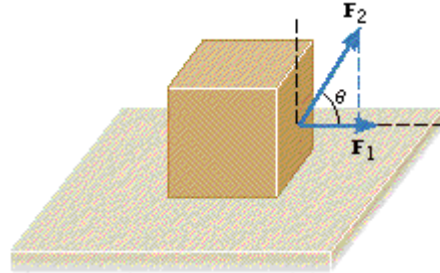


**cq6-7**

1. CJ6 6.CQ.001. [311073] Two forces  $\mathbf{F}_1$  and  $\mathbf{F}_2$  are acting on the box shown in the drawing, causing the box to move across the floor. The two force vectors are drawn to scale. Which force does more work? Justify your answer.



2. CJ6 6.CQ.013. [310907] In Example 10 the Steel Dragon starts with a speed of 3.0 m/s at the top of the drop and attains a speed of 42.9 m/s when it reaches the bottom. If the roller coaster were to then start up an identical hill, would its speed be 3.0 m/s at the top of this hill? Assume that friction is negligible.

- yes  
 no

Explain your answer in terms of energy concepts.

3. CJ6 6.CQ.014. [310979] A person is riding on a Ferris wheel. When the wheel makes one complete turn, is the net work done by the gravitational force positive, negative, or zero?

- positive  
 zero  
 negative

Justify your answer.

4. CJ6 6.CQ.016. [310896] A trapeze artist, starting from rest, swings downward on the bar, lets go at the bottom of the swing, and falls freely to the net. An assistant, standing on the same platform as the trapeze artist, jumps from rest straight downward. Friction and air resistance are negligible.

(a) On which person, if either, does gravity do the greatest amount of work?

- trapeze artist
- the person with more mass
- assistant

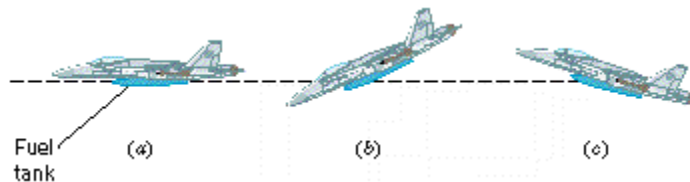
Explain.

(b) Who, if either, strikes the net with a greater speed?

- neither
- assistant
- trapeze artist

Why?

5. CJ6 6.CQ.017. [311017] The drawing shows an empty fuel tank being released by three different jet planes. At the moment of release, each plane has the same speed and each tank is at the same height above the ground. However, the directions of travel are different.



In the absence of air resistance, do the tanks have different speeds when they hit the ground?

- yes
- no

If so, which tank has the largest speed and which has the smallest speed?

largest

- a
- b
- c
- all the same

smallest

- a
- b
- c
- all the same

Explain.

