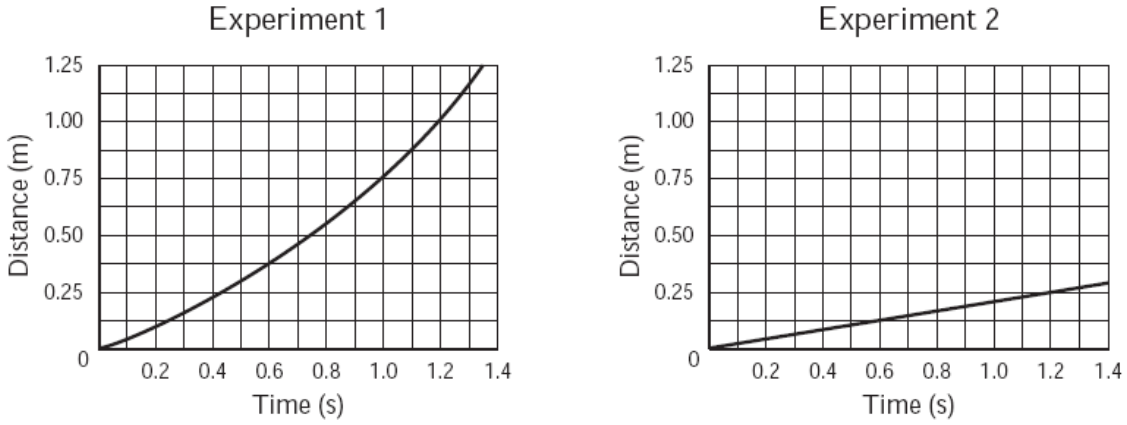
Physics 1

**Question 23 is an open-response question.**

- **BE SURE TO ANSWER AND LABEL ALL PARTS OF THE QUESTION.**
- **Show all your work (diagrams, tables, or computations) in your Student Answer Booklet.**
- **If you do the work in your head, explain in writing how you did the work.**

**Write your answer to question 23 in the space provided in your Student Answer Booklet.**

**23** A student is conducting experiments with a block of wood. In experiment 1, the student pulls the block of wood with a constant force of 10 N along a horizontal surface. In experiment 2, the student pulls the same block of wood with a constant force of 10 N. The type of surface is different from that used in experiment 1. The results of experiments 1 and 2 are shown below.




a. Using information from the graphs, compare the surface in experiment 2 with the surface in experiment 1.

b. Determine both the magnitude of the force of friction **and** the net force on the block that are required to achieve the results shown in the graph for experiment 2. Include units in your answer.

c. Without changing the type of surface used when pulling the block of wood, list one other change to experiment 1 that would produce the results of experiment 2. Explain your reasoning with reference to the frictional force.