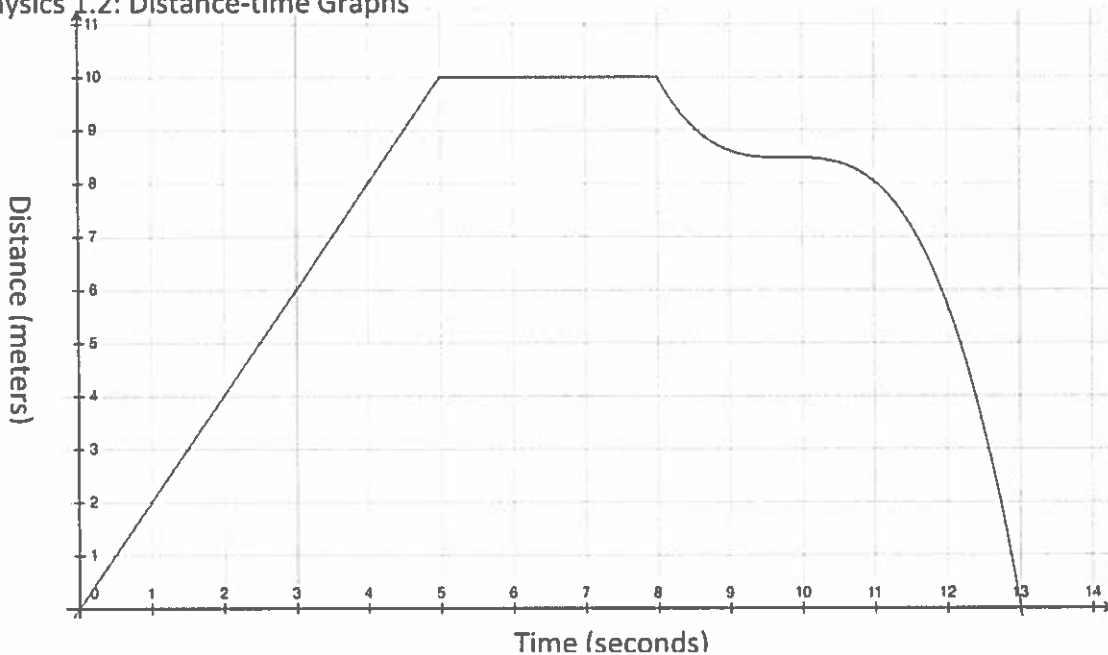


Who is doing this paper? Key

AP Physics 1.2: Distance-time Graphs



1. The graph above is a distance-time graph for a person walking to and from a store. Consider the graph above to answer the questions below.

a. Identify the time interval where the person is not moving? Justify your answer.

$[5, 8]$ the slope is zero

b. Calculate the average velocity for the interval 0 to 5.

$$\frac{10-0}{5-0} = \frac{10}{5} = \boxed{2 \text{ m/s}}$$

c. Calculate the average velocity for the interval 8 to 13.

$$\frac{0-10}{13-8} = \frac{-10}{5} = \boxed{-2 \text{ m/s}}$$

d. Calculate the average velocity from $t=5$ to $t=13$.

$$\frac{0-10}{13-5} = \frac{-10}{8} = \boxed{-\frac{5}{4} \text{ m/s}}$$

e. Calculate the average velocity from $t=2$ to $t=7$.

$$\frac{10-4}{7-2} = \boxed{\frac{6}{5} \text{ m/s}}$$

f. Calculate the average speed from $t=8$ to $t=11$.

$$\frac{8-10}{11-8} = \boxed{\frac{2}{3} \text{ m/s}}$$

g. Is the average velocity the same for both time intervals 0-5 and 8-13?

Yes No

Briefly explain your reasoning.

different sign, different direction

h. Is the average speed the same for both time intervals 0-5 and 8-13?

Yes No

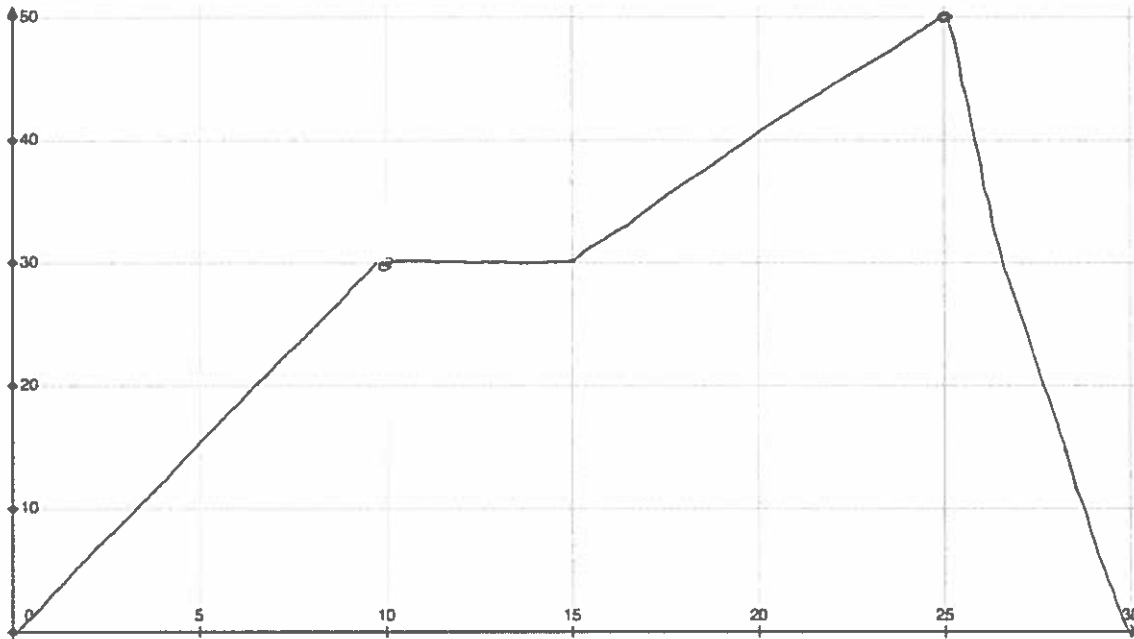
Briefly explain your reasoning.

Speed ignores direction

Who is doing this paper? Key

2. Sketch a distance-time graph of the situation explained below in the blank coordinate grid.

A person begins to run and travels 30 meters in the first 10 seconds of his trip. He then decides to stop because running for 10 seconds was way too difficult. He only rests for 5 seconds. He then runs with a velocity of 2 m/s for 10 more seconds. He then turns around and jogs back to his original position, at a non-constant rate of change, arriving there at t=30 seconds.



- a. Calculate the average velocity of the person for the first 10 seconds of their trip.

$$\frac{30-0}{10-0} = \frac{30}{10} = \boxed{3 \text{ m/s}}$$

- b. Would it be correct if the line from [0,10] was curved? Explain.

Yes, it doesn't say he ran at a constant velocity

- c. Calculate the average velocity of the person over the first 15 seconds of their trip.

$$\frac{30-0}{15-0} = \frac{30}{15} = \boxed{2 \text{ m/s}}$$

- d. Calculate the distance traveled by the person during the time interval [15,25] seconds.

$$2 \text{ m/s} \cdot 10 \text{ sec} = \boxed{20 \text{ meters}}$$

- e. Calculate the speed at which the person was moving for the time interval [25,30].

$$\frac{0-50}{30-25} = \frac{-50}{5} = \boxed{-10 \text{ m/s}}$$

- f. Calculate the distance the person traveled in the first 25 second interval?

50 meters

- g. Calculate the distance the person traveled over the 30 second trip?

100 meters