Weighing a Coating One Tile at a Time

Scoring guide · one credit per question · review written work against each rubric

Weighing a Coating One Tile at a Time

Question 1

Choice (3)

Subtracting two readings can combine two errors of 0.10 g in opposite directions, for a possible error of 0.20 g.

Question 2

The measured gain is 123.5 − 122.3 = 1.2 g. The true gain could be as low as 1.2 − 0.20 = 1.0 g. Over ten tiles, the lowest possible average is 0.10 g per tile.

Question 3

No. A group total of 1.2 g could include one tile with 0.03 g and nine with 0.13 g each. The average would be 0.12 g while one tile would be below 0.09 g. Accept another distribution consistent with the group result.

Question 4

Weigh each tile before and after coating with a balance that has a smaller verified error per reading. Subtract the before mass from the after mass and subtract the worst-case difference error. A tile meets the requirement if that lower bound is at least 0.09 g. For example, a measured gain of 0.10 g is enough if the two readings each have an error limit of 0.005 g.