

## Solutions

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### 2.1

: paper type.: retained-water mass, measured as wet mass minus dry mass after the stated procedure.

### 2.2

each: square area; immersion time; draining time/method; water conditions; checked balance/weighing procedure. Credit distinct relevant controls.

### 2.3

: mean retained mass equals sum divided by three.:  $\text{mean B} = (4.2 + 4.0 + 4.4)/3 = 4.2$  g.: difference =  $4.2 - 3.0 = 1.2$  g. The difference is between means, not identical in every trial.

### 2.4

: squeezing can remove retained water.: it changes a condition alongside paper type, so the result cannot isolate that factor.: repeating a systematically unequal procedure does not remove the unequal treatment.

### 3.1

each: observed B mean is larger; trials vary rather than every difference being 1.2 g; six extra decimal places are unjustified; findings apply to supplied types/procedure/trials; strength/cost/other jobs were untested; retain and explain unexpected data rather than discarding it to match a prediction.

### 3.2

Local analytic rubric, 8 ×: identify comparison; state both means; state 1.2 g difference; distinguish means from identical trials; keep procedure controls; bound scope; reject selective deletion; propose approved testing of another relevant property; coherent truthful 80–110 word response. Example: “Under the supplied procedure, paper A retained a mean of 3.0 grams of water and paper B a mean of 4.2 grams. The difference between these means is 1.2 grams, but the individual trials varied. This supports a bounded comparison of the tested squares, not a claim that B is best for every cleaning task. Both types need the same immersion and draining conditions. Squeezing A alone would undermine that comparison. Unexpected readings should be retained and investigated, not deleted to fit a prediction. A teacher-approved follow-up could compare strength or cost alongside retained water.”