Compare forces 1 and 2

1. Force 1 is bigger
2. Force 2 is bigger
3. They are equal in magnitude
4. There is not enough information to tell.

\[ \vec{F}_1 = \vec{F}^\text{normal}_{\text{table}\rightarrow\text{box}} \]

\[ \vec{F}_2 = \vec{F}^\text{weight}_{\text{earth}\rightarrow\text{box}} \]
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\[ \vec{F}_2 = \vec{F}_{\text{weight}}_{\text{earth} \rightarrow \text{box}} \]

\[ \vec{F}_3 = \vec{F}_{\text{normal}}_{\text{hand} \rightarrow \text{box}} \]
You are pulling the block along a table.
To ensure that the block speeds up at a constant rate you need to

1. Pull with a decreasing force.
2. Pull with a constant force.
3. Pull with an increasing force.
4. Not pull at all.
You are pulling the block along a table
To keep the block moving at constant speed

1. Pull with a decreasing force.
2. Pull with a constant force.
3. Pull with an increasing force.
4. Not pull at all.
You are pulling two blocks along a table with constant speed. Which one requires a larger force?

1. The 1 kg weight block
2. The 5 kg weight block
3. The require the same force.
4. There is not enough information to tell.
Suppose a block is being raised by a rope at constant speed. Which is the correct free-body diagram of the block?
7. The mover is pushing two crates along a frictionless horizontal surface. Consider the following four forces:

\[ \vec{F}_1 \] -- the force that the mover exerts on crate A
\[ \vec{F}_2 \] -- the force that crate B exerts on crate A
\[ \vec{F}_3 \] -- the force that crate A exerts on crate B
\[ \vec{F}_4 \] -- the force that crate A exerts on the mover

Which of the following correctly compares the magnitudes of these forces?

A. \( F_1 = F_2 = F_3 = F_4 \)
B. \( F_1 = F_2 = F_3 > F_4 \)
C. \( F_1 = F_4 > F_2 = F_3 \)
D. \( F_1 > F_3 > F_2 > F_4 \)
6. In each of the situations below, a mover pushes two crates along a horizontal surface, and the crates move together with a constant acceleration. The forces that the two blocks exert on each other are equal in magnitude in ______________. 

A. situation II  
B. situation III  
C. situation IV  
D. two of these situations  
E. All four of these situations

\[ a = 1 \text{ m/s}^2 \]

\[ a = 0 \]
In each of the situations below, a mover pushes two crates along a horizontal surface, and the crates move together with a constant acceleration. Which of these situation are possible only if one or more frictional forces are involved?

A. Situation II
B. Situation III
C. Situations II and III
D. Situations II, III, and IV
E. None -- all can happen frictionlessly.

\[ a = 1 \text{ m/s}^2 \]
\[ a = 0 \]