

Spooky Substances

Lab Stations



Dry Ice “Graveyard Fog”

Station B

“Fake Blood” Viscosity Ramp (*Physical change; property: flow rate*)
Goal: Mix a realistic “fake blood” and measure how fast it flows.
You’ll need: $\frac{1}{2}$ cup corn syrup, 1 tbsp water, 2–3 drops red + 1 drop blue, pinch cocoa, spoon, clear cup, ramp.
Steps:
1. Stir ingredients until uniform.
2. Place 1 tsp on the top of the ramp; start timer.
3. Stop timer when the leading edge reaches 10 cm mark.
4. Record: Time (s), appearance, classify **physical/chemical**, justify.

Station C

Teacher Demo: Dry Ice “Graveyard Fog” (*Sublimation*)
Goal: Observe sublimation of CO_2 and bubble formation.
Teacher will: Add dry ice to warm, soapy water.
Steps:
1. Watch for fog, bubbles, sounds.
2. Feel the outside of the bowl with the back of your hand (does it get colder?).
3. Record: Observations before/during/after, classify **physical/chemical**, justify.

Station D

Oozing Pumpkin (*O_2 gas + heat*)
Goal: Observe a foamy reaction inside a pumpkin.
You’ll need (at the station): Pumpkin with $\frac{1}{2}$ –1 cup 3% H_2O_2 , 1 tbsp dish soap, orange dye; yeast mix.
Steps:
1. Note initial temperature inside pumpkin (thermometer).
2. Add yeast mix and step back.
3. After 30–60 s, measure temperature again (avoid direct contact with foam).
4. Record: Appearance, gas production, temperature change, classify **physical/chemical**, justify.

“Fake Blood” Viscosity Ramp

Oozing Pumpkin (O_2 gas + heat)

Station A

Oobleck “Swamp Sludge” (*Non-Newtonian fluid - viscosity under stress*)
Goal: Make a spooky slime and test how it behaves under different forces.
You’ll need: 2 cups cornstarch, 1 cup water, 1–2 drops green dye, bowl, stick, timer.
Steps:
1. Mix water + dye; slowly add cornstarch, stirring until it flows when tilted but feels firm when tapped.
2. Test 1: Press quickly—does it feel solid? Test 2: Let it drip—does it flow?
3. Time how long a heaping spoonful takes to drip off your spoon (s).
Record: Before/after description, flow time, classify **physical/chemical**, justify.

Station E

“Glowing Ghosts” (*Fluorescence*)
Goal: Compare glow under UV light.
You’ll need: UV light, two identical cups (tonic water vs. water), rating card.
Steps:
1. Turn on UV.
2. Rate glow from 1 (no glow) to 5 (very bright).
3. Record: Brightness rating, explanation of why one glows, classify **physical/chemical**, justify.

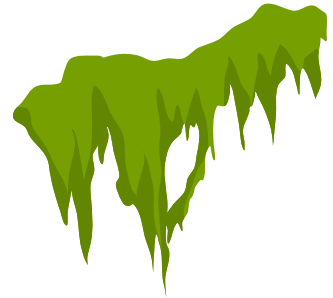
Oobleck “Swamp Sludge”

“Glowing Ghosts”



Engaging Station Activity

Station A – Oobleck “Swamp Sludge” (Non-Newtonian fluid - viscosity under stress)



Station B – “Fake Blood” Viscosity Test (physical change; properties)



Station C – Dry Ice “Graveyard Fog” (teacher demo only; physical change by sublimation)



Station D – Oozing Pumpkin (yeast + 3% H_2O_2 ; chemical change, exothermic)



Station E – “Glowing Ghosts” Fluorescence (physical phenomenon; properties)



Stations and Prep

- Full teacher reference sheet with answer key
- Little to no prep, just gather the materials, print, and go.
- 5 Engaging Stations.
- Each station tests your students' knowledge and provides a fantastic learning opportunity for your kids to learn through assessment.

Station A

Oobleck "Swamp Sludge" (Non-Newtonian fluid - viscosity under stress)
Goal: Make a spooky slime and test how it behaves under different forces.
You'll need: 2 cups cornstarch, 1 cup water, 1-2 drops green dye, bowl, stick, timer.
Steps:
1. Mix water + dye; slowly add cornstarch, stirring until it flows when tilted but feels firm when tapped.
2. **Test 1:** Press quickly—does it feel solid? **Test 2:** Let it drip—does it flow?
3. Time how long a heaping spoonful takes to drip off your spoon (s).
Record: Before/after description, flow time, classify physical/chemical, justify.

