ANSWER KEY

DO NOT HAND OUT

A PREDICTIONS THAT EARN FULL MARKS

Similar or different	Accept either prediction or uncertainty if it is testable and does not claim that ploidy alone determines the result. Students decide after observing the two extracts.

B VARIABLES

Independent	Fruit type: strawberry or banana.
Dependent	Visible precipitate rating (1–5), texture and location.
Controlled	50 g fruit, 30 mL buffer and 30 mL cold alcohol per sample, same 1–2 minute mash, filter, vessel and wait/observation method.

C SAMPLE DATA

One possible illustrative observation only; real results vary. Either fruit may appear to produce more visible material under a classroom procedure, and ratings are not DNA mass or purity measurements.

FRUIT (TYPE)	VISIBLE AMOUNT (1-5)	TEXTURE (NOTES)	LOCATION (WHERE)
Strawberry	3	**Faint, wispy clumps**	**At liquid boundary**
Banana	4	**Thicker, cloudy threads**	**At liquid boundary**
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Sketch two labeled tubes with extract, alcohol and any visible strands. Check both ratings, textures and locations against observation.

D MODEL CLAIM, EVIDENCE, REASONING

Claim: In this illustrative observation, the banana tube had a higher visible-material rating even though strawberry has more chromosome sets; students must base their own claim on their paired tubes.
Evidence: The sample rows rate strawberry 3 and banana 4, with pale material noted at each extract–alcohol boundary. These example observations are not a prediction or expected universal direction.
Reasoning: Mashing exposes cells, detergent disrupts membranes, salt helps released strands clump, filtering removes many large pulp pieces, and cold alcohol makes DNA-containing material less soluble. Other cell material remains, so visual thickness is only a rough comparison.

E THINK FURTHER

Vary detergent amount in matched samples while holding fruit mass, buffer salt and water, mash time, filter and alcohol volume constant; compare the same visual rating and note its limits.

F QUICK GRADING GUIDE

Use observation detail, classification, explanation and communication. Do not reward a predetermined fruit winner; full credit requires equal-mass comparison, a consistent scale and a clear limit on what the precipitate reveals.