# Physics - Constant Acceleration Practice (Show equation - substitution - solve with units) 

1) A poorly tuned car accelerates from rest to a speed of $28 \mathrm{~m} / \mathrm{s}$ in 20 s .
a. What was the car's acceleration?
b. How far does the car travel in this time?
2) A car was initially traveling $30 \mathrm{~m} / \mathrm{s}$. After 6 seconds, its final speed was $15 \mathrm{~m} / \mathrm{s}$.
a. What was the car's acceleration?
3) A student falls asleep while Mr. Sligh is lecturing and falls from the top of a 30 meter tall building. The student's acceleration was $10 \mathrm{~m} / \mathrm{s}^{2}$. (He was teaching how the devil brought Jesus on top of the temple).
a. What speed was the student falling when he hit the ground?
b. How much time did it take for him to fall?
4) A student rolls down a hill from rest with a constant acceleration of $2.0 \mathrm{~m} / \mathrm{s}^{2}$ for 15 seconds.
a. What speed was the student traveling at the end of this time?
b. What was the length of the hill?
5) A mountain goat starts a rock slide and the rocks crash down the slope of 100 m in 5 seconds. a. With what acceleration did the rocks fall?
b. What was the speed of the rocks at the bottom of the hill?
6) A dog runs down his driveway with an initial speed of $5 \mathrm{~m} / \mathrm{s}$ for 8 seconds. He then sees a cat and increases his speed constantly to $10 \mathrm{~m} / \mathrm{s}$ in the next 5 seconds.
a. Sketch out a velocity-time graph of the given scenario.

b. What was the dog's acceleration once he saw the cat?
7) A car starts from rest and accelerates uniformly to reach a speed of $21 \mathrm{~m} / \mathrm{s}$ in 7.0 s .
a. What was the car's rate of acceleration?
b. What was the speed of the object after 7.0 seconds?
c. How far did the car travel in 7.0 seconds?
