Friction Questions from A4.3

Use the convention that to the right is positive, and to the left is negative. Every force should be labeled "Right" or "Left", and every acceleration should be labeled as "accel" = "acceleration" (speeding up) or "decel" = "deceleration" (slowing down)

+2.43 m/s/s, decel -2.70 m/s/s, decel 10.0 N Left 32.6 N Left 39.7 N Right	**1. There is a coefficient of kinetic friction of 0.140 between a 5.20 kg box and the level floor.** a. If the box is sliding to the left, and we exert a force of 5.50 N to the right, what is the acceleration? b. If the box is sliding to the right, and we exert a force of 6.90 N to the left, what is the acceleration? c. The box is sliding to the right, but is decelerating at 3.30 m/s/s, what outside force besides friction is acting on it? d. If the box is sliding and accelerating to the left at 4.90 m/s/s, what force must be acting on it? e. The box slides from rest to the right reaching a velocity of 14.5 m/s in a distance of 16.8 m. What outside force was acting?
+0.696 m/s/s, accel +0.462 m/s/s, decel 25.3 N Right 28.8 N Right +6.75 m/s	**2. There is a coefficient of kinetic friction of 0.105 between a 4.75 kg block of wood and the level floor.** a. If there is a force of 8.20 N to the right, and the block is sliding to the right, what is the acceleration? b. If the block is sliding to the left, and there is a force of 2.70 N to the left, what is the acceleration of the block? c. What applied force would make the block accelerate and slide to the right at 4.30 m/s/s? d. If the block is sliding to the left, but is decelerating at 7.10 m/s/s, what force must be applied to it? e. If you apply 8.90 N to the right and the block starts to slide to the right from rest, what will be the velocity in 8.00 seconds?
-1.48 m/s/s, decel -4.53 m/s/s, decel 2.01 N Left 36.1 N Left 72.4 N Right	**3. There is a coefficient of kinetic friction of 0.310 between an 8.35 kg block of wood and the level floor.** a. If the block is sliding to the right, and there is a force of 13.0 N to the right, what is the acceleration? b. If the block is sliding to the right, but there is a force of 12.4 N to the left, what is the acceleration? c. If the block is sliding to the left, but is decelerating at 2.80 m/s/s, what outside force must be acting? d. If the block is sliding to the right, but is decelerating at 7.36 m/s/s, what is the force acting on the block? e. From rest the block reaches a speed of 15.0 m/s to the right from rest in a distance of 20.0 m. What force was acting?
-2.87 m/s/s, decel -0.518 m/s/s, accel +18.5 N Right 10.1 N Left 13.7 N Left	**4. There is a coefficient of kinetic friction of 0.155 between a 3.10 kg block of wood and the level floor.** a. If the block is sliding to the right, and you exert a force of 4.19 N to the left, what is the acceleration? b. If the block is sliding to the left, and you exert a force of 6.32 N to the left, what is the acceleration? c. If the block is sliding and accelerating to the right at 4.45 m/s/s, what force must be applied? d. If the block is sliding to the left and accelerating to the left at 1.75 m/s/s, what force must be applied? e. The block displaces itself to the left 12.0 m from rest in 2.87 s. What force must have acted?
+0.780 m/s/s, decel +1.62 m/s/s, accel 37.1 N Left 8.99 N Left +10.9 m/s	**5. There is a coefficient of kinetic friction of 0.235 between an 8.85 kg box and the level floor.** a. If the box is sliding to the left, and there is a force of 13.5 N to the left, what is the acceleration? b. If the box is accelerating to the right, and there is a force of 34.7 N to the right, what is the acceleration? c. If the box is sliding to the right, but is decelerating at 6.50 m/s/s, what force must be acting on the box? d. If the box is sliding to the left, but is decelerating at 1.29 m/s/s, what must be the force acting on the box? e. If the box is sliding to the right, and there is a force of 32.0 N to the right, what will be its final velocity from rest when is has gone 45.0 m?