Physics
9 Weeks Review, Form: A

Name: _____
Date: _____
Period: _____
Primary Peer Reviewer: _____

+1	0	-1	Σ

Section 1. Multiple Choice

Choose the best answer to each question.

1. Students complete a laboratory investigation. Who is responsible for returning the materials to their proper place?

2. The data table below lists the masses and speeds of four objects:

Object:	Speed (m/s)	Mass (kg)
A	4	3
B	3	4
C	1	2
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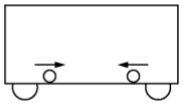
   Which object has the greatest inertia?

3. A train is traveling to the right with a constant speed v_t. Two identical spheres are rolling on the floor of one train car. In the frame of reference of the train, the spheres are moving directly toward each other with a speed v_p, parallel to the train's motion, as shown in the figure above. A person is standing outside the train as it passes by. What are the velocities that the person would measure of each of the spheres as the train passes by?



4. Diana is in a bowling tournament when she rolls a bowling ball with an initial speed of 15 m/s toward the pins. Due to friction, the bowling ball decelerates at a rate of 0.3 m/s^2. What is the final speed of the bowling ball when it hits the pins, 18.9 meters away?

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5. What is the magnitude of the player's displacement at the end of the drill? (Hint: Magnitude means number only and not direction.)

6. What is the player's average speed during this drill?

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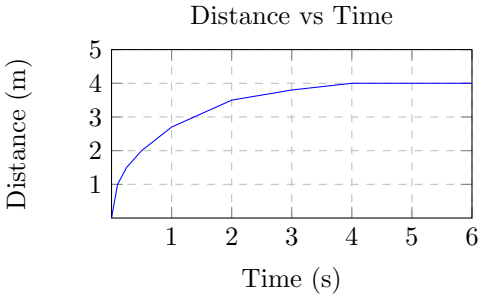
8. The graph below represents the relationship between the distance traveled and time elapsed for an object in motion.



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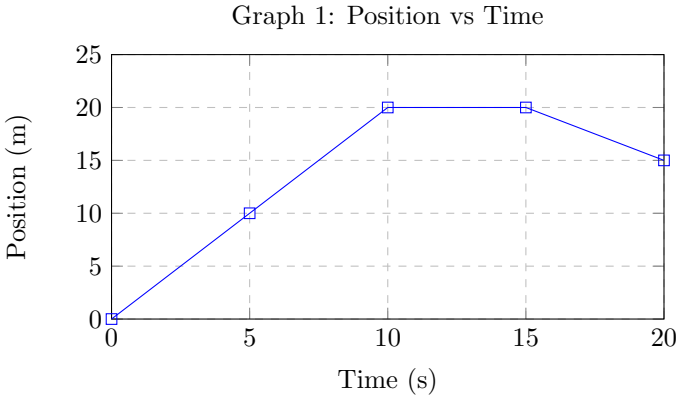

9. What is the average speed of this object from 0 to 10 seconds?

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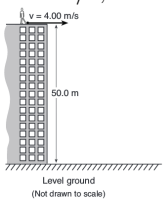

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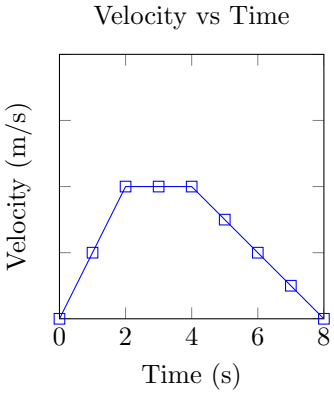
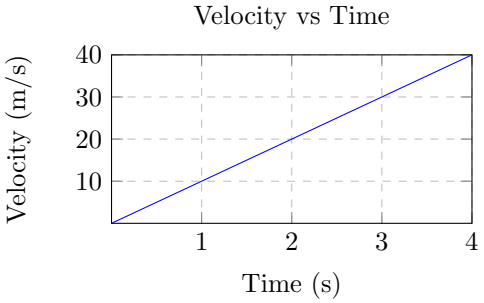


Describe the motion of the object from 4 to 8 seconds.

