Reading What Remains After a Precipitate

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A simulation mixes Mg^{2+} and OH^- to form solid magnesium hydroxide. It treats the solid as insoluble and runs the reaction until the limiting reactant is completely used. The solid is removed before testing the liquid. Spectator ions do not affect the amounts in the equation.

$Mg^{2+} + 2\ OH^- \rightarrow Mg(OH)_2$

Trial	**Mg^{2+} supplied (mol)**	**OH^- supplied (mol)**
P	0.030	0.040
Q	0.020	0.060

1 Which reactant is used up first in P?

(1) Mg^{2+}

(2) OH^-

(3) Both together

(4) Neither

2 Complete the table with the amount of solid formed and the amount of each ion that remains in each trial. [1]

Trial	**Solid (mol)**	**Mg^{2+} left (mol)**	**OH^- left (mol)**
P			
Q			

3 A student says equal solid amounts mean the two liquids must contain the same leftover reactant. Use the reaction ratio and both records to evaluate the claim. [1]

Answer and work

The simulation combines the two liquids after removing the original solids. The liquids contain exactly the leftover amounts from P and Q.

4 Predict the amount of additional solid and whether either measured reactant is left in excess. [1]

Answer and work