

Station Titration!

North Shore Science League

October 2026 Event

This hands-on lab event will measure your team's skill and accuracy in performing acid/base titrations. Teams will be asked to perform titrations with a base of known concentration with both a strong acid and a weak acid. A second part of the challenge will be interpreting/analyzing titration curves and answering questions about titrations.

Students will be given exactly 50.0mL of standardized NaOH (aq) already filled into a buret.

Titration #1 Strong acid vs. NaOH

Students will be given 20.0mL of a strong acid and a few indicators with varying K_a . Students will select the appropriate indicator and perform 1 or 2 titrations.

Titration #2 Weak acid vs. NaOH

Students will be given 20.0mL of a weak acid and a few indicators with varying K_a . Students will select the appropriate indicator and perform 1 or 2 titrations. The K_a for the weak acid will be given.

Part II Paper and Pencil Quiz

Teams will be given 15 multiple choice questions to work on during the Competition.

Safety

Students need to bring proper eye protection or they will not be able to participate in the lab challenge. Aprons are optional but encouraged.

Equipment

The school will supply the following equipment:

Buret	buret clamps
4 erlenmeyer flasks	ring stand
2 (10mL) Graduated cylinders	50 mL NaOH
20 mL weak acid	20 mL strong acid
3 indicators	scrap paper
2 Disposable pipets	Distilled water bottle (250 mL)

Competitors should bring:

Calculator	Periodic table
Wanted glassware not supplied	
Stirring rods or bars	

****No pH meters or pH paper are permitted****

Scoring

Each titration will have 15 maximum points and the MCQ will be 1 point each. That is 15points X 2 for the titration and 15 points for the FRQs. This is a total of 45 points. 5 points will be awarded for all work shown on paper (1.5pts per titration) and answers in the proper number of significant figures (2) Titration Score

$$15 - \left(\frac{|\text{Experimental} - \text{Accepted}|}{\text{Accepted}} \times 15 \right)$$

Teams will be ranked according to the total number of points out of 50.