Practice Exam Chapters 1-3.2 (Ungraded) (6034865)

Due: Wed Feb 3 2016 06:00 PM EST

Question 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Description

This practice exam will NOT be graded. However, it is in your best interest to practice. Many of these questions appeared on previous tests. I recommend that your first preparation for the test be to take the past test on the class website, then this one. In order to get the most from your studying, you should take both tests in as close to a testing environment as possible. Don't just assume you know how to do the problem because you've seen something like it before.

Instructions

On the actual test, all questions will be multiple choice and there will only be one correct answer.

1. Question Details SerCP8 2.CQ.001. [3497469]

If the velocity of a particle is nonzero, can the particle's acceleration be zero?

- yes
- no

Explain.

Key: If the velocity of the particle is nonzero, the particle is in motion. If the acceleration is zero, the velocity of the particle is unchanging or is constant.

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2. Question Details SerCP8 2.CQ.008. [3497457]

A ball is thrown vertically upward.

(a) What are its velocity and acceleration when it reaches its maximum altitude?

Key: At the maximum height, the ball is momentarily at rest. (That is, it has zero velocity.) The acceleration remains constant, with magnitude equal to the free-fall acceleration *g* and directed downward. Thus, even though the velocity is momentarily zero, it continues to change, and the ball will begin to gain speed in the downward direction.

(b) What is the acceleration of the ball just before it hits the ground?

Key: The acceleration of the ball remains constant in magnitude and direction throughout the ball's free flight, from the instant it leaves the hand until the instant just before it strikes the ground. The acceleration is directed downward and has a magnitude equal to the free-fall acceleration *g*.

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3. Question Details SerCP8 2.MC.005. [3497597]

A racing car starts from rest and reaches a final speed v in a time t. If the acceleration of the car is constant during this time, which of the following statements must be true? Select all that apply.

- ☐ The average speed of the car is $v/2$.
- ☐ The car travels a distance vt.
- ☐ The velocity of the car remains constant.
- ☐ The acceleration of the car is v/t.
- ☐ None of these

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4. Question Details SerCP8 2.MC.010. [3497463]

A student at the top of a building throws a red ball upward with speed v_0 and then throws a blue ball downward with the same initial speed V_0. Immediately before the two balls reach the ground (neglecting air friction), which of the following statements is/are *true?* Select all that apply.

- ☐ The acceleration of the blue ball is greater than that of the red ball.
- ☐ The speed of each ball is greater than V_0.
- ☐ The speed of the red ball is greater than that of the blue ball.
- ☐ The speed of the red ball is less than that of the blue ball.
- ☐ Their velocities are equal.

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5. Question Details SerCP8 2.P.029.soln. [3497651]

A truck covers 40.0 m in 9.45 s while smoothly slowing down to a final velocity of 2.40 m/s.

(a) Find the truck's original speed.

[ ] 6.07 m/s

(b) Find its acceleration.

[ ] -0.388 m/s^2

Solution or Explanation

(a) To find the truck's original speed, we use the following formula.

$$\Delta x = v_{av}\,(\Delta t) = \left(\frac{v + v_0}{2}\right)\Delta t$$

We then plug in what we know and solve for v_0.

$$40.0\text{ m} = \left(\frac{2.40\text{ m/s} + v_0}{2}\right)(9.45\text{ s})$$

$$v_0 = \underline{6.07}\ \underline{\text{m/s}}$$

(b) We find the acceleration using the following formula.

$$a = \frac{v - v_0}{\Delta t} = \frac{2.40\text{ m/s} - 6.07\text{ m/s}}{9.45\text{ s}} = \underline{-0.388}\ \underline{\text{m/s}^2}$$

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6. Question Details SerCP8 1.MC.006. [3496121]

A house is advertised as having 1420 square feet under roof. What is the area of this house in square meters?

- 222 m^2
- 176 m^2
- 115 m^2
- 132 m^2
- none of these

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7. Question Details SerCP8 1.MC.007. [3496277]

Which of the following is the best estimate for the mass of all the people living on Earth?

- 4×10^{12} kg
- 2×10^{8} kg
- 2×10^{10} kg
- 3×10^{11} kg
- 1×10^{9} kg

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8. Question Details SerCP8 2.MC.003. [3497655]

When applying the equations of kinematics for an object moving in one dimension, which of the following statements *must* be true?

- The *position* of the object must *increase* with time.
- The *acceleration* of the object must *remain constant*.
- The *velocity* of the object must *increase* with time.
- The *velocity* of the object must *remain constant*.
- The *velocity* of the object must always be in the *same direction* as its acceleration.

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9. Question Details SerCP8 2.MC.004. [3497513]

A juggler throws a bowling pin straight up in the air. After the pin leaves his hand and while it is in the air, which statement is true?

- The velocity of the pin is never in the same direction as its acceleration.
- The velocity of the pin is in the same direction as its acceleration on the way up.
- The velocity of the pin is always in the same direction as its acceleration.
- The velocity of the pin is opposite its acceleration on the way up.
- The acceleration of the pin is zero.

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10. Question Details SerCP8 3.MC.013. [3498997]

Which of the following quantities are vectors?

