# ANSWER KEY

DO NOT HAND OUT

## A PREDICTIONS THAT EARN FULL MARKS

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|---|---|
| **Padding and survival** | Accept a testable prediction, including uncertainty. Well-fitted padding may help, but the table—not a required winner—determines the result. |

## B VARIABLES

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|---|---|
| **Independent** | Amount of cushioning: one, three or five layers. |
| **Dependent** | PASS/FAIL, passes out of three and visible crack location after the same-height drops. |
| **Controlled** | Matched fresh eggs, outer capsule, padding material/placement, adult floor-level release height and method, and landing area. |

## C SAMPLE DATA

Illustrative results only; they do not predict which design will perform best. Actual outcomes depend on fit, construction, egg variation and contact points. Three trials are a small sample and do not certify protection.

| DESIGN (PADDING) | TRIAL 1 | TRIAL 2 | TRIAL 3 | PASSES / 3 |
|---|---|---|---|---|
| 1 layer | PASS | FAIL | **PASS** | **2** |
| 3 layers | PASS | PASS | **PASS** | **3** |
| 5 layers | FAIL | PASS | **FAIL** | **1** |

Check that each of the three designs has three separate outcomes, a fresh egg was used for every drop, and the pass count equals the PASS marks. Do not claim a guaranteed winner or safety rating.

## D MODEL CLAIM, EVIDENCE, REASONING

**Claim:** In this illustrative sample, the three-layer design had the most PASS results at the tested height.
**Evidence:** The sample rows show two, three and one passes out of three for the one-, three- and five-layer designs, respectively; actual classroom data may show a different pattern.
**Reasoning:** Well-fitted padding may lengthen stopping time or spread contact, but fit, movement and construction also affect shell damage. Pass/fail trials do not measure impact force.

## E THINK FURTHER

Change one feature such as an internal restraint and repeat at the same adult-reachable floor-level height, using fresh eggs and the same capsule and landing area.

## F QUICK GRADING GUIDE

Require three recorded outcomes per design, the correct pass counts, fresh eggs, and a conclusion grounded in observed damage. Accept patterns that differ from the illustration; never reward unsafe releases or unsupported protection claims.