

Name _____

Date _____

Mr Rawson



Acceleration I

1. A car traveling in a straight line has a velocity of $+8.5 \text{ m}\cdot\text{s}^{-1}$. After 5.5 s, its velocity is $+5.0 \text{ m}\cdot\text{s}^{-1}$. What is the car's *average* acceleration in this time interval?
2. A car traveling at $9.0 \text{ m}\cdot\text{s}^{-1}$ accelerates at the rate of $0.8 \text{ m}\cdot\text{s}^{-2}$ for an interval of 3.0 s. Find v_f .
3. A ball initially at rest rolls down a hill with an acceleration of $3.3 \text{ m}\cdot\text{s}^{-2}$. If it accelerates for 6.5 s, how far will it move?
4. A bus slows to rest uniformly from 75.0 kmh in 280 m. How many seconds does it take the bus to stop?

5. A plane lands with a velocity of $120 \text{ m}\cdot\text{s}^{-1}$ and accelerates at a maximum rate of $-4.0 \text{ m}\cdot\text{s}^{-2}$.

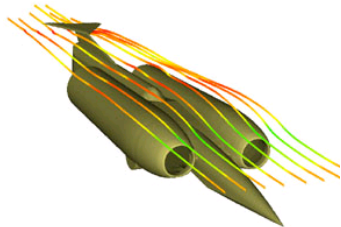
A. From the instant the plane touches the runway, what is the minimum time needed before it can come to rest?

B. What is the minimum distance the plane needs to land?

C. Can this plane land on a naval aircraft carrier where the runway is 2.10 km long?

- i. insufficient information
- ii. yes
- iii. no

6. The first person to break the sound barrier in a car was Andy Green, in the jet-propelled car named ThrustSSC, at a speed of 763 mph ($341 \text{ m}\cdot\text{s}^{-1}$) (Nevada, 1997). He also holds the land speed record, as the fastest vehicle ever driven. If the car accelerated to $270 \text{ m}\cdot\text{s}^{-1}$ in 16 seconds, find the distance the car traveled during this time.



7. The graph below shows the variation with time of the distance moved by a car along a straight road. During which time interval does the car have its greatest acceleration?

