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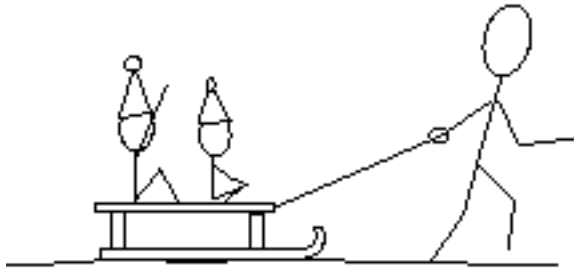
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Unit 4 Review: Newton's Second Law Review Problems

1. An 80 kg water skier is being pulled by a boat with a force of 220 N causing the skier to accelerate at 1.8 m/s^2 . Find the drag force on the skier.
2. A 2000 kg car is slowed down uniformly from 20 m/s to 5 m/s in 4 seconds. Determine the average net force on the car during this time, and how far the car traveled while slowing down.
3. Some baseball pitchers are capable of throwing a fastball at 100 mi/hr. The pitcher achieves this speed by moving his arm through a distance of 1.5 m. Determine the average net force that must be exerted on the 0.15 kg ball during the pitch. (1 mile = 1600 meters)

4. After falling from rest at a height of 30 m, a 0.50 kg ball bounces upward, reaching a height of 20 m. The contact between the ball and ground lasted 20 milliseconds. Find the average force exerted on the ball by the ground. (Break the problem into pieces. Do a bunch of kinematics first, then apply Newton's 2nd law.)

5. In the diagram below, the cord makes a 25° angle with the horizontal, the mass of the sled and occupants is 100 kg. The tension in the cord is 120 N and the friction force is 15 N. Find the acceleration of the sled.



6. The 60 kg skier shown below is skiing down a 35° incline with a coefficient of friction is 0.08. Determine the acceleration of the skier.

