SKITTLES DIFFUSION EXPERIMENT

NAME

CLASS / DATE

01 QUESTION

How does water temperature affect the time a Skittles color front takes to reach the center of a plate?

02 PREDICT BEFORE YOU MEASURE

IN WHICH WATER TEMPERATURE MAY COLORS REACH THE CENTER FASTEST?

○ cold water ○ room-temperature water ○ warm water ○ no clear pattern yet

Predict before testing. The actual pattern can vary with pouring currents, plate tilt and candy placement.

03 VARIABLES

I CHANGE (INDEPENDENT)	I MEASURE (DEPENDENT)

I KEEP THE SAME (CONTROLLED) · CHANGED: MEASURED WATER TEMPERATURE. MEASURED: SECONDS FROM THE END OF THE SAME FIVE-SECOND POUR UNTIL THE FIRST COLOR FRONT REACHES THE CENTER. KEEP TWELVE CANDIES, RING, PLATE AND 100 ML VOLUME MATCHED.

04 MATERIALS

- ☐ Allergy-checked Skittles; never eat test candy
- ☐ Twelve candies in the same ring pattern
- ☐ Level white plate, clean and dry
- ☐ 100 mL cold, room and comfortably warm water per trial
- ☐ Thermometer, cup and timer
- ☐ Paper towels and recording sheet

05 PROCEDURE

SAFETY Check for candy or food-coloring allergies and follow school food-handling rules. Do not eat candy that has touched the plate or test water. Keep small candies away from young children who could choke; follow the teacher's age-appropriate handling directions.

1 **BUILD THE SAME RING** Place twelve Skittles in the same color sequence and spacing on a level white plate. ☐

2 **MEASURE WATER** Measure 100 mL of each sample. Target 10–15°C cold and 35–40°C comfortably warm water; record the actual room temperature. ☐

3 **POUR AND TIME** Use the same gentle five-second pour into the center. Start the timer when the pour ends and stop when the first visible color front reaches the center. ☐

4 **REPEAT EACH CONDITION** Record two trials for each temperature. Replace candies and use a completely clean, dry plate for each trial. ☐

5 **COMPARE CAREFULLY** Compare both times and center status. Note any tilt or current; do not eat tested candy and wipe spills. ☐

DATA AND EXPLANATION

NAME

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06 RECORD YOUR OBSERVATIONS

WATER TEMPERATURE (°C)	TRIAL 1 (S)	TRIAL 2 (S)	FIRST FRONT REACHED CENTER?
Cold · 10–15			
Room · record actual			
Warm · 35–40			

Record elapsed seconds from the end of the same five-second pour until the first color front reaches the center. If it does not reach center within five minutes, record "not reached" and the observation time; keep the trial for comparison.

07 SKETCH THE COLOR FRONTS

Draw the plate after a trial. Show the candy ring, colored paths and center; label any direction where a current or uneven pour affected the pattern.

08 EXPLAIN IT WITH EVIDENCE

CLAIM

EVIDENCE

REASONING

Reasoning must use: water temperature · seconds · color front · dissolving · currents

09 THINK FURTHER

How could you reduce water movement after pouring while still starting each trial in the same way?