

Ayman Ghannam

Bb Examples

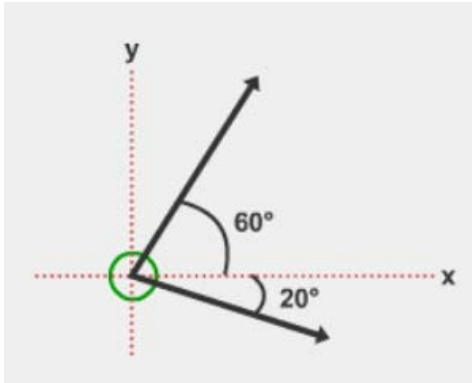
Chapter 5

Example 1

A particle is moving with constant velocity $v=2i-4j$. There are only two forces acting on the particle, one of them is $F_1=2i-6j$. What is the other force?

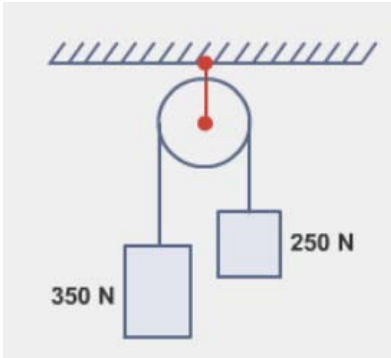
Example 2

A ball of mass 0.3 kg slides on a frictionless surface under the influence of only two forces as shown in the figure. F_1 has a magnitude of 5.0N and F_2 has a magnitude of 8.0N. Determine the magnitude and direction of the ball's acceleration.



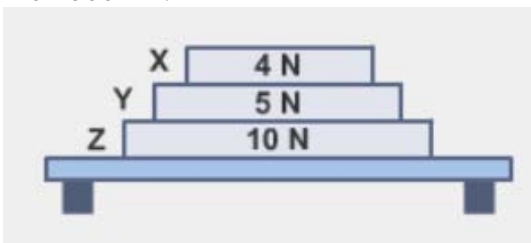
Example 3

A string that passes over a massless pulley as shown connects two blocks weighing 250N and 350N respectively. What is the tension in the string?



Example 4

Three books (X, Y, and Z) rest on a table. The weight of each book is indicated. What is the force exerted by book Z on book Y.

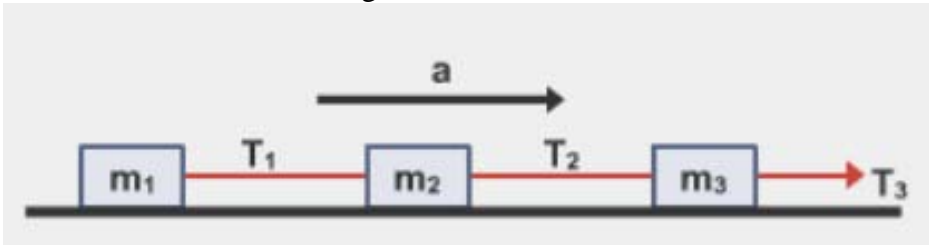


Example 5

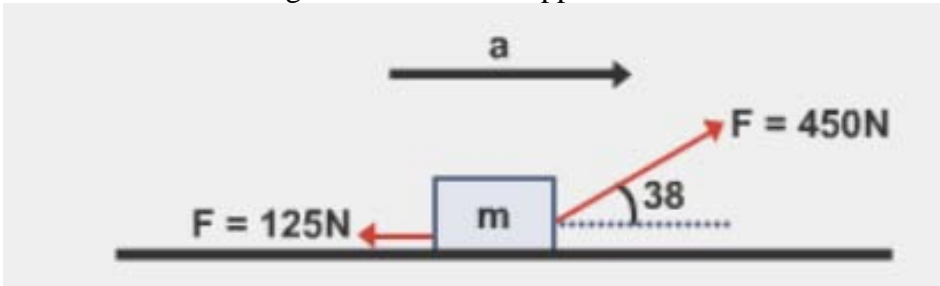
A man weighing 700N is in an elevator that is accelerating upward at 4 m/s^2 . What is the force exerted on him by the floor of the elevator.

Example 6

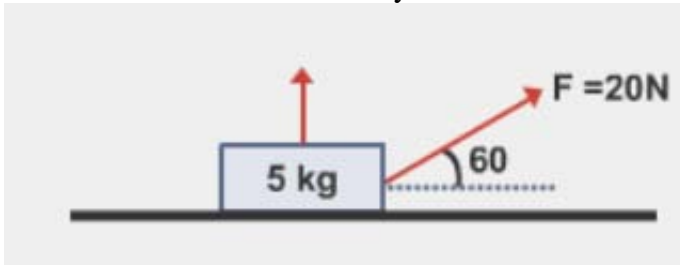
Three blocks are connected and pulled to the right on a horizontal frictionless table by a force with a magnitude $T_3=650\text{N}$. If $m_1=12.0\text{kg}$, $m_2=24.0\text{kg}$, and $m_3=31.0\text{kg}$, calculate the acceleration of the system and the tensions T_1 and T_2 in the interconnecting cords.

**Example 7**

A boy pulls a box of mass 310kg with a force of 450N , which is inclined 38° to the horizontal. The floor exerts a horizontal force of magnitude 125N that opposes the motion. Calculate the acceleration of the box.

**Example 8**

Calculate the normal exerted by the floor on the block of the following figure.

**Example 9**

A 3.5kg block is pulled at constant velocity along a horizontal floor by a force $F=15\text{N}$ that makes an angle of 40° with the horizontal. Find the magnitude of the force of friction between the block and the floor.

