Acids and Bases

1. For the following descriptions, identify each as a property of an acid only (A), base only (B), or either (C).

   (a) Has a bitter taste _____

   (b) Reacts with active metals to generate hydrogen gas _____

   (c) Has a sour taste _____

   (d) Is slippery when placed on the skin _____

   (e) Undergoes neutralization _____

   (f) Turns blue with litmus _____

2. Indicate if each of these compounds is an acid or base and name it.

	Acid or Base	Name
HNO_3	_____	_____
$Mg(OH)_2$	_____	_____
H_3PO_4	_____	_____
H_2CO_3	_____	_____
HF	_____	_____
$Fe(OH)_3$	_____	_____

3. The compound NaOH is a base by Arrhenius, Brønsted-Lowry, and Lewis acid-base theory. However, each of the three theories describes a base in different terms. Use your knowledge of these three theories to describe NaOH as an Arrhenius base, a Brønsted-Lowry base, and a Lewis base.

Acids and Bases

Answers

1. For the following descriptions, identify each as a property of an acid only (A), base only (B), or either (C).

   (a) Has a bitter taste B

   (b) Reacts with active metals to generate hydrogen gas C

   (c) Has a sour taste A

   (d) Is slippery when placed on the skin B

   (e) Undergoes neutralization C

   (f) Turns blue with litmus B

2. Indicate if each of these compounds is an acid or base and name it.

	Acid or Base	Name
HNO_3	Acid	Nitric acid
$Mg(OH)_2$	Base	Magnesium hydroxide
H_3PO_4	Acid	Phosphoric acid
H_2CO_3	Acid	Carbonic acid
HF	Acid	Hydrofluoric acid
$Fe(OH)_3$	Base	Iron (III) hydroxide

3. The compound NaOH is a base by Arrhenius, Brønsted-Lowry, and Lewis acid-base theory. However, each of the three theories describes a base in different terms. Use your knowledge of these three theories to describe NaOH as an Arrhenius base, a Brønsted-Lowry base, and a Lewis base.

   - NaOH is an Arrhenius base because it creates OH^{-1} ions when placed in water.
   - NaOH is a Brønsted-Lowry base because it accepts H^{+1} ions from acids.
   - NaOH is a Lewis base because the lone electron pairs on the hydroxide ion can be donated to other compounds.