Calibration curves — Student Worksheet

Linear model, blank correction, amount in sample.

Name: _____ Date: _____ Section: _____

Learning goal: carry units through the calculation, show an equation, and explain the measurement assumptions.

Numerical practice

1. Concentration from absorbance 1

Calibration: A = (0.240 A/mM)c + 0.035; measured absorbance = 0.395; sample volume = 15.0 mL.

(a) Compute A − b. [Answer in absorbance]

Working: _____

(b) Divide the corrected absorbance by the slope. [Answer in mM]

Working: _____

(c) Multiply concentration in mM by sample volume in mL. Express the amount in micromoles. [Answer in µmol]

Working: _____

2. Concentration from absorbance 2

Calibration: A = (0.180 A/mM)c + 0.025; measured absorbance = 0.385; sample volume = 10.0 mL.

(a) Compute A − b. [Answer in absorbance]

Working: _____

(b) Divide the corrected absorbance by the slope. [Answer in mM]

Working: _____

(c) Multiply concentration in mM by sample volume in mL. Express the amount in micromoles. [Answer in µmol]

Working: _____

3. Concentration from absorbance 3

Calibration: A = (0.320 A/mM)c + 0.040; measured absorbance = 0.200; sample volume = 25.0 mL.

(a) Compute A − b. [Answer in absorbance]

Working: _____

(b) Divide the corrected absorbance by the slope. [Answer in mM]

Working: _____

(c) Multiply concentration in mM by sample volume in mL. Express the amount in micromoles. [Answer in µmol]

Working: _____

4. Concentration from absorbance 4

Calibration: A = (0.125 A/mM)c + 0.018; measured absorbance = 0.268; sample volume = 5.0 mL.

(a) Compute A − b. [Answer in absorbance]

Working: _____

(b) Divide the corrected absorbance by the slope. [Answer in mM]

Working: _____

(c) Multiply concentration in mM by sample volume in mL. Express the amount in micromoles. [Answer in µmol]

Working: _____

Concept and interpretation

5. Why must the calibration range include the sample concentration?

_____

_____

6. What does a nonzero fitted intercept imply?

_____

_____

Note: Report an appropriate number of significant figures for measured quantities. The online checker evaluates numeric accuracy separately from precision.