Average/Instantaneous Velocity/Speed

Physics 513

Let's Try This One Together

- A car travels in the $+$ x-direction on a straight and level road. For the first 4.00 s of its motion, the average velocity of the car is $\vec{v}_{av\text{-}x}$ = 6.25 m/s. What is the car's displacement after 4.00 s?

Let's Try This One Together Too

- Starting from the front door of your ranch house, you walk 60.0 m due east to your windmill, and then you turn around and slowly walk 40.0 m west to a bench where you sit and watch the sunrise. It takes you 28.0 s to walk from your house to the windmill and then

  36.0 s to walk from the windmill to the bench. For the entire trip from your front door to the bench, what is your average speed?

Let's Think This Through Together…

- Does the speedometer of a car measure speed or velocity? Explain

Let's Discuss the Direction of Motion

If the x-coordinate is:	. . . the x-velocity is:
Positive & increasing (getting more positive)	
Positive & decreasing (getting less positive)	
Negative & increasing (getting less negative)	
Negative & decreasing (getting more negative)	

Let's Think About This One

- The figure on the next slide is a position vs. time graph of the motion of a particle.

- (a) Rank the values of the particle's x-velocity $\vec{v}_x$ at the points P, Q, R, and S from most positive to most negative.

- (b) At which points is $\vec{v}_x$ positive?

- (c) At which points is $\vec{v}_x$ negative?

- (d) At which points is $\vec{v}_x$ zero?

- (e) Rank the values of the particle's speed at the points P, Q, R, and S from fastest to slowest

Figure