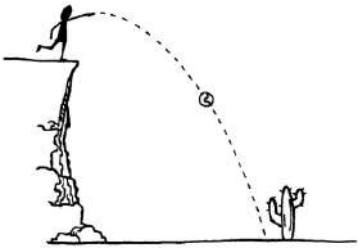
NAME _____ DATE _____

Scenario

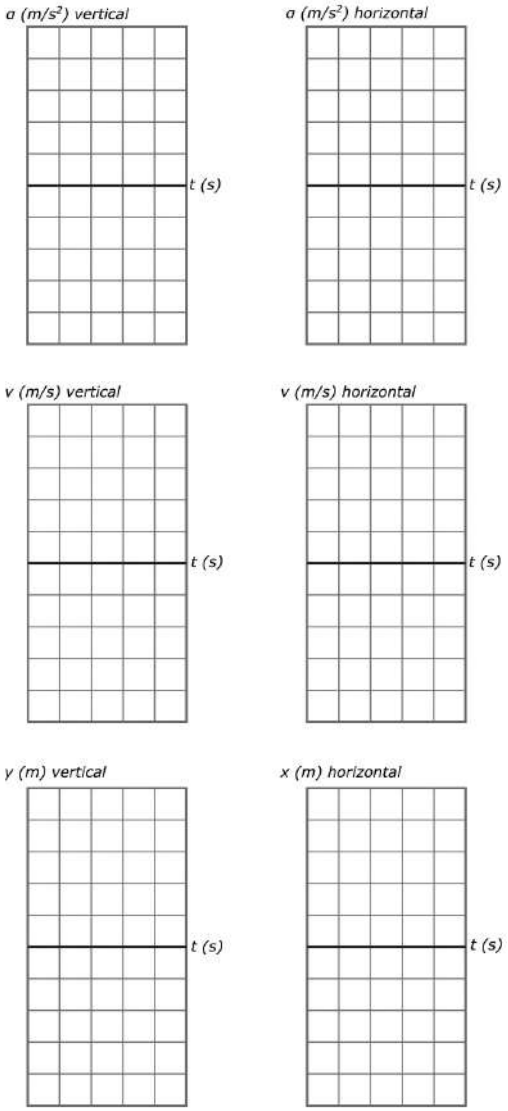
A rock is thrown horizontally with speed v from the top of a cliff of height H as shown in the diagram to the right.



Using Representations

PART A: Sketch the following graphs of the motion of the rock on the axes provided below the diagram to the right:

PART B: A second rock is now thrown at an angle θ above the horizontal at the same speed v and from the same height H as the rock in Part A. On the same set of axes in Part A, sketch the graphs for the second rock. If the graphs for Part B are different than those for Part A, use different colors or different lines (e.g., dashed vs. solid) to differentiate between the lines in Part A and Part B. Create a key so that it is easy to differentiate the lines.



Argumentation

PART C: If the second rock was instead thrown ***horizontally*** with initial speed $2v$, would the horizontal distance D between the bottom of the cliff and the place where the rock lands be larger, smaller, or the same as the first rock? (Check the appropriate blank for the claim and fill in the blanks of the evidence.)

Claim:

The horizontal distance between the bottom of the cliff and the place where the rock lands is:

_____ Larger ____ Smaller _____ The same

Evidence: The _____ (physical quantity/quantities) for both rocks is/are the same, so the _____ (physical quantity) to fall is also the same. Since both rocks are in the air for the same _____ (physical quantity), the rock that is going horizontally faster, Rock _____ (A or B) goes _____ (Further, Less Far, Equal Distance).