Reading a Two-Color Solution Test

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

A classroom rinsewater model contains dissolved markers P and Q. Each marker affects both meter channels. The table gives the signal from one model unit of each marker. Signals from different units add in the model, and pure water gives zero on both channels.

Reference	Red-channel signal	Blue-channel signal
1 unit of P	4	1
1 unit of Q	1	4

1 Which mixture gives a reading of 5 on each channel?

(1) One unit of P and one unit of Q

(2) Two units of P only

(3) Two units of Q only

(4) One unit of P and two units of Q

2 A student says a red reading of 4 proves the sample contains one unit of P and no Q. Give another composition that fits the red reading alone. [1]

Answer and work

A new sample has two units of one marker and one unit of the other. Its red signal is 9 and its blue signal is 6.

3 Identify which marker is present in two units. Verify the choice with both channel readings. [1]

Answer and work

4 Describe one control test to check the assumption that the meter readings add when the two markers are mixed. [1]

Answer and work