

PHYS 201 ... Practice Problems

Chapter 4 Part B

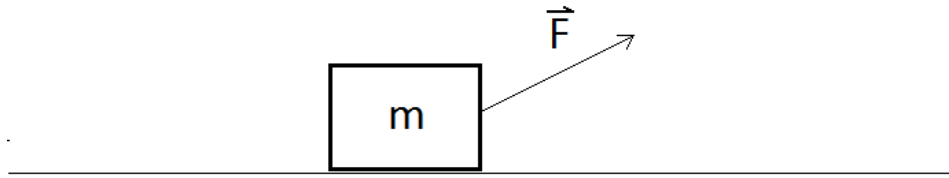


Figure #1

1. The block shown in figure #1 above has a mass of 4.30 kg. The applied force \vec{F} has a magnitude of 31.2 N and is directed at 38.0° above the horizontal frictionless surface the block is on.
 - a) What is the magnitude of the force of gravity that acts on the block?
 - b) What is the magnitude of the normal force that acts on the block?
 - c) What is the net force that acts on the block?
 - d) What is the acceleration of the block?
2. The block shown in figure #1 above has a mass of 12.6 kg. The applied force \vec{F} has a magnitude of 21.5 N and is directed at 29.4° above the horizontal surface the block is on. The block is initially at rest and remains at rest.
 - a) What is the magnitude of the force of gravity that acts on the block?
 - b) What is the magnitude of the normal force that acts on the block?
 - c) What is the acceleration (magnitude and direction) that is experienced by the block?
 - d) What is the net force (magnitude and direction) that acts on the block?
 - e) What is the frictional force (magnitude and direction) that acts on the block?
3. The block shown in figure #1 above has a mass of 8.16 kg. The applied force \vec{F} has a magnitude of 28.4 N and is directed at 23.0° above the horizontal surface the block is on. The block is initially at rest and accelerates to the right at 0.740 m/s^2 .
 - a) What is the magnitude of the force of gravity that acts on the block?
 - b) What is the magnitude of the normal force that acts on the block?
 - c) What is the net force (magnitude and direction) that acts on the block?
 - d) What is the frictional force (magnitude and direction) that acts on the block?
4. The block shown in figure #1 above has a mass of 22.7 kg. The applied force \vec{F} has a magnitude of 43.8 N and is directed at 36.8° above the horizontal surface the block is on. The block is initially traveling to the right at 12.2 m/s and slows at a rate of 1.08 m/s^2 .
 - a) What is the magnitude of the force of gravity that acts on the block?
 - b) What is the magnitude of the normal force that acts on the block?
 - c) What is the acceleration (magnitude and direction) that is experienced by the block?
 - d) What is the net force (magnitude and direction) that acts on the block?
 - e) What is the frictional force (magnitude and direction) that acts on the block?
5. The block shown in figure #1 above has a mass of 11.7 kg. The applied force \vec{F} has a magnitude of 45.0 N and is directed at 21.8° above the horizontal surface the block is on. The block is initially traveling to the right at 8.25 m/s and gets faster at a rate of 1.34 m/s^2 .
 - a) What is the magnitude of the force of gravity that acts on the block?
 - b) What is the magnitude of the normal force that acts on the block?
 - c) What is the acceleration (magnitude and direction) that is experienced by the block?
 - d) What is the net force (magnitude and direction) that acts on the block?
 - e) What is the frictional force (magnitude and direction) that acts on the block?