Name _____ Date _____ Period _____

**ZornScience**
zornscience.org

# Titrations
Chemistry

Use the full roadmap: M titrant × L titrant → mol titrant → mole ratio → mol analyte ÷ L analyte. MaVa = MbVb works only for a 1 : 1 ratio. Keep the sig figs of the data (usually four).

**1.** A buret reads 0.50 mL at the start and 21.35 mL at the endpoint. What volume was used?

**2.** In a titration of HCl with NaOH using phenolphthalein, name the titrant, the analyte, and the color at the endpoint.

**3.** 25.00 mL of HCl is titrated with 21.60 mL of 0.1000 M NaOH. HCl + NaOH → NaCl + $H_2O$. What is the molarity of the HCl?

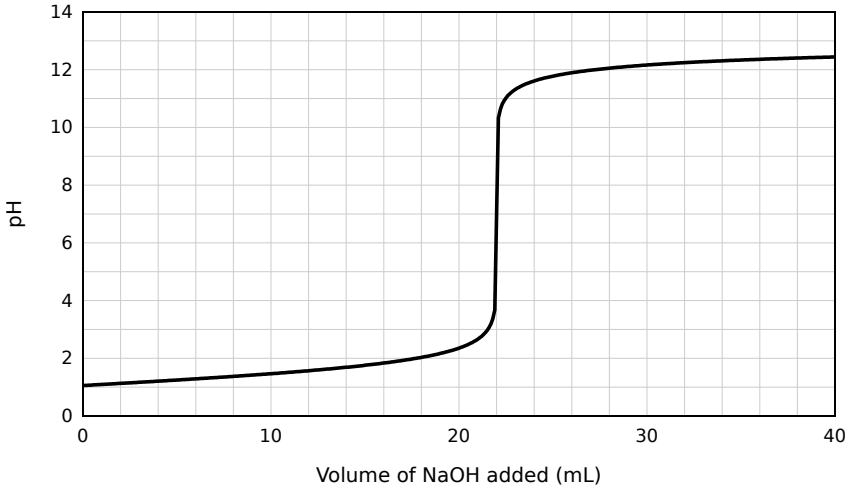
**4.** 20.00 mL of NaOH is titrated with 16.25 mL of 0.1200 M HCl. What is the molarity of the NaOH?

**5.** $H_2SO_4$ + 2NaOH → $Na_2SO_4$ + 2$H_2O$. 25.00 mL of $H_2SO_4$ needs 30.00 mL of 0.2000 M NaOH. What is the molarity of the acid? What would MaVa = MbVb give, and why is it wrong?


CC BY-NC-SA 4.0 | zornscience.org

**6.** $Ca(OH)_2 + 2HCl \rightarrow CaCl_2 + 2H_2O$. 20.00 mL of $Ca(OH)_2$ is titrated with 15.00 mL of 0.1000 M HCl. What is the molarity of the $Ca(OH)_2$?

**7.** The curve shows 25.0 mL of HCl titrated with 0.100 M NaOH. (a) What volume of NaOH reaches the equivalence point? (b) What is the pH there? (c) Find the molarity of the HCl.




**8.** A student titrates until the solution is dark pink. Will the calculated molarity of the acid be too high or too low? Explain using the endpoint and the equivalence point.


CC BY-NC-SA 4.0 | zornscience.org