Controls and Fair Tests

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

A controlled comparison changes the factor being tested and keeps other factors that could affect the outcome the same.

1 To test whether a coating affects how much dye a sample absorbs, which condition should be the same in both trials?

(1) The presence of the coating

(2) The amount of dye exposure

(3) The measured dye uptake

(4) The outcome of the test

2 One coated sample soaks twice as long as an uncoated sample. Explain why the difference in dye uptake cannot be attributed to the coating alone. [1]

Answer and work

3 Which measurement directly records dye uptake in the model?

(1) Time before the experiment starts

(2) The amount of dye retained by the sample

(3) The cost of the coating

(4) The color of the empty beaker

4 Explain how a repeated trial helps check a controlled comparison. [1]

Answer and work

A Model Coating Test

Use the information below to answer the questions.

A class uses same-size samples of the same material and the same dye solution. It changes the coating and soaking time as shown.

Trial	Coating	Soaking time (min)	Dye uptake (mg)
P	None	10	6.0
Q	Present	10	2.0
R	Present	20	3.5

5 Which pair isolates the effect of the coating on dye uptake?

(1) P and Q
(2) P and R
(3) Q and R
(4) All pairs

6 By how many milligrams does the coating reduce uptake in the matched 10-minute trials? [1]

Answer and work

7 Which pair can test the effect of soaking time when a coating is present?

(1) P and Q
(2) P and R
(3) Q and R
(4) No pair

8 Propose one new trial to test the coating at 20 minutes. State the trial to use for comparison. [1]

Answer and work