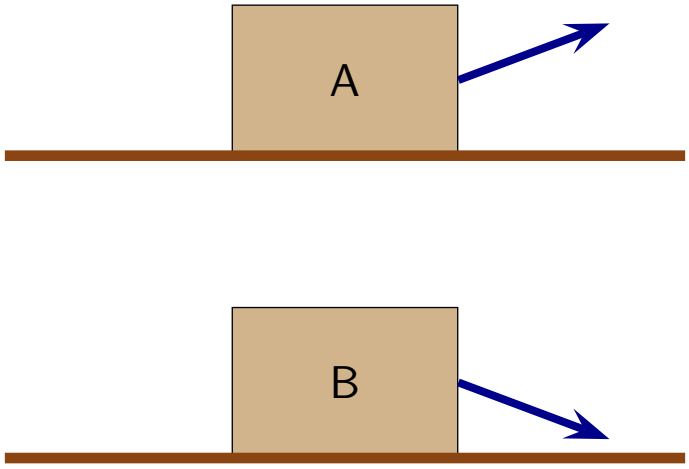
Warm Up Question 1

Consider a skier sliding down a ramp as in Example 5.12. Assume that there is no friction. Suppose that the skier were sliding up the hill. What, if anything, would change in the free-body diagram and how might this affect the acceleration of the skier (larger, smaller, same)? Explain your answer.

1. Forces are the same, acceleration smaller when sliding up.
2. Forces are the same, acceleration same when sliding up.
3. Net forces will be different, acceleration different.
4. Forces will be different, acceleration different.

Question 1

Two identical blocks are on the same surface. Forces with identical magnitudes act on the blocks at different angles.



Which of the following is true?

1. μ_k is same for both.
2. μ_k is larger for A.
3. μ_k is smaller for A.

Warm Up Question 2

A person pushes on a box that moves along a rough horizontal floor. The person can push with a force of constant magnitude but angled in various directions. Suppose that the person can push either angled right and down or else right and up. How does the frictional force for these two cases compare (same, larger when right and down, smaller when right and up,...)? Explain your answer.

1. Same.
2. Depends on the exact nature of the floor.
3. Larger for right and down. Pushes the box into the floor.
4. Larger for right and down. This would increase the gravitational force.
5. Larger for right and down. This would increase the normal force.

Question 2

A $10\,\mathrm{kg}$ box is at rest on a horizontal surface while a rope pulls on it as illustrated. The coefficient of static friction between the block and surface is $\mu_s = 0.50$.

Which of the following is true?

1. The static friction force is less than $30\,\mathrm{N}$.
2. The static friction force is $30\,\mathrm{N}$.
3. The static friction force is $0.50\,\mathrm{N}$.
4. The static friction force is $49\,\mathrm{N} (= \mu_s mg)$.