**Repeat Trials and Data Reliability**

New Regents original practice • Name: _____ Date: _____
Show your work for written answers.

Repeating a trial under the same conditions helps assess consistency. The range is the largest measurement minus the smallest.

**1** Which action measures repeatability in a timed dissolving test?

(1) Run the same test again under the same conditions.

(2) Change water temperature each time.

(3) Use a different solute in every trial.

(4) Report only the first measurement.

**2** Three trials take 9 s, 10 s, and 11 s. Calculate their mean and range. [1]

Answer and work

**3** Which set of times has the smallest range?

(1) 8 s, 10 s, 13 s

(2) 10 s, 11 s, 11 s

(3) 7 s, 10 s, 12 s

(4) 6 s, 9 s, 14 s

**4** One of four trials takes much longer than the others. Explain what to check before deciding how to use that reading. [1]

Answer and work

**Comparing Measurement Records**

Use the information below to answer the questions.

A class measures the time for the same mass of a solid to dissolve under two stirring conditions. The samples, water temperature, and water volume are held constant.

| Condition | Trial 1 (s) | Trial 2 (s) | Trial 3 (s) | Trial 4 (s) |
|---|---|---|---|---|
| A | 18 | 19 | 20 | 19 |
| B | 14 | 13 | 26 | 15 |

**5** Which condition gives more consistent trial times based on range?

(1) A

(2) B

(3) Both have the same range.

(4) Range cannot be found from the table.

**6** Which measurement in B should the class investigate first? Use the other B readings to explain. [1]

Answer and work

**7** Calculate B’s mean including all four trials, then calculate the mean of its three shorter times. Include units. [1]

Answer and work

**8** Which next test would best help investigate whether B’s unusual reading repeats?

(1) Repeat B under the same conditions.

(2) Use warmer water with B only.

(3) Switch B to a different solid.

(4) Change both conditions and compare with the old results.