with several different kinds of paper to see for yourself!

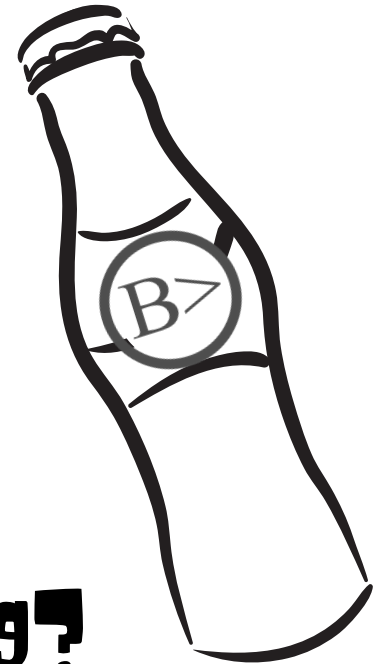
# Pop Rocks Magic

MATERIALS NEEDED: POP ROCKS, BALLOON, BOTTLE OF SODA

- POUR THE ENTIRE PACKAGE OF POP ROCKS INTO A BALLOON (USE A SMALL KITCHEN FUNNEL TO MAKE THIS EASIER)
- PLACE THE OPENING OF THE BALLOON OVER THE MOUTH OF A BOTTLE OF SODA. HAVE THE BALLOON HANG DOWN ON THE SIDE THE BOTTLE. STRETCH THE OPENING OF THE BALLOON OVER THE MOUTH OF THE BOTTLE BEING CAREFUL NOT TO HAVE THE CANDY DUMP INTO THE SODA. (YOU DON'T WANT TO DROP THE CANDY BEFORE YOU'RE READY.)
- GRAB THE BALLOON AND LIFT IT UP, DUMPING THE POP ROCKS INTO THE SODA.
- USE THE CHART BELOW AND DRAW/WRITE DOWN YOUR PREDICTIONS OF WHAT WILL HAPPEN. OBSERVE WHAT'S HAPPENS NEXT!

WHAT I THINK WILL HAPPEN:

WHAT HAPPEND?



## What is happening?

WHAT MAKES POP ROCKS POP? POP ROCKS ARE PRESSURIZED CARBON DIOXIDE GAS ( $\text{CO}_2$ ). EACH OF THE TINY LITTLE CANDY PEBBLES CONTAINS A SMALL AMOUNT OF THE GAS. WHEN THEY BURST FREE FROM THEIR CANDY SHELLS, THESE TINY GAS BUBBLES MAKE THE POPPING SOUND YOU HEAR

THE CARBON DIOXIDE GAS HELD IN THE CANDY ISN'T ENOUGH TO CAUSE THE SMALL AMOUNT OF INFLATION YOU OBSERVE – THAT'S WHERE THE  $\text{CO}_2$  IN THE SODA COMES INTO PLAY.

SODA IS A CARBONATED LIQUID. IT CONTAINS PRESSURIZED  $\text{CO}_2$ . WHEN THE POP ROCKS MIX WITH THE SODA, SOME OF THE GAS IN THE SODA COLLECTS IN THE OF "BUBBLES" (CRACKS, DENTS, BUMPS, HOLES) ON THE CANDY. SOME OF THE GAS ESCAPES FROM THE WATER AND CORN SYRUP THAT HOLD IT AND MOVES UPWARD. IT FILLS THE SPACE AT THE TOP OF THE BOTTLE AND THEN MOVES UP INTO THE BALLOON AS THE VOLUME OF  $\text{CO}_2$  INCREASES.



# OUBLECK!

OUBLECK ISN'T A LIQUID OR A SOLID, IT'S A NON-NEWTONIAN FLUID.  
AT TIMES, IT MAY SEEM LIKE A SOLID OR A LIQUID BUT IT ACTS  
DIFFERENTLY THAN A NORMAL SOLID OR LIQUID.

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HERE'S WHAT YOU'LL NEED TO MAKE THIS OUBLECK RECIPE:

2 CUPS CORNSTARCH

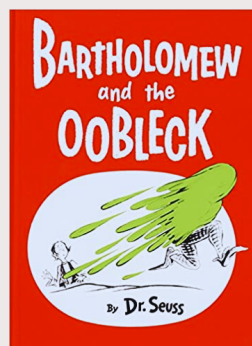
1 CUP WATER

FOOD COLORING (OPTIONAL)

\*dispose of  
oobleck in trash.  
DO NOT put  
down the sink

1. MIX 2 CUPS OF CORNSTARCH TO 1 CUP OF WATER INTO A BOWL. MIX THE  
CORNSTARCH AND WATER UNTIL YOUR OUBLECK IS FORMED.

TIP: IF YOU WOULD LIKE TO COLOR  
YOUR OUBLECK, ADD YOUR FOOD  
COLORING TO YOUR WATER AND  
THEN MIX WITH THE CORNSTARCH.



## ACTIVITY EXTENSION

KEEP THE FUN GOING!  
READ THE DR SEUSS BOOK,  
BARTHOLOMEW AND THE OUBLECK

# LAVA LAMP!

HERE'S WHAT YOU'LL NEED TO MAKE A LAVA LAMP:

VEGETABLE OIL

WATER

FOOD COLORING

ALKA SELTZER TABLETS

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- COLOR ABOUT 1/2 CUP OF WATER WITH FOOD COLORING
  - TAKE THE ALKA SELTZER TABLETS AND BREAK THEM INTO 2 OR 3 PIECES.
  - PLACE THEM IN A SMALL CUP OR CONTAINER.
  - FILL A GLASS ABOUT 3/4 FULL WITH VEGETABLE OIL.
  - POUR IN THE COLORED WATER UNTIL THE LIQUID IN THE CUP IS ABOUT 1–2 INCHES FROM THE TOP.

## HOW DOES IS WORK?

THE WATER AND OIL DO NOT MIX AND THE OIL DOESN'T CHANGE COLOR BECAUSE THE FOOD COLORING IS WATER SOLUBLE. THE ALKA SELTZER REACTS WITH THE WATER TO MAKE BUBBLES OF CARBON DIOXIDE. THE BUBBLES ATTACH THEMSELVES TO THE BLOBS OF COLORED WATER AND BRING THEM TO THE TOP OF THE GLASS. WHEN THE BUBBLES POP THE BLOBS OF COLORED WATER FALL BACK TO THE BOTTOM OF THE GLASS.