20. A blue sphere and a red sphere with the same diameter are released from rest at the top of a ramp. The red sphere takes a longer time to reach the bottom of the ramp. The spheres are then rolled off a horizontal table at the same time with the same speed and fall freely to the floor. Which sphere reaches the floor first?

21. A car is traveling eastward along a straight road. The graph below represents the velocity of the car as a function of time, t.



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22. A bus is moving forward at 20 m/s. A student on the bus throws a tennis ball horizontally at 15 m/s toward the front of the bus. From the perspective of an observer standing on the sidewalk outside the bus, the tennis ball appears to move at -

23. During a baseball game, a player hits a ball directly up. It is in the air for a total of 6.2 seconds. At the top of its path, the acceleration of the ball is -

24. A man rolls a ball up a hill with an initial speed of 2 m/s. 10 seconds later, it is traveling at 5.2 m/s down the hill. What is the ball's acceleration?

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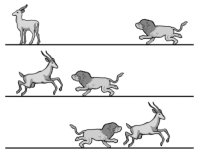
30. A lion is running at a constant speed toward a gazelle that is standing still, as shown in the top figure. After several seconds, the gazelle notices the lion and accelerates directly toward him, hoping to pass the lion and force him to reverse direction. As the gazelle accelerates toward and past the lion, the lion changes direction and accelerates in pursuit of the gazelle. The lion and Gazelle eventually reach constant but different speeds.



Sketch graphs that show a reasonable representation of the velocities of the lion and the gazelle as functions of time.

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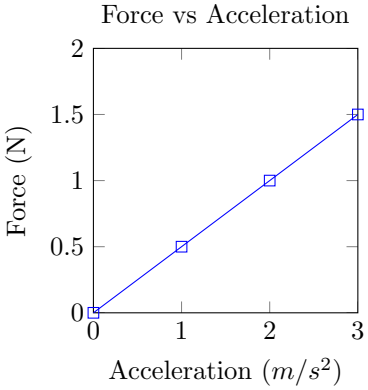

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33. A blue car and a red car are racing. Both cars start from a stop and accelerate, each at a different constant rate. The blue car crosses the finish line in 10 seconds, and the red car crosses the finish line in 30 seconds. Compared to the blue car's final velocity, the red car's final velocity was -

Section 2. Multiple Correct Multiple Choice

For the following question, ***choose two*** *correct answers. No credit will be given for incorrect or partially correct answers. Mark* ***both*** *answers clearly.*

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35. Which of the following objects are accelerating? (CHOOSE TWO)
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36. A car starts from rest and accelerates at a constant rate of 3 m/s^2. What additional information could be used to calculate the final velocity of the car? (CHOOSE TWO)
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Answer Key for Exam A

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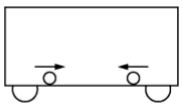

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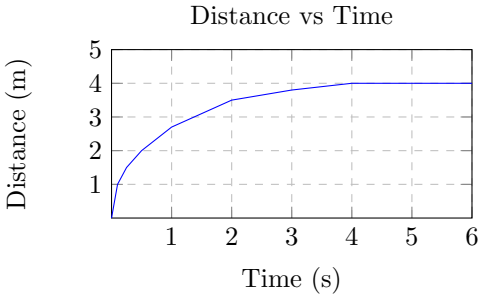

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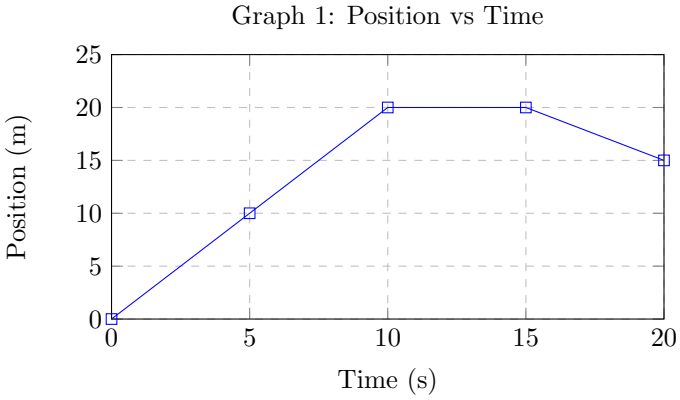

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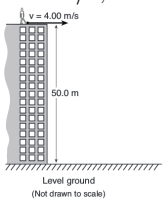

