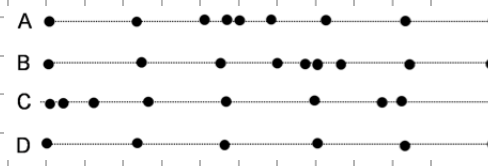
Problems tagged with standards:CAPM

100. A car starting from rest speeds up to 30 $\frac{m}{s}$ with constant acceleration in 15 seconds. Then, it travels at 30 $\frac{m}{s}$ for 10 seconds. Finally, it brakes to a stop in 30 seconds with constant acceleration.

How far does it travel in the 55 second time period?

110. Driving a car in the positive x direction at a speed of 60 mph, Mary tests her brakes by coming to a complete stop in 4 seconds. Then she accelerates to her original speed of 60 mph in 8 seconds. A motion diagram is created by illuminating her car with a strobe at 2 second intervals.



Which of the following best represents the correct diagram? Marys car is represented by a dot.

20. A box of mass m slides with an initial velocity of 3 $\frac{m}{s}$ down a ramp which is inclined 20° from the horizontal. The coefficient of kinetic friction between the ramp and box is .45.

a. Determine the direction and magnitude of the acceleration of the box as it slides down the incline.

b. Discuss the subsequent motion of the box (qualitatively - no numbers are necessary).

90. A car starting from rest speeds up to 30 $\frac{m}{s}$ with constant acceleration in 10 seconds. Then, it travels at 30 $\frac{m}{s}$ for 10 seconds. Finally, it brakes to a stop in 20 seconds with constant acceleration.

Which of the following graphs represents the speed of the car versus time?