# GUMMY BEAR OSMOSIS

NAME

CLASS / DATE

## 01 QUESTION

**How does the type of liquid a gummy bear soaks in change its mass overnight?**

## 02 PREDICT BEFORE YOU MEASURE

**WHICH LIQUID MAY CAUSE THE LARGEST PERCENT MASS GAIN?**

○ distilled water ○ salt water ○ vinegar ○ not sure yet

Predict before the 24-hour soak. Vinegar may soften gelatin, so it can behave differently from salt water.

## 03 VARIABLES

I CHANGE (INDEPENDENT)

I MEASURE (DEPENDENT)

I KEEP THE SAME (CONTROLLED) · CHANGED: SOAKING LIQUID. MEASURED: MASS BEFORE/AFTER, MASS AND PERCENT CHANGE, AND LONGEST LENGTH. KEEP BEAR TYPE, 100 ML LIQUID AND 24-HOUR SOAK MATCHED.

## 04 MATERIALS

- ☐ Three same-brand, same-color gummy bears
- ☐ Labeled water, salt-water and vinegar cups
- ☐ 100 mL per cup and a stable tray
- ☐ Balance, spoon, ruler and paper towels
- ☐ Allergy check and no-tasting reminder

## 05 PROCEDURE

**SAFETY** Do not eat gummy bears after they have been soaked or handled. Check ingredient labels for allergies and keep small candies away from young children who could choke. Use cups on a tray, clean spills promptly and wash hands after handling samples. Avoid splashes when pouring vinegar, and keep liquids away from eyes and mouths.

1 **LABEL AND PREDICT** Label the three cups and predict which liquid may produce the greatest mass change. Check ingredient allergies; test bears are not food. ☐

2 **MEASURE BEFORE SOAKING** Record starting mass to 0.01 g and longest length in centimeters for each same-brand bear. ☐

3 **SOAK FOR 24 HOURS** Add 100 mL of the assigned liquid to each cup. Add one bear per cup and leave them undisturbed for 24 hours. ☐

4 **BLOT AND MEASURE** Lift with a spoon, blot each bear the same way, then record final mass and longest length without squeezing. ☐

5 **CALCULATE AND COMPARE** Find mass change and percent change. Explain that vinegar may affect gelatin; discard samples as directed and wash hands. ☐

# DATA AND EXPLANATION

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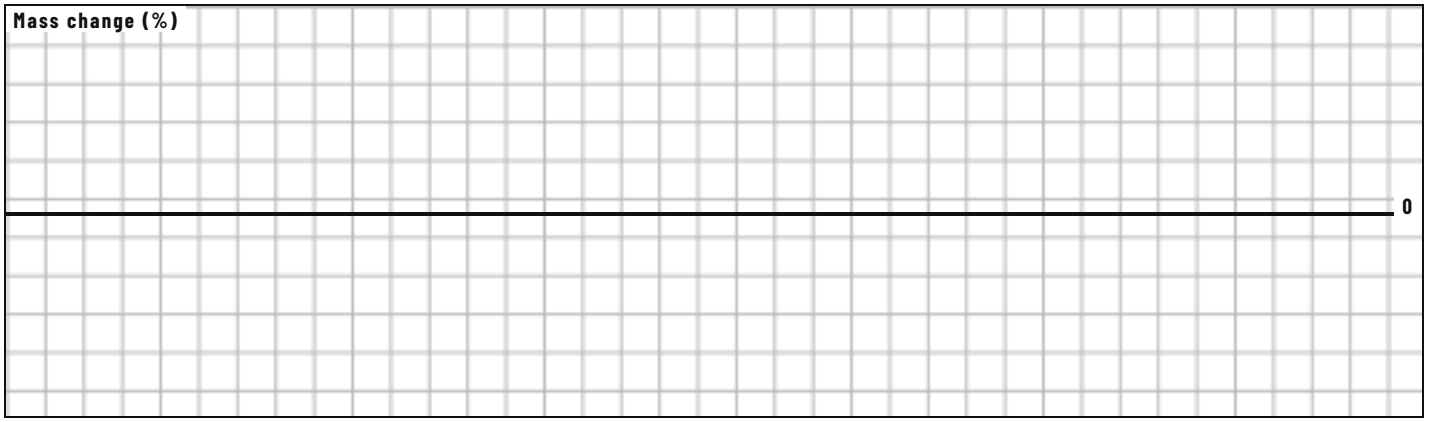
## 06 RECORD YOUR OBSERVATIONS

| LIQUID | START MASS (G) | AFTER SOAK (G) | CHANGE (G) | % CHANGE | LENGTH BEFORE → AFTER (CM) |
|---|---|---|---|---|---|
| Distilled water | | | | | |
| Salt water (about 10%) | | | | | |
| Vinegar | | | | | |

Change = after-soak mass − start mass. Percent change = change ÷ start mass × 100. Measure longest length without squeezing; put 0 on the middle graph line for positive gains and negative losses.

SHOW ONE CALCULATION

## 07 PERCENT MASS CHANGE BY LIQUID




Graph the percent change for each liquid. Mark 0 on the middle line; bars above zero gained mass and bars below zero lost mass.

X: Soaking liquid

## 08 EXPLAIN IT WITH EVIDENCE

**CLAIM**

**EVIDENCE**

**REASONING**

Reasoning must use: liquid · 24 hours · starting mass · percent change · gelatin model limits

## 09 THINK FURTHER

How might a second salt concentration change mass and size while all bears soak for the same 24 hours?