

flipping physics

Flipping Physics Lecture Notes: Example Problem: Velocity and Speed are Different

Example Problem: Buster and mr.p embark on a walk. If they leave mr.p's house, travel a distance of 1.2 km and return back to the house 12 minutes & 13 seconds later, (a) what was their average speed and (b) what was their average velocity? Give answers in meters per second.

$$\text{Knowns: } distance = 1.2\text{km} \times \frac{1000\text{m}}{1\text{km}} = 1200\text{m}; \quad time = 12\text{min} \times \frac{60\text{sec}}{1\text{min}} + 13\text{sec} = 733\text{sec}$$

(a) Speed_{avg} = ? & (b) v_{avg} = ?

$$(a) \text{ speed} = \frac{distance}{time} = \frac{1200\text{m}}{733\text{sec}} = 1.63711 \frac{\text{m}}{\text{s}} \approx \boxed{1.6 \frac{\text{m}}{\text{s}}}$$

$$(b) v = \frac{\Delta x}{\Delta t} = \frac{0}{\Delta t} = \boxed{0}$$

They started and ended in the same location, therefore the straight-line distance between where they started and ended is zero. Hence, displacement equals zero. Therefore velocity is also zero.

Remember Velocity \neq Speed and Speed is *not* simply velocity without direction.