

**ACTIVITY SHEET**

## 7.2 Precipitation challenge

Use the information in the solubility table below to identify whether or not a precipitate would form when each of the following anions and cations are mixed together in aqueous solution.

Soluble anions	Exceptions
$\text{NO}_3^-$	None
$\text{CH}_3\text{COO}^-$	$\text{Ag}^+$ slightly soluble
$\text{Cl}^-$	$\text{Ag}^+$ insoluble; $\text{Pb}^{2+}$ slightly soluble
$\text{Br}^-$	$\text{Ag}^+$ insoluble; $\text{Pb}^{2+}$ slightly soluble
$\text{I}^-$	$\text{Ag}^+$ , $\text{Pb}^{2+}$ insoluble
$\text{SO}_4^{2-}$	$\text{Ba}^{2+}$ , $\text{Pb}^{2+}$ , $\text{Sr}^{2+}$ insoluble; $\text{Ag}^+$ , $\text{Ca}^{2+}$ slightly soluble
Insoluble anions	Exceptions
$\text{OH}^-$	Group 1, $\text{NH}_4^+$ , $\text{Ba}^{2+}$ , $\text{Sr}^{2+}$ soluble; $\text{Ca}^{2+}$ slightly soluble
$\text{O}^{2-}$	Group 1, $\text{NH}_4^+$ , $\text{Ba}^{2+}$ , $\text{Sr}^{2+}$ , $\text{Ca}^{2+}$ soluble
$\text{S}^{2-}$	Groups 1 and 2, $\text{NH}_4^+$ soluble
$\text{CO}_3^{2-}$	Group 1, $\text{NH}_4^+$ soluble
$\text{SO}_3^{2-}$	Group 1, $\text{NH}_4^+$ soluble
$\text{PO}_4^{3-}$	Group 1, $\text{NH}_4^+$ soluble

Use 'P' to indicate a precipitate and 'NP' to indicate that no precipitate is formed. Assume that slightly soluble compounds all form precipitates. Shade in the cell for the combinations that result in precipitates. You may need to consult a periodic table.

### Precipitation grid

Anions \ Cations	Anions									
	$\text{Br}^-$	$\text{Cl}^-$	$\text{CO}_3^{2-}$	$\text{I}^-$	$\text{NO}_3^-$	$\text{O}^{2-}$	$\text{OH}^-$	$\text{S}^{2-}$	$\text{SO}_4^{2-}$	$\text{PO}_4^{3-}$
$\text{Ag}^+$										
$\text{Al}^{3+}$										
$\text{Ba}^{2+}$										
$\text{Ca}^{2+}$										
$\text{Cu}^{2+}$										
$\text{Fe}^{2+}$										
$\text{Fe}^{3+}$										
$\text{Mg}^{2+}$										
$\text{Na}^+$										
$\text{NH}_4^+$										
$\text{Pb}^{2+}$										
$\text{Sr}^{2+}$										
$\text{Zn}^{2+}$										