## AP Physics - Great, More Homework - 3



Computers in the future may weigh no more than 1.5 tons. -- Popular Mechanics, 1949

1. A race car accelerates at a rate of $15.6 \mathrm{~m} / \mathrm{s}^{2}$. If it starts from rest, how much time till it is traveling at $325 \mathrm{~km} / \mathrm{h}$ ?
2. A truck falls off a cliff. If the cliff is 33.5 m high, how much time for the truck to reach the bottom?
3. You toss a ball straight up in the air, it goes up, comes down, and you catch it. If it took 5.6 s from when you threw it to when you caught it, how high did it go?
4. The speed of sound is $344 \mathrm{~m} / \mathrm{s}$. You have built a really fantastic car that can really go fast. If the car can accelerate at $22.4 \mathrm{~m} / \mathrm{s}^{2}$, how much time till you reach the speed of sound? How many kilometers will you travel before you reach that speed?
5. In 1947 Bob Feller, a pitcher for the Cleveland Indians, threw a baseball across the plate at 98.6 mph or $44.1 \mathrm{~m} / \mathrm{s}$. For many years this was the fastest pitch ever measured. If Bob had thrown the pitch straight up, how high would it have gone?
6. You are on top of a building that is 75.0 m tall. You toss a ball straight up with an initial velocity of $33.8 \mathrm{~m} / \mathrm{s}$. How high does the ball travel? It goes up and then falls down to the ground below. How much time is it in the air?
