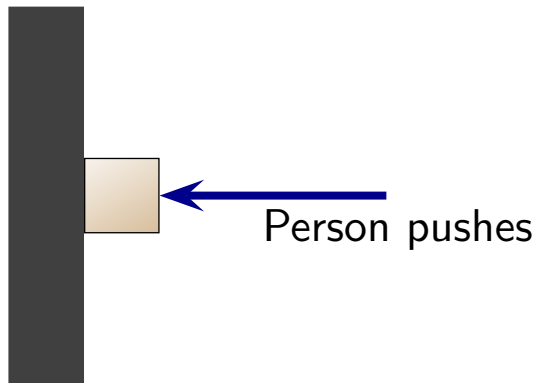# Question 1

A person pushes horizontally on a block in order to hold it against a vertical wall. The block is at rest.

Person pushes

Which of the following is true?

1. As the person pushes harder, the friction force stays the same.

2. As the person pushes harder, the friction force increases.

3. As the person pushes harder, the friction force decreases.

4. Angels are holding the block up.

Warm Up Question 1

> Two blocks are in contact and move along a horizontal surface (see Fig. 7.12). The mass of block A is a half that of block B. A hand pushes to the right as illustrated and the blocks move together. How does the force exerted on block B compare (same, half, larger, etc...) to that by the hand on block A? Explain your answer.

1. Larger (on B). It has a larger mass and $F = ma$.

2. Larger (on B). Needs a larger force to move.

3. Same. They have the same acceleration.

4. Same. Newton's Third Law.

5. Smaller (on B). Hand effectively moves both A and B. Force exerted by A only moves B.

6. Smaller (on B). B pushes back on A.

Warm Up Question 2

A $10\,\text{kg}$ blue block rests on a table. A $5\,\text{kg}$ red block is placed on top of the blue block. How does the force exerted by the red block on the blue block compare (in magnitude and direction) to the force exerted by the blue block on the red block?

1. Equal. Newton's third law.

2. Equal. Blue block exerts and equal force to the gravitational force on the red block. The red block is at rest.

3. Equal. No acceleration of the red block.

Question 2

A ball falls toward the floor of a spacecraft that is very distant from any planets or stars. It bounces off the floor. Consider the period when the ball is in contact with the floor. Which of the following is true?

1. $F_{\text{floor on ball}} > F_{\text{ball on floor}}$. The net force on the ball is thus non zero.

2. $\vec{F}_{\text{floor on ball}} = -\vec{F}_{\text{ball on floor}}$. The net force on the ball is thus zero.

3. $\vec{F}_{\text{floor on ball}} = -\vec{F}_{\text{ball on floor}}$. The net force on the ball is not zero.