Physics questions?
(1) Read Ch. 4 – Forces and Newton's laws
Outline

(1) Applying Newton's Laws
(2) Uniform circular motion
-1- A body in uniform motion remains in uniform motion, and a body at rest remains so, unless acted on by a non-zero net force.

\[ \vec{F}_{\text{net}} = m \vec{a} \]

-2- For every action there is an equal and opposite reaction.

\[ \vec{F}_{12} = -\vec{F}_{21} \]
A woman pulls on a 6.00-kg crate, which in turn is connected to a 4.00-kg crate by a light rope. The light rope remains taut.

Compared to the 6.00-kg crate, the lighter 4.00-kg crate

A. is subjected to the same net force and has the same acceleration
B. is subjected to a smaller net force and has the same acceleration
C. is subjected to the same net force and has a smaller acceleration
D. is subjected to a smaller net force and has a smaller acceleration
E. none of the above
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In problem 4.47 an airplane pulls two gliders. The airplane produces forward thrust $F_p$ from its propeller. What is the third-law couple for $F_p$?

- **a-** Backward tension in tow rope connected to plane.
- **b-** Backward force on atmosphere from propeller.
- **c-** Backward force on airplane from drag.
- **d-** Gravity
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✓
You are pushing a 1.00-kg food tray through the cafeteria line with a constant 9.0-N force. As the tray moves, it pushes on a 0.50-kg milk carton.

If the food tray and milk carton move at constant speed,

A. the tray exerts more force on the milk carton than the milk carton exerts on the tray
B. the tray exerts less force on the milk carton than the milk carton exerts on the tray
C. the tray exerts as much force on the milk carton as the milk carton exerts on the tray
You are pushing a 1.00-kg food tray through the cafeteria line with a constant 9.0-N force. As the tray moves, it pushes on a 0.50-kg milk carton.

If the food tray and milk carton are accelerating to the left,

A. the tray exerts more force on the milk carton than the milk carton exerts on the tray

B. the tray exerts less force on the milk carton than the milk carton exerts on the tray

C. the tray exerts as much force on the milk carton as the milk carton exerts on the tray
The motion diagram shows an object moving along a curved path at constant speed. At which of the points A, C, and E does the object have *zero* acceleration?

A. point A only  
B. point C only  
C. point E only  
D. points A and C only  
E. points A, C, and E
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A. point A only  ✔
B. point C only
C. point E only
D. points A and C only
E. points A, C, and E
Q3.4a
An object moves at a constant speed in a clockwise direction around a circular track. The geometrical center of the track is at point \(O\). When the object is at point \(P\), which arrow shows the direction of the object’s acceleration vector?

A. arrow #1 (directly away from \(O\))
B. arrow #2 (perpendicular to track)
C. arrow #3 (in direction of motion)
D. arrow #4 (directly toward point \(O\))
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Astronauts in orbit are weightless because:

- a- gravity ends at the edge of Earth's atmosphere.

- b- they are too far from the center of Earth for gravity to affect them much.

- c- they are closer to the moon which mostly balances Earth's pull.

- d- they aren't weightless, they're just falling.

- e- there are good special effects on that “space set” in Arizona that NASA has been using for years.
Science teachers ride the vomit comet

http://www.youtube.com/watch?v=iCAzo-wTxiU&NR=1
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