Edgenuity

# Warm-Up | Properties of Acids and Bases

**Lesson Question**

## Lesson Goals

**Differentiate** between _____ and _____.

**Compare** the _____ of acids and bases.

**Describe** common _____ for acids and bases.

## Words to Know

*Fill in this table as you work through the lesson. You may use the glossary to help you.*

| | |
|---|---|
| acid | a substance that tastes _____ and reacts with metals and carbonates |
| base | a substance with a _____ taste and _____ texture that reacts with lipids |
| carbonate | a chemical made up of molecules that contain a _____ ion |
| hydroxide | a negatively charged ion formed from one atom of _____ and one atom of _____ |
| lipids | naturally occurring, fatty _____ that make up substances such as oil, grease, and wax |

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## Ions

- [ ] have no overall charge.
- [ ] form when one or more electrons are lost or gained.
  - When electrons are lost, the atom becomes [ ].
  - When electrons are gained, the atom becomes [ ].

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# Instruction | Properties of Acids and Bases

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## Acids

An [ ] is a substance that releases [ ] ions in solution.

- Acetic acid ($CH_3COOH$) is found in [ ].
- Citric acid ($H_3C_6H_5O_7$) is in [ ], limes, and oranges.
- Formic acid ($HCOOH$) is found in [ ] venom.

All the formulas contain a hydrogen atom.

## Properties of Acids

- Taste [ ]
- [ ] with metals
- [ ] electricity
- Can [ ] certain substances
  - Strong acids can cause serious burns.

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## Uses of Acids

- Hydrochloric acid ($HCl$) is used to clean masonry and [ ] from steel.
- Sulfuric acid ($H_2SO_4$) is used in industrial chemicals and car [ ].
- Nitric acid ($HNO_3$) is used in [ ], dyes, and plastics.

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## The Formation of Caves

**REAL-WORLD CONNECTION**

- Acids react with _____ , chemicals that contain a _____ ion.
  - Limestone rock (calcium carbonate) is dissolved by _____ , forming a cave.
  - This _____ also forms stalactites and stalagmites.

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## Bases

A _____ is a substance that releases _____ ions in solution.

- Ammonium _____ ($NH_4OH$) is used in household cleaners.
- _____ (sodium hydroxide, NaOH) is used in soap and oven and drain cleaners.
- Slaked _____ (calcium hydroxide, $Ca(OH)_2$) is used to mark lines on play fields.

All these chemicals contain $OH^-$ ions called hydroxide, which is made up of one oxygen and one hydrogen atom. This is one way to identify a base by its chemical formula.

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## Properties of Bases

- Taste [ ]
- Feel [ ]
- [ ] with nonmetals
- [ ] electricity
- Can cause [ ] and damage tissue

## Uses of Bases

- Potassium hydroxide is used in [ ].
- Lithium hydroxide is used in grease, [ ], and cement.
- Zinc hydroxide is used in [ ], lotions, and cosmetics.

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## Oil Spill Cleanup

**REAL-WORLD CONNECTION**

- Bases react with [ ], naturally occurring fatty compounds that make up oil, grease, and wax.
- In April 2010, the *Deepwater Horizon* oil spill dumped 210 million gallons of [ ] in the Gulf of Mexico.
    - Bases were used to [ ] from water and clean affected marine birds.

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# Summary | Properties of Acids and Bases

**Lesson Question**

How do acids and bases differ?

**Answer**

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## Review: Key Concepts

### Acids

- Release [ ] ions in solution
- Taste [ ]
- React with [ ]
- Conduct [ ]
- Can [ ] down certain substances

### Bases

- Release [ ] ions in solution
- Taste [ ]
- Feel [ ]
- React with [ ]
- Conduct [ ]
- Can cause [ ] and damage tissue

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# Summary | Properties of Acids and Bases

*Use this space to write any questions or thoughts about this lesson.*

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