# Checking Bond Lengths in a Carbonate Model

Scoring guide · one credit per question · review written work against each rubric

### Checking Bond Lengths in a Carbonate Model

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### Question 1

Choice (3)

Picture Q treats the connections equally, consistent with all three measurements of 129 pm.

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### Question 2

The C–O1 connection would be shorter than C–O2 and C–O3, which are single in P.

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### Question 3

C–O1 is 10 pm longer than the other two. C–O2 and C–O3 have the same measured length.

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### Question 4

No. All three lengths in carbonate are 129 pm. The hydrogen carbonate model has one C–O connection at 136 pm and two at 126 pm. All are carbon–oxygen connections, so the element labels alone do not establish equal lengths.