Station B

"Fake Blood" Viscosity Ramp (Physical change; property: flow rate)
Goal: Mix a realistic "fake blood" and measure how fast it flows.
You'll need: $\frac{1}{4}$ cup corn syrup, 1 tbsp water, 2-3 drops red + 1 drop blue, pinch cocoa, spoon, clear cup, ramp.
Steps:
1. Stir ingredients until uniform.
2. Place 1 tsp on the top of the ramp; start timer.
3. Stop timer when the leading edge reaches 10 cm mark.
4. **Record:** Time (s), appearance, classify physical/chemical, justify.

Station C

Teacher Demo: Dry Ice "Graveyard Fog" (Sublimation)
Goal: Observe sublimation of CO_2 and bubble formation.
Teacher will: Add dry ice to warm, soapy water.
Steps:
1. Watch for fog, bubbles, sounds.
2. Feel the outside of the bowl with the back of your hand (does it get colder?).
3. **Record:** Observations before/during/after, classify physical/chemical, justify.

Station D

Oozing Pumpkin (O_2 gas + heat)
Goal: Observe a foamy reaction inside a pumpkin.
You'll need (at the station): Pumpkin with $\frac{1}{4}$ -1 cup 3% H_2O_2 , 1 tbsp dish soap, orange dye, yeast mix.
Steps:
1. Note initial temperature inside pumpkin (thermometer).
2. Add yeast mix and step back.
3. After 30-60 s, measure temperature again (avoid direct contact with foam).
4. **Record:** Appearance, gas production, temperature change, classify physical/chemical, justify.

Station E

"Glowing Ghosts" (Fluorescence)
Goal: Compare glow under UV light.
You'll need: UV light, two identical cups (tonic water vs. water), rating card.
Steps:
1. Turn on UV.
2. Rate glow from 1 (no glow) to 5 (very bright).
3. **Record:** Brightness rating, explanation of why one glows, classify physical/chemical, justify.

Save your time by utilizing dry labs. Just print and place around the room.

Station A

Oobleck "Swamp Sludge" (Non-Newtonian fluid - viscosity under stress)
Goal: Make a spooky slime and test how it behaves under different forces.
You'll need: 2 cups cornstarch, 1 cup water, 1–2 drops green dye, bowl, stick, timer.

Steps:

1. Mix water + dye; slowly add cornstarch, stirring until it flows when tilted but feels firm when tapped.
2. **Test 1:** Press quickly—does it feel solid? **Test 2:** Let it drip—does it flow?
3. Time how long a heaping spoonful takes to drip off your spoon (s).
Record: Before/after description, flow time, classify **physical/chemical**, justify.

Station B

"Fake Blood" Viscosity Ramp (Physical change; property: flow rate)
Goal: Mix a realistic "fake blood" and measure how fast it flows.
You'll need: $\frac{1}{4}$ cup corn syrup, 1 tbsp water, 2–3 drops red + 1 drop blue, pinch cocoa, spoon, clear cup, ramp.

Steps:

1. Stir ingredients until uniform.
2. Place 1 tsp on the top of the ramp; start timer.
3. Stop timer when the leading edge reaches 10 cm mark
4. **Record:** Time (s), appearance, classify **physical/chemical**, justify.

Station E

"Glowing Ghosts" (Fluorescence)

Goal: Compare glow under UV light.

You'll need: UV light, two identical cups (tonic water vs. water), rating card.

Steps:

1. Turn on UV.
2. Rate glow from 1 (no glow) to 5 (very bright).
3. **Record:** Brightness rating, explanation of why one glows, classify **physical/chemical**, justify.

Station C

Teacher Demo: Dry Ice "Graveyard Fog" (Sublimation)

Goal: Observe sublimation of CO_2 and bubble formation.

Teacher will: Add dry ice to warm, soapy water.

Steps:

1. Watch for fog, bubbles, sounds.
2. Feel the outside of the bowl with the back of your hand (does it get colder?).
3. **Record:** Observations before/during/after, classify **physical/chemical**, justify.

Station D

Oozing Pumpkin (O_2 , gas + heat)

Goal: Observe a foamy reaction inside a pumpkin.

