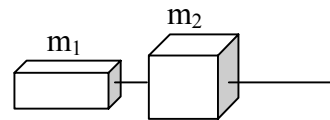


Forces II

Draw force diagrams and explain your reasoning for each of the following.

- A small car and a large truck collide. At any instant, which experiences:
 - the greater force?
 - the greater acceleration?
- The cartoon cat Tom, in order to get away from a shark, blows on the sail of his sailboat. Explain why this won't work in the real world.
- A car is moving at 10 m/s. A 50 kg driver is held firmly in her seat by a seat belt. Find the force on the driver (assume that it is constant) if the car crashes by crumpling through a distance of :
 - 150 cm.
 - 50 cm.
- Sean pushes a 20 kg lawn mower with a force of 80 N directed along the handle, which is inclined at 30° to the horizontal.
 - If she moves at a constant velocity, what is the retarding force due to the ground?
 - What force along the handle would produce an acceleration of 1 m/s^2 given the same retarding force?

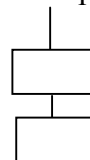
- Theresa is pulling two blocks across a horizontal frictionless floor with an acceleration of 1.5 m/s^2 . The mass of block 1 is 4 kg and the mass of block 2 is 2 kg.



- What is the tension in the rope that connects the blocks?
 - What is the tension in the other rope?
- John jumps out of an airplane with a 7.0 kg parachute. After he opens the chute, he falls at a constant 5.6 m/s. Assume that John's mass is 70 kg.
 - Find the force of the parachute on John.
 - Find the force of the air on the parachute.

- Two blocks hang one under the other as shown. The mass of the top block is 0.2 kg while the bottom mass is 0.3 kg. Find the tensions in each of the ropes in each of the following cases:

- The blocks are at rest.
- The blocks move upward at 10 m/s.
- The blocks accelerate upward at 2 m/s^2 .
- They accelerate downward at 2 m/s^2 .



Name:

HR:

AP PHYSICS Unit 5. Worksheet 3

To be submitted