

## 8.3 WORKING WITH SOLUTIONS

### PRACTICE

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#### Applying Inquiry Skills

1.	Name	Use
	Erlenmeyer flask	for temporarily containing reacting substances (specifically shaped to allow mixing of contents by swirling) and also for approximate measure of various volumes
	graduated pipet	for very precise addition of various (smaller) volumes
	graduated cylinder	for precise measurement of various (larger) volumes
	volumetric flask and stopper	for very precise measurement (and mixing) of a single specific volume
	buret	for very precise addition of various (small) volumes
	graduated beaker	for temporarily containing reacting substances, and for approximate measure of various (large) volumes

### PRACTICE

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#### Making Connections

2. Typical answers might include information such as:

Teaching Chemistry requires a minimum four years of university training, with five or six years usually seen as preferable. Specifically, such a person would require a B.Sc. degree in physical sciences, plus background in mathematics, as well as education course requirements. (Courses vary from province to province.) Teachers must be certified by the provincial government. At publication date, a nationwide shortage of teachers is being felt in this subject area, making future job prospects good.

 GO TO [www.science.nelson.com](http://www.science.nelson.com), Chemistry 11, Teacher Centre.

## 8.4 ACID – BASE THEORIES

### PRACTICE

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#### Understanding Concepts

- Sour taste for acids is not an appropriate lab test, because many lab acids are dangerous: toxic and/or highly reactive. It *would* be of practical use in a household kitchen.
- $\text{Mg}_{(s)} + 2 \text{HCl}_{(aq)} \rightarrow \text{MgCl}_{2(aq)} + \text{H}_{2(g)}$  fast (strong acid)
  - $\text{Mg}_{(s)} + 2 \text{HC}_2\text{H}_3\text{O}_{2(aq)} \rightarrow \text{Mg}(\text{C}_2\text{H}_3\text{O}_2)_{2(aq)} + \text{H}_{2(g)}$  slow (weak acid)
  - $2 \text{HCl}_{(aq)} + \text{CaCO}_{3(s)} \rightarrow \text{H}_2\text{O} + \text{CO}_{2(g)} + \text{CaCl}_{2(aq)}$  fast (strong acid)
  - $2 \text{HC}_2\text{H}_3\text{O}_{2(aq)} + \text{CaCO}_{3(s)} \rightarrow \text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_{2(aq)} + \text{H}_2\text{O}_{(g)} + \text{CO}_{2(g)}$  slow (weak acid)
- The best properties to distinguish strong acids from weak acids would be the rates of reaction with active metals and/or carbonates, the last two properties listed in Table 1. The other tests would distinguish acids from bases, but not strong acids from weak acids.
- Strong acids are molecular substances that theoretically ionize in aqueous solution to a very large extent (essentially completely), to produce hydrogen ions. Weak acids are molecular substances that theoretically ionize in aqueous solution to a very small extent, to produce hydrogen ions.