You'll need (at the station): Pumpkin with $\frac{1}{2}$ –1 cup 3% H_2O_2 , 1 tbsp dish soap, orange dye; yeast mix.

Steps:

1. Note initial temperature inside pumpkin (thermometer).
2. Add yeast mix and step back.
3. After 30–60 s, measure temperature again (avoid direct contact with foam).
4. **Record:** Appearance, gas production, temperature change, classify **physical/chemical**, justify.

Station Lab – Spooky Substance Lab

Teacher Reference Sheet

Topic: States of Matter: Physical vs. Chemical Changes; Properties of Material
Time: 60–90 minutes (plus 10–15 min prep)
Group Size: Pairs or triads **Stations:** 5 (one is teacher-led demo)

Essential Question

How can we use observations and simple measurements to decide whether a change is **physical** or **chemical**?

Learning Targets

- I can describe and observe properties of substances before and after a change.
- I can classify a change as physical or chemical and justify my decision with evidence.
- I can communicate my findings using data tables, graphs/ratings, and a CER.

Teacher Guide

Materials (for 8 lab groups + 1 demo station)

General

- Safety goggles (class set), nitrile gloves (optional), aprons (optional)
- Paper towels, wipes, trash bin liners, masking tape & Sharpie for labels
- 10 small mixing bowls/cups, 10 plastic spoons/craft sticks, 10 funnels (optional)
- 10 timers/phones, 5 thermometers (alcohol or digital), 5 plastic trays or cookie sheets
- Shopping List (for 1 class of ~28 students)**
 - Cornstarch (2 large boxes + 16 cups)
 - Corn syrup (1 bottle + 2 cups)
 - Food coloring (red, blue, green), small cocoa container
 - 3% hydrogen peroxide (1 L bottle)
 - 2 yeast packets; dish soap
 - 1 medium pumpkin; large tray
 - Dry ice (1–2 kg) or baking soda + vinegar alternative
 - Tonic water (1 L) + plain water
 - Goggles (class set), timers, thermometers, bowls/spoons, UV flashlight

Station A – Oobleck "Swamp Sludge" (Non-Newtonian fluid - viscosity under stress)

- Cornstarch "16 cups (2 cups/group)
- Water "8 cups (1 cup/group)
- Green food coloring (optional)
- 8 small tubs/bowls, 8 craft sticks

Station B – "Fake Blood" Viscosity Test (physical change; properties)

- Light corn syrup "2 cups ($\frac{1}{4}$ cup/group)
- Water "8 tbsp (1 tbsp/group)
- Red food coloring + 1 drop blue per batch, pinch of cocoa powder (for realism)

8 class cups, 8 student cups, 8 station lab trays, index cards to serve as ramps (propped at "30"

Grading Rubric (20 points total)

Criterion	4 – Exceeds	3 – Meets	2 – Developing	1 – Beginning
Safety & Conduct (4)	Consistently follows all rules; proactive cleanup	Follows all rules	Minor reminders needed	Repeated reminders/unsafe
Data Table Quality (6)	Complete, specific, measurable entries	Mostly complete, clear	Some missing/unclear	Sparse/inaccurate
Classification Accuracy (4)	All stations correct & justified	One error or weak justification	Multiple errors	Mostly incorrect
Analysis Responses (4)	Clear, evidence-rich explanations	Accurate, adequately supported	Partially correct; light support	Minimal/incorrect
CER (2)	Strong claim, multiple evidence pieces, correct reasoning	Clear claim with basic evidence/reasoning	Vague claim or weak evidence	Missing/incorrect

Differentiation & Extensions

Supports:

- Sentence starters for CER ("The change was ____ because I observed ____ which shows ____").
- Pre-label "physical vs chemical" evidence list on the handout for emerging learners.
- Assign roles (reader, mixer, timer, recorder).

