

SCIENCE FESTIVAL FACILITATOR'S GUIDE



Martian Jelly

1. Make sure you have the materials you need.

- Plastic table cover and paper towels to wipe up spills
- Large plastic cups, clear or with white interiors (one for each student-adult pair)
- Grape jelly
- Baking soda (not baking powder)
- Vinegar
- Pitcher of warm water
- 1/2 cup measures (several to share)
- Tablespoons (several to share)
- 1/8 teaspoon measures (several to share)
- Popsicle sticks for stirring (one for each student-adult pair)

2. Watch this video on your smartphone:

<https://youtu.be/8KtUpvU-FCw>

3. Prepare your station.

- Cover your table with plastic to protect it from sticky spills.
- Fill a pitcher with warm water (you or a helper will need to do this several times throughout the evening).
- Distribute plastic cups and popsicle sticks for each student-adult pair.
- Place shared grape jelly, baking soda, vinegar and measuring cups/spoons where they can be easily reached by all participants.

spark. inspire. engage.



Questions to ask participants before they start:

- How do you think we could change the color of this grape jelly? (Let them brainstorm for a few minutes—remember, there are no wrong answers!)
- Do you think we could do it using chemistry?
- Let's find out!

Instructions:

Please read each set of instructions out loud. Make sure that you direct the correct person to complete each assigned task.

- **Student:**
 - Pour 1/2 cup warm water into your plastic cup.
 - Dissolve one Tablespoon grape jelly in the cup and note the color.
- **Adult:** Add 1/8 teaspoon baking soda, and stir. Be careful! A fizzing reaction will occur, possibly causing it to overflow.
- **Both:** When the fizzing dies down, what do you notice? (The color will have changed.)
- **Adult:** Slowly, add one Tablespoon vinegar. Take care not to let any vinegar splash—it can sting your eyes!
- **Student:** Stir until the color of the grape jelly solution changes again.

How It Works:

Chemical reactions occur when one chemical comes into contact with another. For example, when you added the baking soda (a base), it made the solution *basic* and changing the color of the grape jelly to a greenish-black. When you added vinegar (which contains *acid*), the color of the grape jelly solution changed back to purple.

Vocabulary:

Basic: A solution is *basic* if it has a low concentration of hydrogen ions, or a pH of greater than 7.

Acidic: The opposite of basic is *acidic*—acidic solutions have a high concentration of hydrogen ions and a pH of less than 7.

Real-World Application:

Neutral pH (around 7) is best for most living beings. The more acidic or basic a liquid becomes, the more irritating it is to our skin, eyes, and organs. For example, most household cleaners (bleach, ammonia, oven cleaners and tub and tile cleaners) are basic. Use gloves when working with these! Others, like dish soap, are neutral and safer to use.

spark. inspire. engage.