- ☐ the velocity of a sport car
- ☐ temperature
- ☐ the volume of water in a can
- ☐ the height of a building
- ☐ the displacement of a tennis player from the backline of the court to the net

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11. Question Details SerCP8 2.P.031. [3497700]

A Cessna aircraft has a lift-off speed of 120 km/h.

(a) What minimum constant acceleration does the aircraft require if the aircraft is to be airborne after a takeoff run of 260 m?

[ ] 2.14 m/s^2

(b) How long does it take the aircraft to become airborne?

[ ] 15.6 s

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12. Question Details SerCP9 1.MC.005. [3500213]

The Roman cubitus is an ancient unit of measure equivalent to about 445 mm. Convert the 2.00-m height of a basketball forward to cubiti.

- 2.52 cubiti
- 3.12 cubiti
- 4.49 cubiti
- 5.33 cubiti
- none of these

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13. Question Details SerCP9 1.MC.007. [3500125]

Answer each question yes or no.

(a) Must two quantities have the same dimensions if you are adding them?

- Yes
- No

(b) Must two quantities have the same dimensions if you are multiplying them?

- Yes
- No

(c) Must two quantities have the same dimensions if you are subtracting them?

- Yes
- No

(d) Must two quantities have the same dimensions if you are dividing them?

- Yes
- No

(e) Must two quantities have the same dimensions if you are equating them?

- Yes
- No

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14. Question Details SerCP9 1.MC.010. [3500276]

The price of gasoline at a particular station is 1.7 euros per liter. An American student can use 31 euros to buy gasoline. Knowing that 4 quarts make a gallon and that 1 liter is close to 1 quart, how much gas can she buy.

She can buy about [ ] 4.56 gallons of gas.

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15. Question Details SerCP9 2.MC.001. [3501635]

An arrow is shot straight up in the air at an initial speed of 15.0 m/s. After how much time is the arrow heading downward at a speed of 8.00 m/s?

- 0.714 s
- 1.24 s
- 1.87 s
- 2.35 s
- 3.22 s

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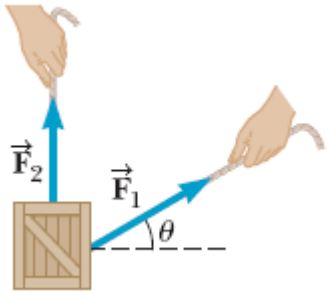
16. Question Details SerCP9 3.P.008. [3502618]

A force $\vec{F}_1$ of magnitude 5.30 units acts on an object at the origin in a direction θ = 31.0° above the positive *x*-axis. (See the figure below.) A second force $\vec{F}_2$ of magnitude 5.00 units acts on the object in the direction of the positive *y*-axis. Find graphically the magnitude and direction of the resultant force $\vec{F}_1 + \vec{F}_2$.

magnitude [ ] 8.97 units

direction [ ] 59.6 ° counterclockwise from the +*x* axis



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17. Question Details SerCP9 3.P.011.WI. [3502698]

The magnitude of vector $\vec{A}$ is 37.5 units and points in the direction 330° counterclockwise from the positive *x*-axis. Calculate the *x*- and *y*-components of this vector.

A_x = [ ] 32.5 units

A_y = [ ] -18.8 units

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18. Question Details SerCP9 3.P.013. [3502708]

A girl delivering newspapers covers her route by traveling 8.00 blocks west, 4.00 blocks north, and then 4.00 blocks east.

(a) What is her resultant displacement?

[ ] 5.66 blocks

(b) What is the total distance she travels?

[ ] 16 blocks

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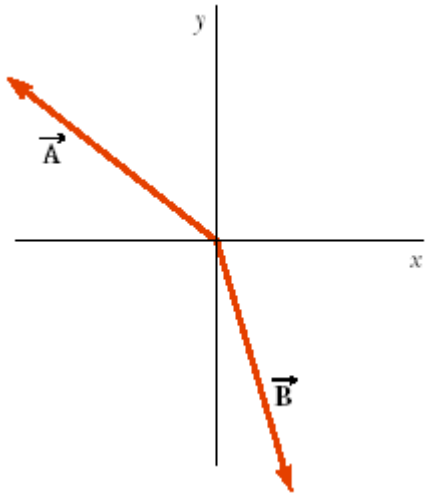
19. Question Details SerCP9 3.QQ.002. [3502591]

The figure below shows two vectors lying in the *xy* plane. Determine the signs of the *x* and *y* components of $\vec{A}$, $\vec{B}$, and $\vec{A} + \vec{B}$, and place your answers in the following table.

Vector	*x* component	*y* component
$\vec{A}$	---Select--- -	---Select--- +
$\vec{B}$	---Select--- +	---Select--- -
$\vec{A} + \vec{B}$	---Select--- -	---Select--- -



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Assignment Details

Name (AID): **Practice Exam Chapters 1-3.2 (Ungraded) (6034865)**
Submissions Allowed: **10**
Category: **Homework**
Code:
Locked: **Yes**
Author: **Holcomb, Mikel (** mickybarry@gmail.com **)**
Last Saved: **Sep 10, 2014 10:42 AM EDT**
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