Newton's 2nd Law of Motion Worksheet

1. A net force of 9.0 N east is used to push a 20.0 kg object. What is the acceleration of the object?
   $0.45\ m/s^2$ East
2. A 16.0 kg object is accelerated at a rate of $2.0 m/s^2$ by a net force. What is the magnitude of this force?
   32 N
3. A 925 kg car accelerates uniformly from rest to a velocity of 25.0 m/s south in 10.0 s. What is the net force acting on the car during this time?
   $2{,}312.5 = 2.31 \times 10^3$
4. A net force of 6.6N east acts on a 9.0 kg object. If this object accelerates uniformly from rest to a velocity of 3.0 m/s east. How far did the object travel and how long did it take?

   t= 0.24s 3.3m

5. A 12.0 kg object is pushed with a horizontal force of 6.0 N East across a table. If the force of friction is 2.0 N, what is the acceleration of the object?
   $0.33\ m/s^2$ East
6. A 20.0 kg object is pulled horizontally along a level floor with a force of 27.0 N. If the object is accelerating at a rate of $0.80 m/s^2$, what is the magnitude of the force of friction?
   27N - 16N = 11 N
7. An object that has a mass of 36.0 kg is pushed along a horizontal surface with a force of 85.0 N. IF the force of friction is 72.0 N, what is the magnitude of the acceleration of the object?
   $0.36\ m/s^2$
8. A 7.0 kg object rests on a horizontal frictionless surface. What is the magnitude of the horizontal force that is required to accelerate it at the rate of $2.3 m/s^2$?
   16 N
9. You are traveling in your car at a velocity of 24.0 m/s east when you slam on your brakes. The force of friction on your car tires is 1.80×10^4 N. IF the mass of you and your car is 1.50×10^3 kg, how far do you skid before stopping?
   24 m
10. A 325 N box is sliding down a frictionless inclined plane. If the inclined plane makes an angle of 30.0° with the horizontal, what is the acceleration along the incline?

    $4.91\ m/s^2$ along the incline