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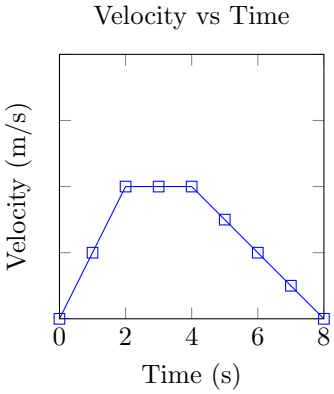

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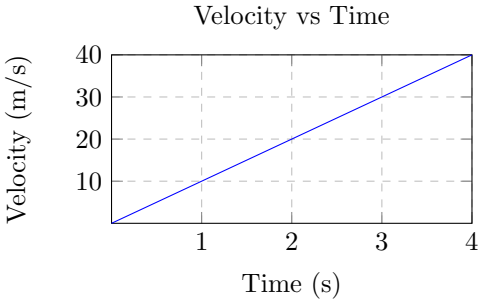

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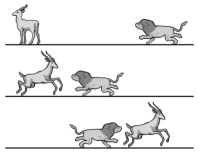

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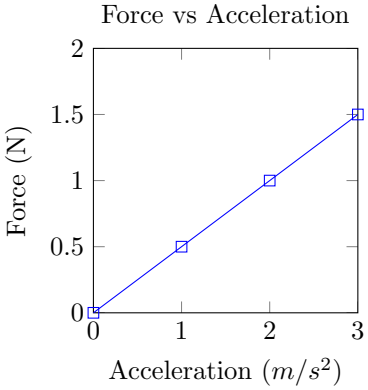

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Physics
9 Weeks Review, Form: B

Name: _____
Date: _____
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+1	0	-1	Σ

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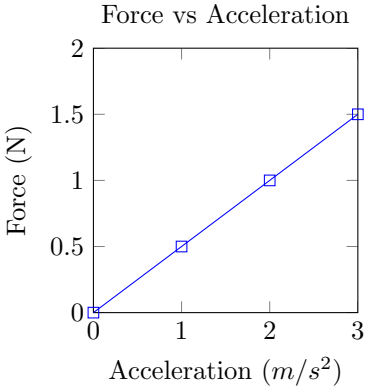

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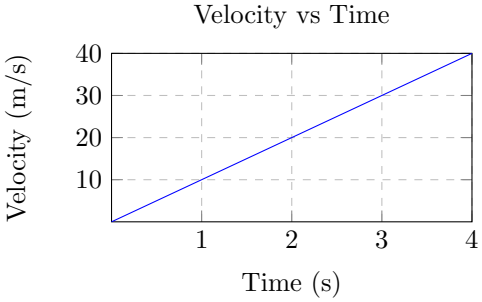

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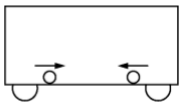

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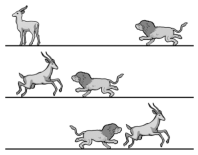

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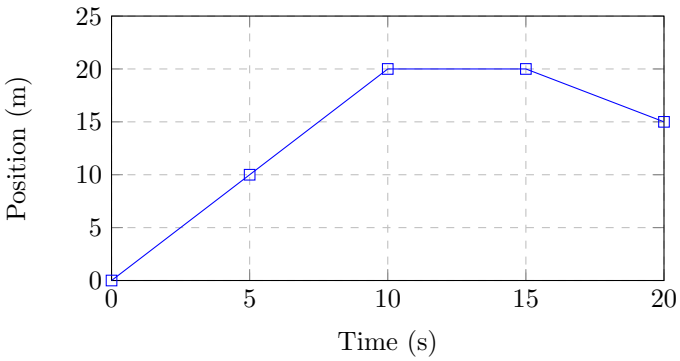

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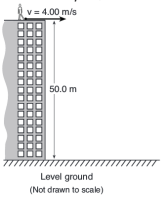

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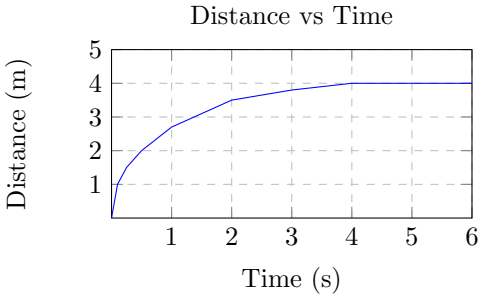