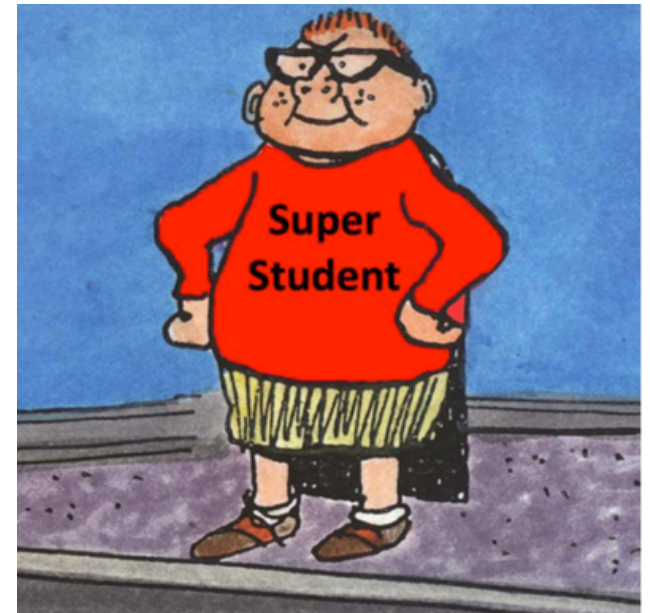
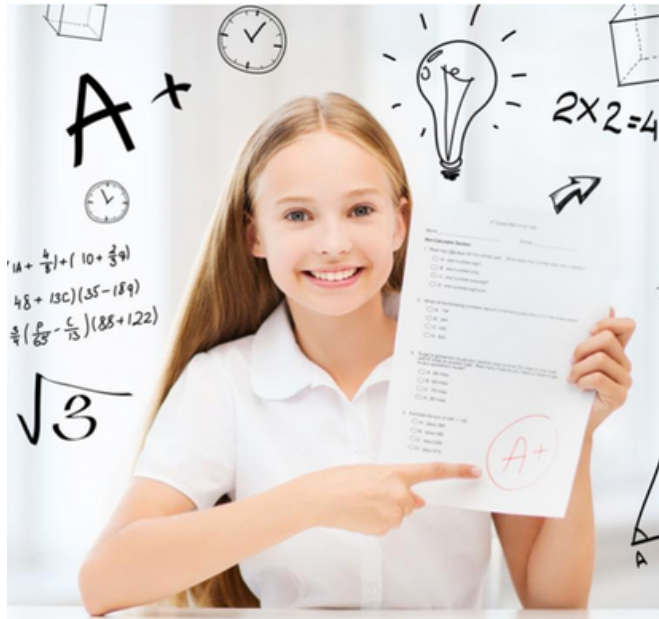
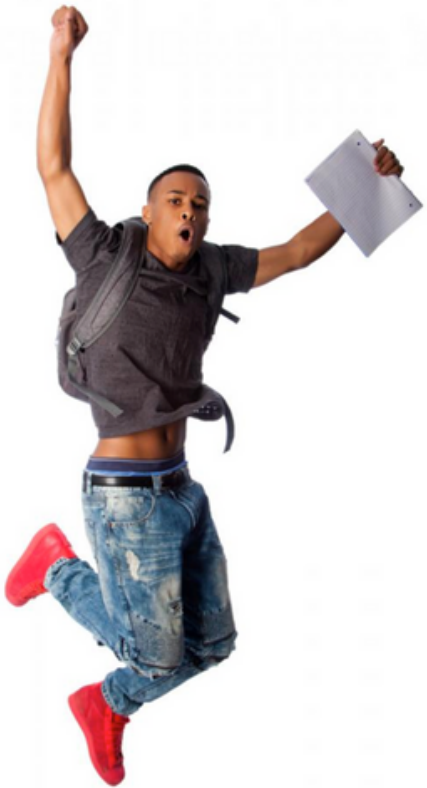
Extensions (or early finishers):

- **Quantify:** Convert flow times to rate (cm/s) on the ramp; graph mass of dry ice vs. bubble count (demo).
- **Model:** Draw particle diagrams for each station (before/after).
- **Design:** Modify the pumpkin reaction (soap amount, temperature) and predict effects.
- **Research:** Why quinine fluoresces; other real-world fluorescent materials.

