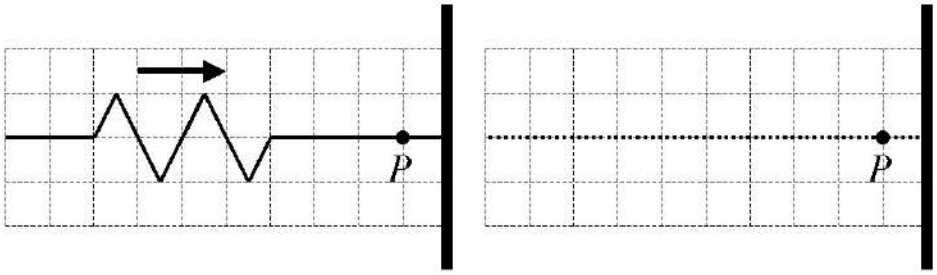
NAME _____ DATE _____



Scenario

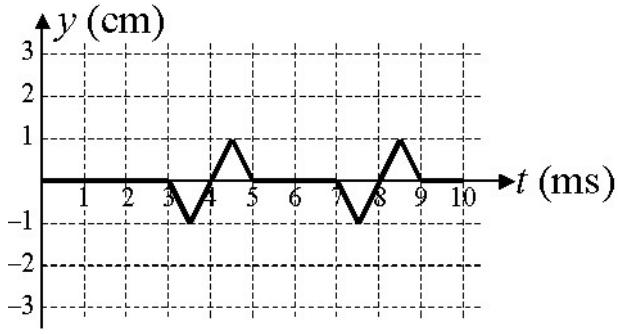
A wave made of triangular wave pulses initially travels to the right on an elastic string that is fixed to a wall. The diagram above and on the left shows the wave at time $t = 0$, with a grid of squares that represent distances of $1\ cm$. The speed of the wave is $1\ cm/ms$.

Using Representations

PART A: On the blank grid above right, draw what the string looks like at time $t = 5$ ms.

Data Analysis

PART B: Point P is a single point on the string. Blake attempts to draw a graph of the height of point P as a function of time, creating the graph shown to the right. He assumes that no energy is lost as the wave reflects off the wall.



i. Blake's graph is correct between 5 and 7 ms Explain why.

ii. Another aspect of Blake's graph is incorrect. State what this aspect is, why it is incorrect, and what he can do to correct it. Explain why this correction is necessary.

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PART C: Suppose instead that some wave energy is transformed into other, dissipative forms of energy when the wave reflects off the wall.

i. How would the wave drawn in Part A need to be modified in this case?

ii. Other than the wrong aspect identified in Part B (ii), how would the graph shown in Part B need to be modified in this case?

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