EXTERNAL STANDARD CALIBRATION
For an external standard quantitation, known data from a calibration standard and unknown data from the sample are combined to generate a quantitative report.

It is called external standard because the standard or known material is separate or external to the unknown material.

• External standard calibration is one of the most common approaches to calibrations.

• It involves a simple comparison of instrument responses from the sample to the responses from the target compounds in the calibration standards.

*Ref: SW846, 8000C, Section 11.4.2, Revision 3, March 2003*
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• Sample peak areas (or peak heights) are compared to peak areas (or heights) of the standards.

• The ratio of the detector response to the amount (mass) of analyte in the calibration standard is defined as the calibration factor (CF).

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Equation for Calibration Factor

(External Standard Curve)

$$CF = \frac{(A_x)}{(C_x)}$$

Where:  
$$A_x = \text{Area of the compound}$$  
$$C_x = \text{Concentration of the compound}$$
Benefits

The advantages of external standard calibration are that it is simple to perform this type of calibration and it can be applied to a wide variety of methods.

Ref: SW846, 8000C, Section 11.4.2, Revision 3, March 2003
Disadvantage

Its primary disadvantage is that it is greatly affected by the stability of the chromatographic detector system and the presence of chromatographic interferences in a sample or sample extract.

Ref: SW846, 8000C, Section 11.4.2, Revision 3, March 2003