**Checking Test Order When a Meter Drifts**

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

A classroom meter compares two rinse samples. It reads a reference whose true signal is 10 units immediately before each sample. For each trial, the reference reading minus 10 gives the offset. The same offset applies to the sample in that trial.

| Order | Sample tested | Reference reading | Sample reading |
|---|---|---|---|
| 1 | P | 10 | 14 |
| 2 | Q | 12 | 16 |
| 3 | P | 13 | 17 |

**1** Which observation gives direct evidence that the meter offset changes?

(1) The true reference is 10 units in every trial.

(2) The reference reading changes from 10 to 13 while its true value stays fixed.

(3) P is measured twice.

(4) Q is tested after P.

**2** Enter the corrected sample reading for each trial. Explain how the offset enters your calculation. [1]

| Trial | Corrected sample reading |
|---|---|
| 1 | |
| 2 | |
| 3 | |

How you found the offsets

**3** A student says the two P readings prove the rinse sample changed. Evaluate the claim using the reference records. [1]

Answer and work

The class repeats the comparison on a second meter. The offset may change so quickly that a single reference before a sample is insufficient.

**4** Describe how to bracket each sample with reference readings and state what pattern would warn that the sample correction is uncertain. [1]

Answer and work