

Topic 2: Mechanics

2.2 – Forces

Solving problems involving forces and resultant force

EXAMPLE: A 25-kg object resting on a frictionless incline is released, as shown. What is its acceleration?

SOLUTION:

- Begin with a FBD.
- Break down the weight into its components.
- Since R and $mg \cos 30^\circ$ are perpendicular to the path of the crate they do NOT contribute to its acceleration.

• Thus

$$F_{\text{net}} = ma$$

$$\cancel{mg \sin 30^\circ} = \cancel{ma}$$

$$a = 10 \sin 30^\circ = 5.0 \text{ m s}^{-2}.$$

