Choosing When to Sample a Rinse Stream

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

A workshop checks a dissolved marker in its rinse water. Flow is constant. In this model the concentration is constant within each interval and can change between intervals. A mixed sample over four equal intervals gives their average. The workshop must stay at or below 5 mg/L on average and at or below 9 mg/L in each interval.

Run	First interval (mg/L)	Second interval (mg/L)	Third interval (mg/L)	Fourth interval (mg/L)
P	4	4	4	4
Q	1	1	13	1

1 Which run meets both limits?

(1) P only

(2) Q only

(3) Both runs

(4) Neither run

2 Calculate the concentration a single mixed sample reports for each run. Explain why the peak cannot be inferred from that reading. [1]

Answer and work

A second test collects samples only in the first and fourth intervals. Either unsampled interval could have a higher concentration.

3 Evaluate a claim that first and fourth interval readings of 4 mg/L are enough to establish compliance with the peak limit. Give one possible missed record. [1]

Answer and work

4 Describe a sampling plan that checks both requirements for a new run. Identify how each limit is checked. [1]

Answer and work