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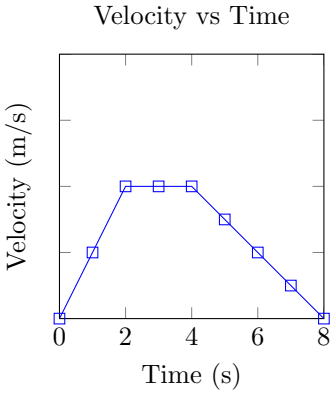

Describe the motion of the object from 4 to 8 seconds.

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Section 2. Multiple Correct Multiple Choice

For the following question, ***choose two*** *correct answers. No credit will be given for incorrect or partially correct answers. Mark* ***both*** *answers clearly.*

34. Which of the following objects are accelerating? (CHOOSE TWO)
    (a) A train that slows down as it pulls into the station.
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    (e) An airplane traveling in a straight line at a constant speed.

35. A car starts from rest and accelerates at a constant rate of 3 m/s^2. What additional information could be used to calculate the final velocity of the car? (CHOOSE TWO)
    (a) The time the car is accelerating.
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    (a) 15 s
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37. A woman throws a rock horizontally off of a cliff. Which of the following statements are true concerning the time it takes for the rock to hit the ground. (CHOOSE TWO)
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38. Which of the following quantities are scalars? (CHOOSE TWO)
    (a) Distance
    (b) Displacement
    (c) Speed
    (d) Velocity
    (e) Acceleration

Answer Key for Exam B

Section 1. Multiple Choice

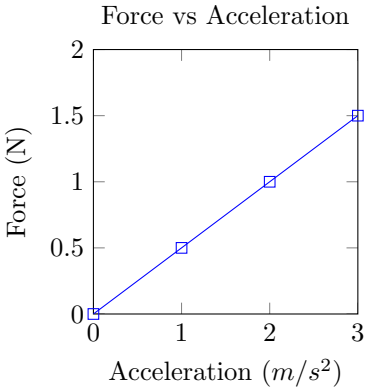
Choose the best answer to each question.

1. An airplane is traveling north at 200 m/s when it encounters a 80 m/s crosswind from west to east. What is the resultant speed of the plane, rounded to the nearest whole number?

2. A student drops an object from the top of a building 19.6 meters from the ground. How long does it take the object to fall to the ground?

3. Diana is in a bowling tournament when she rolls a bowling ball with an initial speed of 15 m/s toward the pins. Due to friction, the bowling ball decelerates at a rate of 0.3 m/s^2. What is the final speed of the bowling ball when it hits the pins, 18.9 meters away?

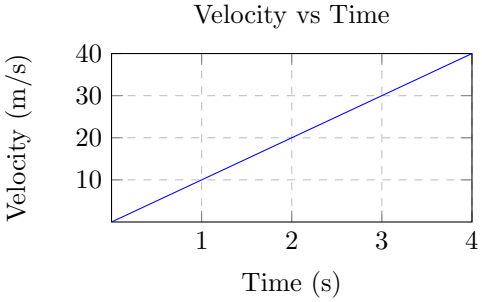
4. The following graph shows the relationship between the force on an object and the acceleration of an object.:



   What is the Mass of the object?

5. A person walks 5.0 kilometers north, then 5.0 kilometers east. What is the person's net displacement?

6. A car is traveling eastward along a straight road. The graph below represents the velocity of the car as a function of time, t.



   What is the magnitude of the displacement of the car from t = 2.0 seconds to t = 4.0 seconds?

7. An airplane starts from rest and accelerates at a constant rate along a runway for a distance d in time t. If the same airplane were to accelerate at the same rate, what would be the time it takes the airplane to go a distance 3d, in terms of t?

8. An astronaut is standing on the surface of Venus. (Venus has an atmosphere that is nearly 100 times thicker than Earth's, and $g_{venus} = 8.87 m/s^2$) He holds a hammer in one hand and a feather in the other hand, the same distance from the surface. He drops both at the same time. Which is the best description of what happens?

