Checking Precipitate Recovery After a Wash

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

A classroom separation model can make at most 15.0 g of a desired solid in each run. The collected dry material can include an impurity. A separate test measures the impurity mass in each dry sample.

Wash plan	Collected dry mass (g)	Impurity in dry sample (g)
P	13.0	3.0
Q	12.0	1.0

1 Which wash plan recovers more of the desired solid?

(1) P only

(2) Q only

(3) The two plans recover the same amount.

(4) No comparison can be made from these readings.

2 Calculate the percentage of the possible desired product recovered by Q. [1]

Answer and work

The exhibit needs at least 10.0 g of desired solid with no more than 0.50 g of impurity. A further wash of Q removes 0.80 g of the impurity and also dissolves 0.50 g of the desired solid.

3 Determine whether Q after the further wash meets both requirements. Use the two masses in your answer. [1]

Answer and work

4 Evaluate the claim that any wash that improves purity must also improve recovery of the desired solid. [1]

Answer and work