## ACID STRENGTH - GENERAL CHEMISTRY FORMATIVE ASSESSMENT - KEY

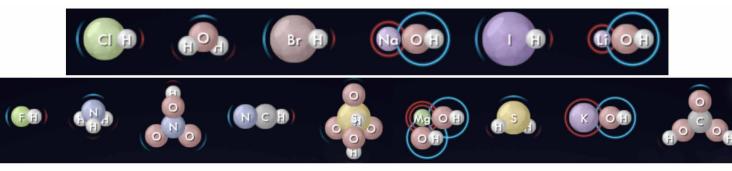


## STUDENT CHECK FOR UNDERSTANDING

Concepts:
Bronsted-Lowry
Acids & Bases, Strong
vs Weak Acids,
Percent Dissociation,
Neutralization Reactions,
Polyprotic Acids,
Amphoteric Substances,
Conjugate Acids &
Bases, and Charge
of Resulting Ions

## **DIRECTIONS:**

Identify the reactants and products from the bank that fulfill each scenario described in the table. Simply write the coefficients (if needed), chemical formulas, and state symbols (use "aq" for most, " $\ell$ " for  $H_2O$ , and "s" for solid when using  $Mg(OH)_2$  as it is mostly insoluble in water) on the appropriate lines in the "Balanced Molecular Equation" column. Use the sandbox to help as needed. **Some substances may be used more than once and some scenarios might have more than one correct answer.** 



Answers are examples. There may be more than one answer.

Scenario	Balanced Molecular Equation
A base that is <b>NOT</b> ionic reacts with an amphoteric substance to form hydroxide and another ion.	NH <sub>3</sub> + H <sub>2</sub> O ⇒ NH <sub>4</sub> + OH <sup>-</sup> Coefficient (If needed) Chemical + State (If needed) Chemical + State Formula + State (If needed) Chemical + State Formula + State (If needed) Chemical + State Formula + State
An acid that dissociates only partially at 0.1 M reacts with an ionic salt that fully dissociates at the same concentration.	HF (aq) + LiOH (aq) $\rightarrow$ LiF (aq) + H <sub>2</sub> O ( $\ell$ )



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Addition of this substance to water produces an amphoteric substance which can also dissociate in water. Write the equations for each individual reaction. You must determine the formula of the amphoteric substance yourself.	$H_2CO_3$ (aq) + $H_2O$ ( $\ell$ ) $\rightleftharpoons$ $H_3O^+$ (aq) + $HCO_3^-$ (aq) $HCO_3^-$ (aq) + $H_2O$ ( $\ell$ ) $\rightleftharpoons$ $H_3O^+$ (aq) + $CO_3^{2-}$ (aq)
The neutralization reaction between these two substances produces anions with -1 charges and cations with +2 charges.	2 HNO <sub>3</sub> (aq) + Mg(OH) <sub>2</sub> (s) $\rightarrow$ Mg(NO <sub>3</sub> ) <sub>2</sub> (aq) + 2 H <sub>2</sub> O ( $\ell$ )
An acid with an extremely weak conjugate base reacts with a base that is <b>NOT</b> an ionic compound.	$HI$ (aq) + $NH_3$ (aq) $\rightarrow NH_4I$ (aq)
A reaction occurs between a weak acid and a base with a very weak conjugate acid.	HCN (aq) + KOH (aq) → KCN (aq) + H₂O (ℓ)

Answers are examples. There may be more than one answer.

