Answer on Question #51939-Physics-Other

A boy intends to move an m-kg crate across the floor by applying a constant force P newtons on it. The coefficient of friction between the floor and the crate is μ. Which of these is the best option for his task?

Pull the crate with P applied horizontally

Push the crate with P inclined at an angle above the horizontal

Pull the crate with P inclined at an angle above the horizontal

Pull the crate with P inclined an angle below the horizontal

Solution

Best option is Pull the crate with P applied horizontally. Because only in this situation all value of force goes on moving the crate and against friction force:

$$P = ma - \mu mg.$$

In other cases part of this force spent on reaction against vertical forces (the weight or the floor reaction force).

Answer: Pull the crate with P applied horizontally.