## Module 09-Lesson 2

## Work for a Constant Force

**Question 1**: An airline passenger exerts a 60-N force on her suitcase, pulling at an angle of 30° with respect to the horizontal. How much work does the passenger do in pulling the suitcase 100 m on a level floor on her way to the gate?

**Question 2**: Find the work done by a force $\vec{F} = 2\hat{\imath} + 3\hat{\jmath}$ as it acts on an object moving from the origin to the point $\hat{\imath} - 2\hat{\jmath}$.

**Problem**: A box is being pulled along a horizontal surface by a force $\vec{F}$, which makes a constant angle $\theta = 30°$ with the horizontal, as shown in Fig. 1. The other forces exerted on the box are the gravitational force, the normal force, and the kinetic friction. The kinetic friction coefficient between the box and the horizontal surface is $\mu_k$. Find analytic expressions for the work done by each force when the box moves a distance $d$ to the right?

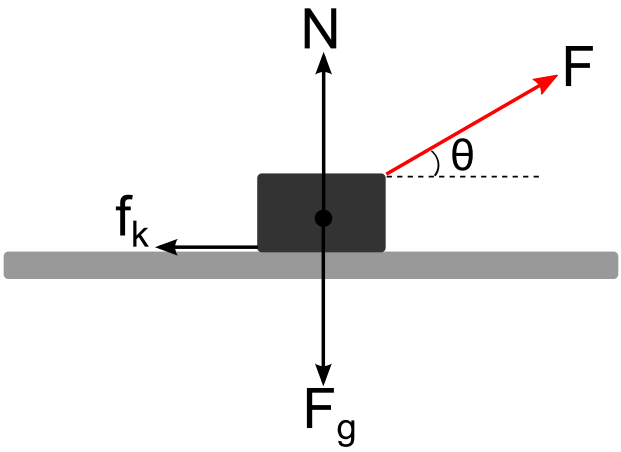


FIG. 1: Box pulled by force $\vec{F}$ at angle $\theta$.