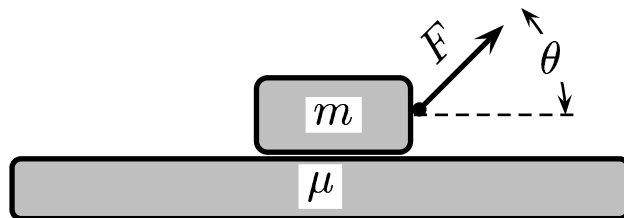


Given: $m = 1 \text{ kg}$, $\mu_s = 0.7$, $\mu_k = 0.5$, $F_x = 8 \text{ N}$, $F_y = 6 \text{ N}$.



Determine the friction force f .

- A) $f = F_x = 8 \text{ N}$.
- B) $f = \mu_s (m g - F_y) = (0.7) (4 \text{ N}) = 2.8 \text{ N}$.
- C) $f = \mu_k m g = (0.5) (10 \text{ N}) = 5 \text{ N}$.
- D) $f = \mu_k (m g - F_y) = (0.5) (4 \text{ N}) = 2 \text{ N}$.

Hint:

$$N = m g - F_y = (1 \text{ kg}) (10 \text{ m/s}^2) - (6 \text{ N}) = 4 \text{ N}.$$

$$f_s^{max} = \mu_s N = (0.7) (4 \text{ N}) = 2.8 \text{ N}.$$

$$f_s = F_x, \text{ or } f_k = \mu_k N.$$

Since $F_x = 8 \text{ N}$, which is stronger than the maximum static friction; *i.e.*, $f_s^{max} = \mu_s N = 0.7 \times 4 \text{ N} = 2.8 \text{ N}$, so the block is moving to the right.

The friction force involved is moving to the right. The friction force involved is kinetic friction. Equation $f_k = \mu_k N$ and $N = m g - F_y$.

Answer **D**.