ANSWER KEY

DO NOT HAND OUT

A PREDICTIONS THAT EARN FULL MARKS

Predicted greatest mass gain	A reasoned prediction of 0% salt is expected because water may move into potato cells. Accept alternatives when supported by a coherent explanation and evaluate against recorded evidence.

B VARIABLES

Independent	Salt concentration: 0%, 5% or 10%.
Dependent	Starting and final mass to 0.1 g, mass change and percentage change; length and texture are supporting observations.
Controlled	Potato source, strip dimensions, solution volume, container, room temperature, 24-hour soak and consistent blotting.

C SAMPLE DATA

Illustrative 24-hour values, not guaranteed results. The mean percentage changes are about +7.3% (range +6.1 to +8.0%), −7.8% (−9.8 to −6.0%), and −24.2% (−25.5 to −22.0%). Calculate each row from its own starting mass; real results vary with potato tissue, strip dimensions, solution preparation, temperature and blotting.

SALT SOLUTION	START MASS (G)	AFTER 24 H (G)	CHANGE (G)	CHANGE (%)
0% · 1	5.0	5.4	**+0.4**	**+8.0%**
0% · 2	5.1	5.5	**+0.4**	**+7.8%**
0% · 3	4.9	5.2	**+0.3**	**+6.1%**
5% · 1	5.2	4.8	**−0.4**	**−7.7%**
5% · 2	5.0	4.7	**−0.3**	**−6.0%**
5% · 3	5.1	4.6	**−0.5**	**−9.8%**
10% · 1	5.0	3.9	**−1.1**	**−22.0%**
10% · 2	4.8	3.6	**−1.2**	**−25.0%**
10% · 3	5.1	3.8	**−1.3**	**−25.5%**

For each row, calculate final minus start and divide by that row's start mass. Then calculate the mean and range of the three percentage changes within each concentration. Preserve signs and plot zero at the centered middle line.

D MODEL CLAIM, EVIDENCE, REASONING

Claim: In these illustrative data, the mean percentage mass change becomes more negative as salt concentration rises.
Evidence: Mean changes are about +7.3%, −7.8% and −24.2% for 0%, 5% and 10%; each mean summarizes three replicate strips.
Reasoning: A more concentrated external solution can result in net water movement out of potato cells across their membranes. The values are examples, not measured class results, and replication shows variation rather than proving a universal rule.

E THINK FURTHER

Add more replicate strips and test finer concentration intervals around the point where mean mass change is near zero.

F QUICK GRADING GUIDE

Require labeled measurements, correct signed mass and percentage changes, and a conclusion tied to observed data. Reward mention of cell membranes, controlled conditions and biological variation; do not grade against illustrative values as a fixed target.