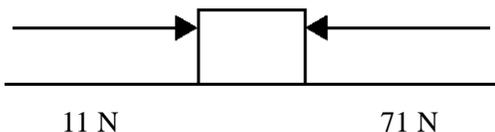


Problem Skill Set 5

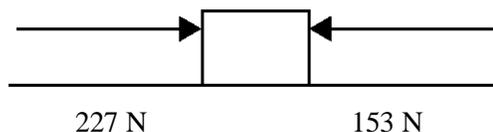
Use Given, Equation, Substitution and Solve & Answer format for problems 3 to 11.
Assignment value 100 pts / 130pts available

1. Which of the following system of forces provides the block the highest net force? **(5pts)**

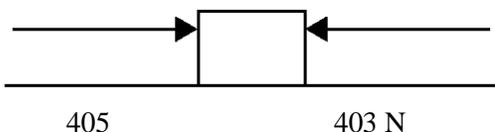
a.



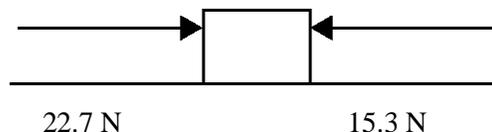
c.



b.



d.



2. Which of the following does NOT represent Newton's second law? **(5pts)**

a. $a = m/F$

c. $F = ma$

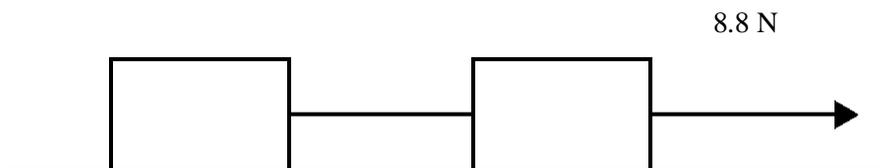
b. $m = F/a$

d. $a = F/m$

3. A car of mass 1330 kg is traveling at 28.0 m/s. The driver applies the brakes to bring the car to rest over a distance of 79.0 m. Calculate the force acting on the car. **(10pts)**

4. An elevator is moving down with an acceleration of 1.40 m/s^2 . A 14.5-kg block hangs from a spring balance fixed to the roof of the elevator. What is the apparent weight of the block? **(10pts)**

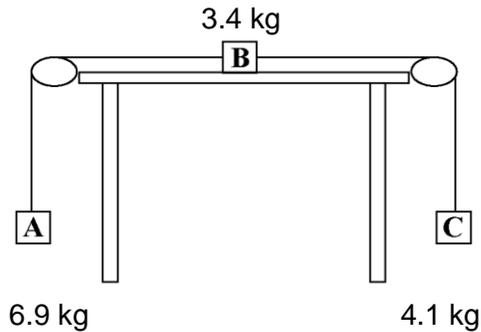
5. The blocks shown below are placed on a smooth horizontal surface and connected by a piece of string. If a 8.8 -N force is applied to the 8.8 -kg block, what is the tension in the string? **(20pts)**



19.4 kg

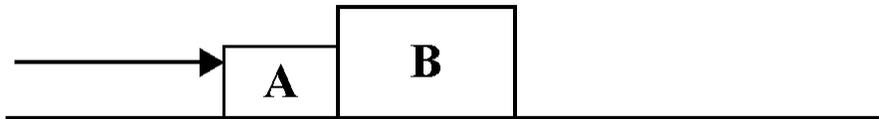
8.8 kg

6. Three blocks A, B, and C are connected by two massless strings passing over smooth pulleys as shown below, with the 3.4-kg block on a smooth horizontal surface. Calculate the tension in the strings connecting A and B, and, B and C. **(20pts)**



7. Two blocks A and B are kept in contact with each other on a smooth horizontal surface and a 3.9 -N force is applied to the block A as shown below. Calculate the force exerted by the block A on the block B, assuming that they do not separate at any time. The mass of block A is 4.4 kg and that of block B is 5.5 kg. **(10pts)**

3.9 N



8. Little Georgie Atwood was playing with his blocks and some massless string. He connected the first block with mass M_1 on one end of the string, put the string over a frictionless pulley, and attached the other block with mass M_2 on the other end of the string. **(10pts)**

Draw a free body diagram that shows the forces acting on each block when $M_1 > M_2$.

9. A moose pushes a barrel with a mass of 6.8 kg for a distance of 8.5 m over the frictionless surface of a frozen pond. He exerts a constant 50 N force as he does so. If the final velocity is 15 m/s, what was the initial velocity? **(10pts)**
10. A mouse pushes a piece of cheese with a mass of 6.4 g for a distance of 75 cm over the frictionless surface of an air hockey table. He exerts a constant 0.5 N force as he does so. If the cheese starts from rest, what is its final velocity? **(10pts)**

11. A person's mass is 60 kg. He or she is standing on a bathroom scale in an elevator. Starting from rest, the elevator accelerates downward at 3 m/s for 2 s and then continues at constant speed. Is the scale reading during acceleration greater than, equal to, or less than the scale reading when the elevator is at rest? **(20pts)**