BALLOON ROCKET LAB

NAME

CLASS / DATE

01 QUESTION

How does the amount of air in a balloon change how far it travels along a string?

02 PREDICT BEFORE YOU MEASURE

WHICH AIR AMOUNT MAY SEND THE BALLOON FARTHEST?

○ small (~5 breaths) ○ medium (~8 breaths) ○ full (~12 breaths) ○ not sure yet

Use one inflation counter if possible. Breath counts estimate air amount; keep the balloon pinched until release.

03 VARIABLES

I CHANGE (INDEPENDENT)	I MEASURE (DEPENDENT)

I KEEP THE SAME (CONTROLLED) · CHANGED: APPROXIMATE BALLOON AIR AMOUNT. MEASURED: TRAVEL DISTANCE IN TWO TRIALS AND AVERAGE. KEEP BALLOON TYPE, STRING, STRAW, TRACK LENGTH, ANGLE, START POINT AND RELEASE ALIKE.

04 MATERIALS

- ☐ Matching balloons
- ☐ Taut string, straw and tape
- ☐ Two approved anchors
- ☐ Tape measure and start marker
- ☐ Breath-count card and clear low track

05 PROCEDURE

SAFETY Keep the string as straight and tight as possible — a sagging string adds friction that shortens every balloon's distance unevenly. Pinch the balloon's opening shut right up until release, so air doesn't escape early and throw off the air-amount comparison.

1 **BUILD THE TRACK** Thread a straw onto a taut string. Secure it low, clear the route and mark one starting point. ☐

2 **ATTACH THE BALLOON** Tape a matching balloon to the straw with the nozzle pointing backward. Keep its opening pinched until launch. ☐

3 **SET AIR AMOUNT** Inflate to about 5, 8 or 12 breaths using a consistent counter. Do not overinflate. ☐

4 **RELEASE AND MEASURE** Release without pushing. Measure travel from the start in meters; repeat each level once with the same setup. ☐

5 **AVERAGE AND EXPLAIN** Average the two distances and compare air levels. Explain backward air flow and forward motion; collect snapped pieces. ☐

DATA AND EXPLANATION

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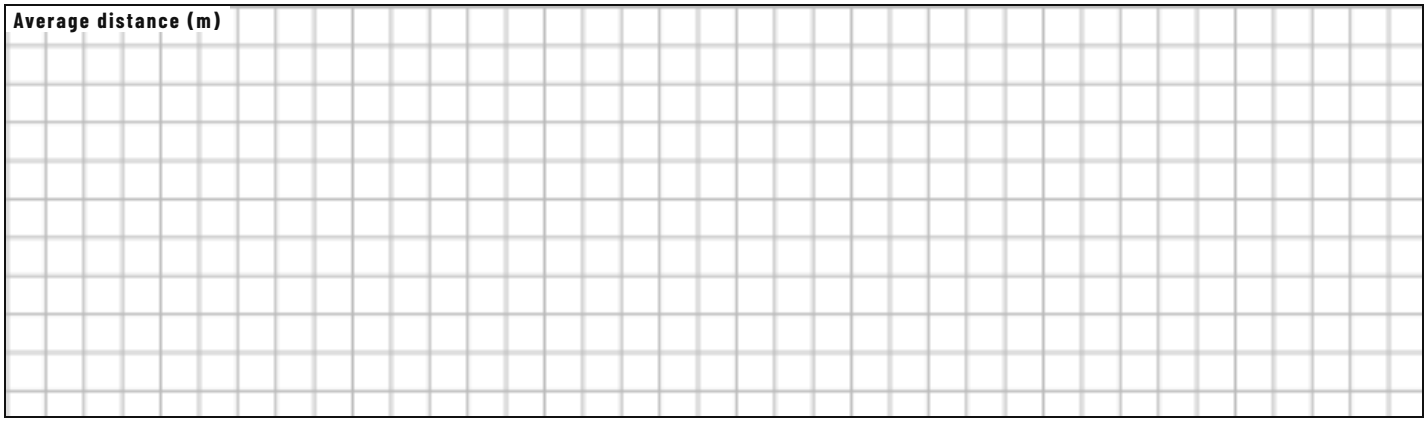
06 RECORD YOUR OBSERVATIONS

AIR AMOUNT	TRIAL 1 DISTANCE (M)	TRIAL 2 DISTANCE (M)	AVERAGE DISTANCE (M)
Small (~5 breaths)			
Medium (~8 breaths)			
Full (~12 breaths)			

Average distance = (Trial 1 distance + Trial 2 distance) ÷ 2. Record the distance from the marked start point to where the balloon stops, in meters.

SHOW ONE CALCULATION

07 AVERAGE TRAVEL BY BALLOON AIR AMOUNT



Graph the average distance for small, medium and full inflation. Start the scale at zero because travel distances are nonnegative.

X: Approximate air amount

08 EXPLAIN IT WITH EVIDENCE

CLAIM

EVIDENCE

REASONING

Reasoning must use: air amount · two trials · distance · average · opposite force

09 THINK FURTHER

How might a measured starting circumference improve on breath count as the air-amount comparison?