9. Gravity on the moon is approximately 1/6th that of gravity on the earth. An astronaut on the moon drops a rock from a height, h, that causes it to hit the surface of the moon 1 second later. If a rock were dropped from the same height on earth, how much later would it hit the ground?

10. The data table below lists the masses and speeds of four objects:

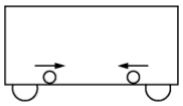
Object:	Speed (m/s)	Mass (kg)
A	4	3
B	3	4
C	1	2
D	0	5

Which object has the greatest inertia?

11. A man rolls a ball up a hill with an initial speed of 2 m/s. 10 seconds later, it is traveling at 5.2 m/s down the hill. What is the ball's acceleration?

12. What is acceleration?

13. A train is traveling to the right with a constant speed v_t. Two identical spheres are rolling on the floor of one train car. In the frame of reference of the train, the spheres are moving directly toward each other with a speed v_p, parallel to the train's motion, as shown in the figure above. A person is standing outside the train as it passes by. What are the velocities that the person would measure of each of the spheres as the train passes by?



14. A bus is moving forward at 20 m/s. A student on the bus throws a tennis ball horizontally at 15 m/s toward the front of the bus. From the perspective of an observer standing on the sidewalk outside the bus, the tennis ball appears to move at -

15. Billy throws a baseball upward and the catches it. If upward is to be the positive direction, sketch a graph that shows the baseball's velocity vs time.

The following two questions refer to the following information:

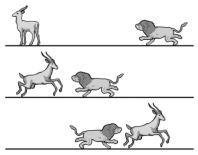
During a drill in basketball practice, a player runs the length of a 40 meter court and back. The player does this four times in 120 seconds.

16. What is the magnitude of the player's displacement at the end of the drill? (Hint: Magnitude means number only and not direction.)

17. What is the player's average speed during this drill?

18. During the 2012 Olympics in London, Usain Bolt ran 400 meters in 45.35 seconds. What was his average speed?

19. A lion is running at a constant speed toward a gazelle that is standing still, as shown in the top figure. After several seconds, the gazelle notices the lion and accelerates directly toward him, hoping to pass the lion and force him to reverse direction. As the gazelle accelerates toward and past the lion, the lion changes direction and accelerates in pursuit of the gazelle. The lion and Gazelle eventually reach constant but different speeds.



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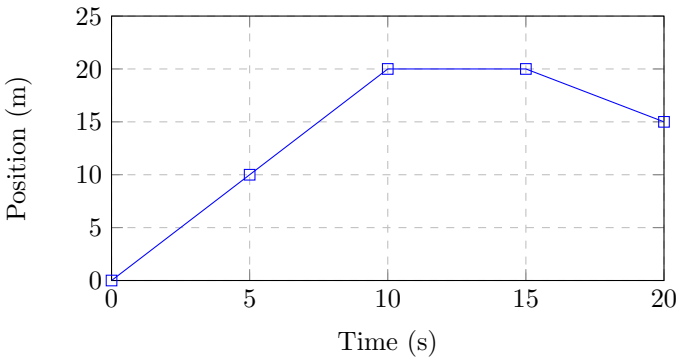

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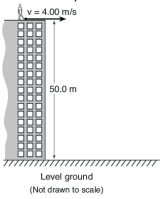

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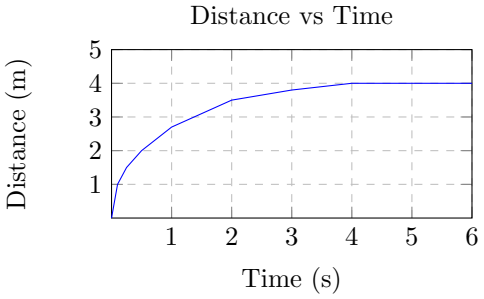

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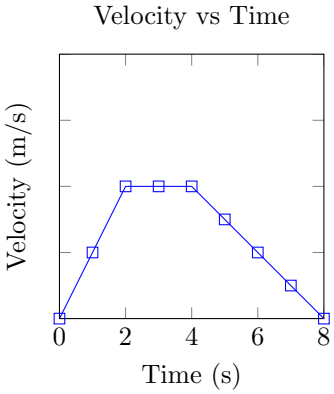

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