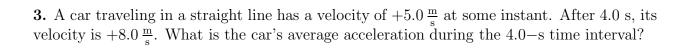
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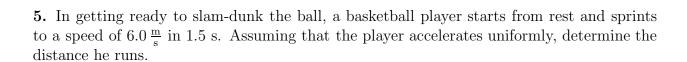
Phys 2010 (NSCC), Fall 2005 Problem Set #2

1. A motorist drives north for 35.0 minutes at 85.0 km/hr and then stops for 15.0 minutes. He then continues north, traveling 130 km in 2.00 hr. (a) What is his total displacement? (b) What is his average velocity?

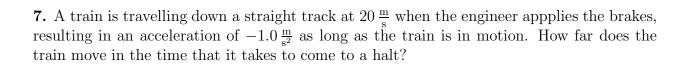
2. If the average speed of an orbiting space shuttle is $19800 \frac{\text{mi}}{\text{hr}}$, determine the time required for it to circle the Earth. Assume that the radius of the shuttle's orbit is 4163 mi. (This is the radius for an orbit at 200 mi above the Earth's surface.)



4. A runner accelerates to a velocity of $5.36 \, \frac{m}{s}$ due west in 3.00 s. His average acceleration is $0.640 \, \frac{m}{s^2}$, also directed due west. What was his velocity when he began accelerating?



6. A speedboat increases its speed uniformly from $20 \frac{m}{s}$ to $30 \frac{m}{s}$ in a distance of 200 m. Find (a) the magnitude of its acceleration and (b) the time it takes the boat to travel the 200–m distance.



8. From her bedroom window a girl drops a water–filled balloon to the ground, 6.0 m below. If the balloon is released from rest, how long is it in the air?