Investigation 8.D: Titrating a Strong Base with a Strong Acid Answer Key

Answers to Analysis Questions

1. You should show your calculations clearly for your answer to this question. The average volume of titrant used should be approximately 1.2 times greater than the volume of sample titrated.

2. $NaOH(aq) + HCl(aq) \rightarrow NaCl(aq) + H_2O(\ell)$

3. Show your calculations. The value should be close to 0.150 mol/L.

Answers to Conclusion Questions

4. Answers will vary depending on your experimental design. The value obtained should be close to 0.150 mol/L.

5. Possible sources of error include:
- inaccurate judgment of endpoint
- inaccurate pipetting
- inaccurate reading of burette
- spillage and contamination of solution
- inadequate time to gather data from enough trials to minimize sources of error

6. Suggested improvements should be consistent with your reported errors. For example, if you report an inaccurate judgment of the endpoint, you might suggest preparing a standard to which you will compare the colour.

Answers to Extension Questions

7. Since the drain cleaner is concentrated, it must be diluted before it can be analyzed. If not, it would require a large volume of acid to react. This would make the titration lengthy and tedious.

8. Suggestions for bases could include: ammonia, drain cleaner, detergents, antacid tablets or liquids, or soaps. Suggestions for acids could include: lemon juice, vinegar, vitamin C tablets, or rust and lime cleaners.