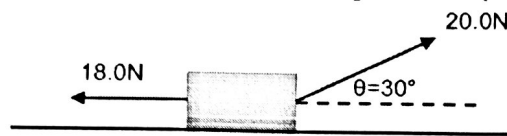
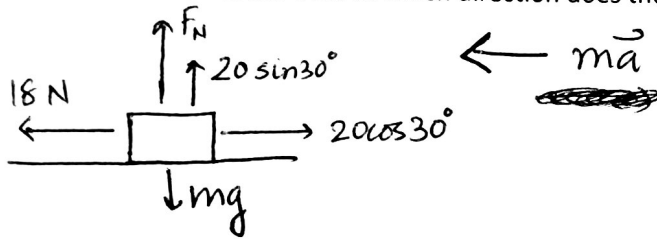


PHYSICS 271 - QUIZ 2 — SOLUTION

Q1. Two forces are acting on a box ($m = 2.0\text{kg}$) on a frictionless surface as shown.



a) What is the acceleration of the box? In which direction does the box move?



$$m\vec{a} = 18 - 20 \cos 30^\circ \Rightarrow a = \frac{18 - 20 \cos 30^\circ}{2} = 0.35 \text{ m/s}^2$$

b) What is the normal force?

$$\begin{aligned} F_N + 20 \sin 30^\circ &= mg \\ \Rightarrow F_N &= 2 \times 10 - 20 \times \frac{1}{2} \\ &= 10 \text{ N} \end{aligned}$$