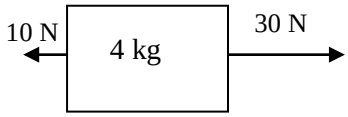
Practice Worksheet: Net Force and Acceleration Name_____

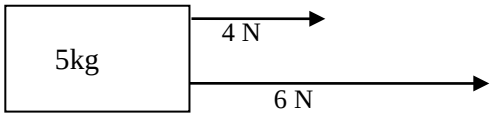
For each of the following problems, give the net force on the block, and the acceleration, including units.

1)



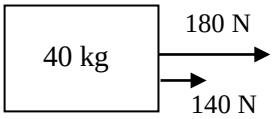
Net Force = _____ a = F/m = _____

2)



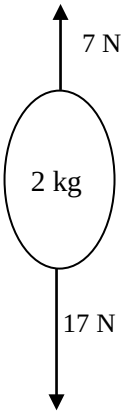
Net Force = _____ a = F/m = _____

3)



Net Force = _____ a = _____

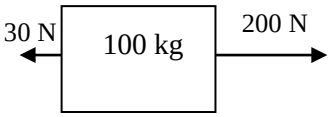
4)



Net Force = _____

a = _____

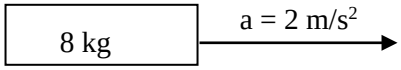
5)



Net Force = _____ a = _____

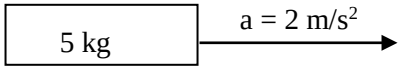
For problems 6-9, using the formula net Force = Mass • Acceleration, calculate the net force on the object.

6)



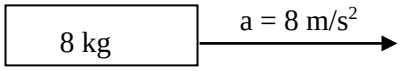
F = m•a = _____

7)



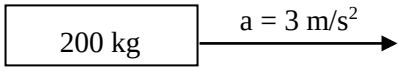
F = m•a = _____

8)



F = m•a = _____

9)



F = m•a = _____

10) Challenge: A student is pushing a 50 kg cart, with a force of 600 N. Another student measures the speed of the cart, and finds that the cart is only accelerating at 3 m/s^2. How much friction must be acting on the cart? Hint: Draw a diagram showing the cart, and the two forces acting on it.

Practice Problem Set F=ma ⇨ FORCE = MASS x ACCELERATION Name _____

Equations: F=ma a=F/m m=F/a

Plug in the given values for Force/Mass/Acceleration to solve.
Remember, **mass is in kg** - - **force in in N** (newtons) - - **acceleration is in m/s²**

1. How much force is needed to accelerate a 66 kg skier at 2 m/sec^2?

2. What is the force on a 1000 kg elevator that is falling freely at 9.8 m/sec^2?

3. What is the acceleration of a 50 kg object pushed with a force of 500 newtons?

4. The mass of a large car is 1000 kg. How much force would be required to accelerate the car at a rate of 3 m/sec^2?

5. A 50 kg skater pushed by a friend accelerates 5 m/sec^2. How much force did the friend apply?

6. A force of 250 N is applied to an object that accelerates at a rate of 5 m/sec^2. What is the mass of the object?

7. A bowling ball rolled with a force of 15 N accelerates at a rate of 3 m/sec^2; a second ball rolled with the same force accelerates 4 m/sec^2. What are the masses of the two balls?

8. If a 60 kg person on a 15 kg sled is pushed with a force of 300 N, what will be person's acceleration?

9. A force of 20 N acts upon a 5 kg block. Calculate the acceleration of the object.

10. An object of mass 300 kg is observed to accelerate at the rate of 4 m/s^2. Calculate the force required to produce this acceleration.

11. A 5 kg block is pulled across a table by a horizontal force of 40 N with a frictional force of 8 N opposing the motion. Calculate the acceleration of the object.

12. An object of mass 30 kg is in free fall in a vacuum where there is no air resistance. Determine the acceleration of the object.

13. An object of mass 30 kg is falling in air and experiences a force due to air resistance of 50 newtons.
    a. Determine the net force acting on the object and
    b. calculate the acceleration of the object.