# AS 91161 v2
## Carry out quantitative analysis
## Level 2 4 Credits

This standard involves carrying out quantitative analysis.

| Achievement | Achievement with Merit | Achievement with Excellence |
|---|---|---|
| Carry out quantitative analysis. | Carry out in-depth quantitative analysis. | Carry out comprehensive quantitative analysis. |

**Quantitative analysis involves Titration & Calculations**

Assessment of this standard will involve both practical and written components. The student will carry out all aspects of the task(s) individually.

The standard solution to be used in the titration may be provided. The titration procedure and balanced equations will be provided. Molar masses for substances may be provided. Calculations must be carried out using appropriate procedures (not provided). The relationships n=m/M and c=n/V will not be given.

- ❑ collecting primary data from an acid-base titration. Student selected data will be used in determining the accuracy of the titration.
- ❑ processing primary data to solve quantitative problems
- ❑ processing secondary data to solve quantitative problems
  - o Achievement:
    - titration data that contains at least three titre values that fall within a range of 0.4 mL
    - average titre value must be within 0.8 mL of the expected outcome
    - solve quantitative problems that use the relationships n=m/M and c=n/V to calculate one variable given the other two
  - o Merit:
    - titration data that contains at least three titre values that fall within a range of 0.4 mL
    - average titre value must be within 0.5 mL of the expected outcome
    - titration calculations must be carried out correctly using only concordant titre values
    - solve quantitative problems that involve at least two steps and require application of relationships such as n=m/M and c=n/V
  - o Excellence:
    - titration data that contains at least three titre values that fall within a range of 0.2 mL
    - average titre value must be within 0.2 mL of the expected outcome
    - titration calculations must be carried out correctly using only concordant titre values
    - solve quantitative problems that involve more than two steps, and the use of stoichiometric principles
    - answers to calculations must demonstrate
      - correct units
      - appropriate use of significant figures
- ❑ written activities will use the relationships (the relationships will not be given)
  - o n=m/M
  - o c=n/V
- ❑ questions *might* include the calculation of
  - o empirical & molecular formula
  - o water of crystallisation calculations
  - o percentage composition
  - o calculations about mass and concentration
  - o mass of a substance which could be made from x g of reactant, using stoichiometric principles