1. Two dogs pull a sled. One exerts a constant force of 50 N at an angle 30 degrees to the right of north. The other exerts a constant force of 50 N at an angle of 30 degrees to the left of north. What is the total work they do on the sled over a distance of 10 m?
2. Two dogs pull a sled. One exerts a constant force of 40 N at an angle 10 degrees to the right of north. The other exerts a constant force of 50 N at an angle of 20 degrees to the left of north. What is the total work they do on the sled after 1 minute?
3. A 15 N ball is thrown vertically upwards. When it is 7 m above the initial position, its velocity is 5 m/s upwards. Find the ball’s speed when it left its initial position and its maximum height.
4. A 3 kg package is lowered down a 20 m long ramp at constant velocity. The ramp is at an angle of 30 degrees above the horizontal and the rope lowering the package is at an angle of 45 degrees above the ramp. The coefficient of friction between the package and the ramp is 0.3. Determine each force acting on the package and the work done by that force. Find the net work done on the package.
5. A 5 kg package slides up a 10 m ramp at an angle of 20 degrees above the horizontal. The coefficient of friction between the package and the ramp is 0.1. If the package reaches the top of the ramp with a speed of 1 m/s, determine its speed at the bottom of the ramp using energy analysis.
6. A 15 kg sled is initially moving with a velocity of 3 m/s 35 degrees east of north. How much work must be done on the sled to change its velocity to be 5 m/s due east?
7. M=100 kg and m=50 kg. The coefficient of friction between M and the surface is 0.1. Find the velocity of the blocks after m has descended 3 cm.