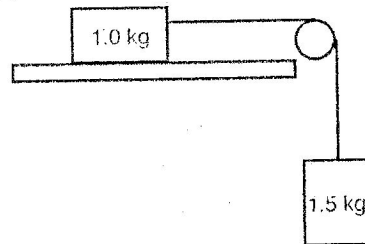
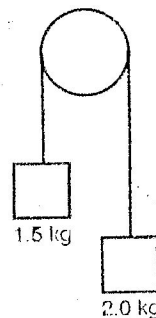


37. A  $1.0 \times 10^2$  N box is slid north along a horizontal surface by a  $2.5 \times 10^2$  N horizontal force. If the force of friction on the box is  $1.4 \times 10^2$  N, what is the acceleration of the box?
38. A 7.0 kg object rests on a horizontal frictionless surface. What is the magnitude of the horizontal force that is required to accelerate it at the rate of  $2.3 \text{ m/s}^2$ ?
39. You are traveling in your car at a velocity of  $24.0 \text{ m/s}$  east when you slam on your brakes. The force of friction on your car tires is  $1.80 \times 10^4$  N. If the mass of your car is  $1.50 \times 10^3$  kg, how far do you skid before coming to a stop?
40. A  $1.2 \times 10^3$  kg car is traveling at a velocity of  $20.0 \text{ m/s}$  east when its brakes are locked. Assuming a force of friction of  $2.5 \times 10^4$  N, what is the velocity of the car after  $0.50 \text{ s}$ ?

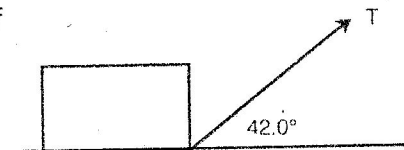
41. A 1.0 kg box on a horizontal frictionless surface is accelerated by attaching a 1.5 kg mass as shown in the diagram. What is the acceleration of the box? (Remember, both boxes are accelerated.)



42. Two masses of 1.5 kg and 2.0 kg are hung on a frictionless pulley as shown in the diagram. What is the acceleration of
- the 1.5 kg mass?
  - the 2.0 kg mass?



43. A 125 N box is pulled east along a horizontal surface with a force of 60.0 N acting at an angle of  $42.0^\circ$  as shown in the diagram. If the force of friction on the box is 15.0 N, what is the acceleration?



44. A 725 N student stands on a bathroom scale while riding in an elevator. The student observes that the scale reads 775 N as the elevator begins to rise. Find the acceleration of the elevator as it begins to rise. (Remember, the scale reading is the applied force,  $F_T$ .)
45. A hockey puck with a mass of 0.48 kg is shot north along the ice with an initial velocity of  $3.0 \text{ m/s}$ . If after traveling 8.0 m the puck comes to rest, what is the force of friction on the puck?
46. An 8.0 kg object is pulled vertically upward by a rope. If the tension in the rope is constant at 95 N, what is the velocity of the object after 1.1 s? (Assume the object was initially at rest.)
47. A 445 N box is sliding down a frictionless  $25.0^\circ$  inclined plane. Find the parallel component of the weight that causes the box to slide.
48. A 325 N box is sliding down a frictionless inclined plane. If the incline makes an angle of  $30.0^\circ$  with the horizontal, what is the acceleration along the incline?
49. A 275 N box is sliding down a  $35.0^\circ$  incline. If the force of friction along the incline is 96.0 N, what is the acceleration of the box?
50. A 435 N box is sliding down a  $40.0^\circ$  incline. If the acceleration of the box is  $0.250 \text{ m/s}^2$ , what is the force of friction on the box?