Troubleshooting:

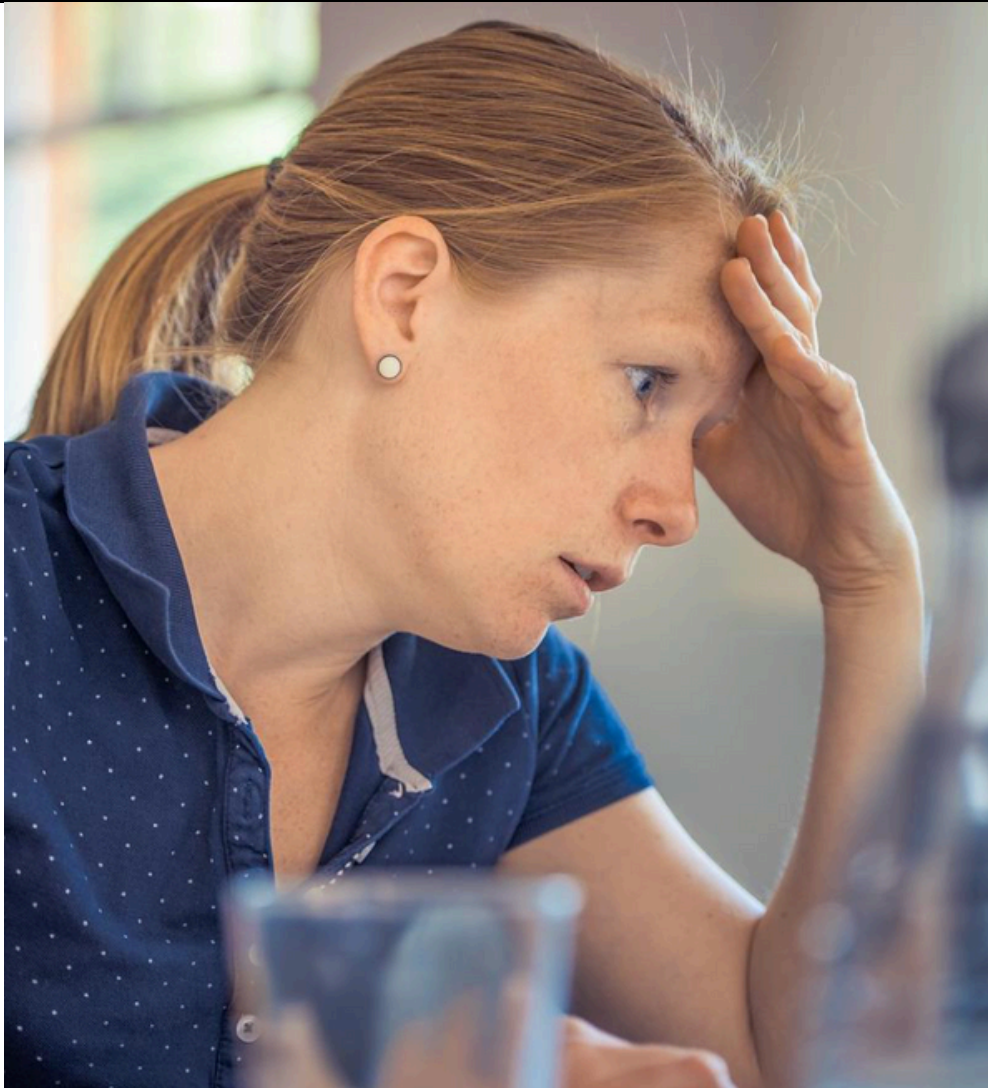
- **Oobleck too runny?** Add cornstarch 1 tbsp at a time. Too crumbly? Add 1 tsp water.
- **Fake blood too thick to flow?** Add $\frac{1}{4}$ tsp water, mix well.
- **Pumpkin reaction weak?** Ensure fresh yeast (proof until foamy), use room-temp H_2O_2 , add a bit more soap.
- **Dry ice not fogging?** Water may be too cold; replace with warm water.
- **UV not bright?** Darken the room; hold lamp closer; use clear cups.

Create Engagement and Let Them Reach their Potential



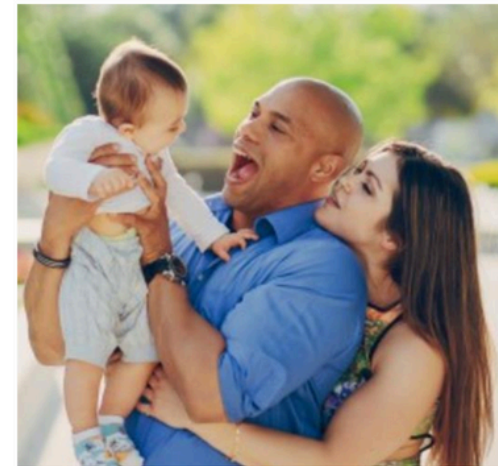
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Save yourself the STRESS AND TIME



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Spend your time WISELY



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