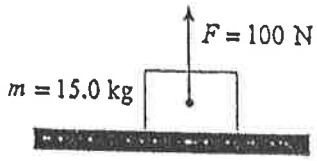
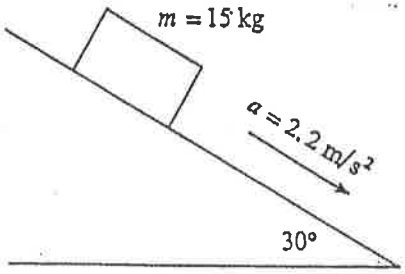
Practice Questions — Friction and Vectors

1. An 84 kg sled slides down an icy slope inclined at 28° to the horizontal. If the force of friction between the sled and the ice is 180 N, what is the coefficient of friction? (Ans. 0.25)

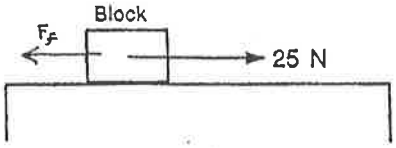
2. A 15 kg block on a horizontal surface has a 100 N force acting on it as shown. What is the normal force? (Ans. 47 N)



3. A 15 kg block has a constant acceleration of 2.2 m/s^2 down a 30° incline. What is the magnitude of the friction force? (Ans. 41 N)



4. A wooden block is pulled across a level table by a horizontal force of 25 N as shown. If the coefficient of friction between the block and the table is 0.40 and the block is observed to be accelerating at 5.0 m/s^2, what is the mass of the block of wood? (m = 2.8 kg)



5. A girl applies a 140 N force to a 35 kg bale of hay at an angle of 28° above the horizontal. The friction force acting on the bale is 55 N. What will be the horizontal acceleration of the bale? (Ans. 2.0 m/s^2)