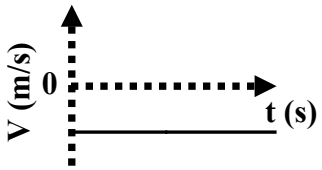
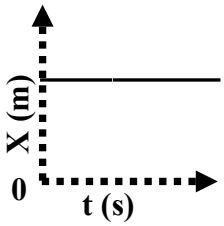
Match the type of motion shown in part 1 of each problem a correct version of it. ***If none of the answers are correct on any part of the multiple choice test choose choice "E".***

1. **Part 1**



A.



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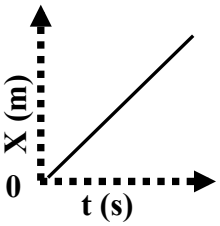

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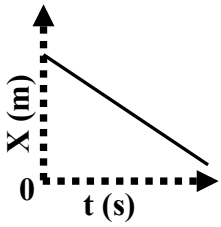

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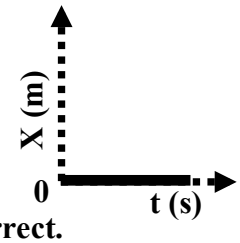
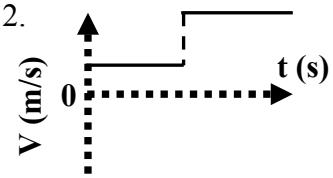


E. None of the answers are correct.

2. **Part 1**



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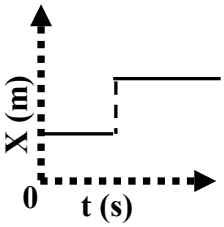

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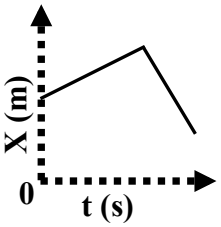

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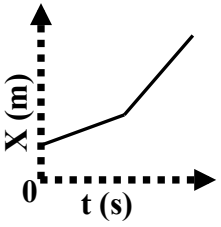

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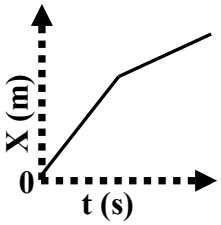
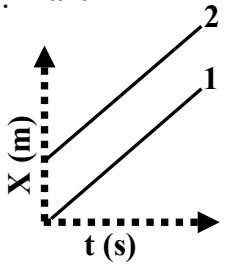


E. None of the answers are correct.

3. **Part 1**



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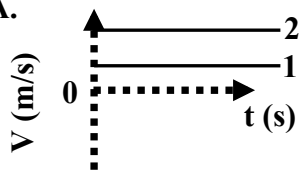

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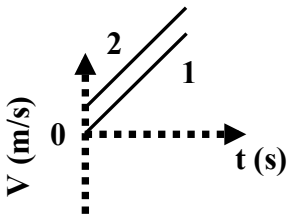

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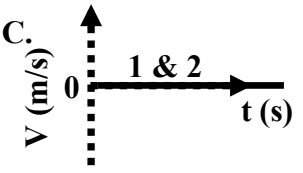

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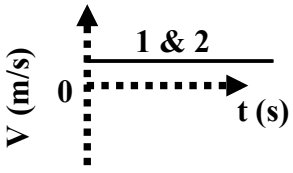
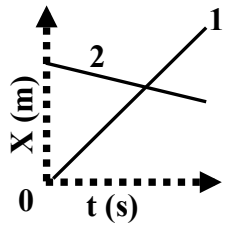
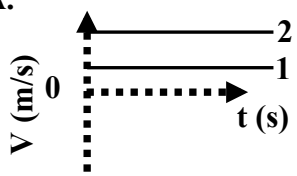


E. None of the answers are correct.

4. Part 1



A.



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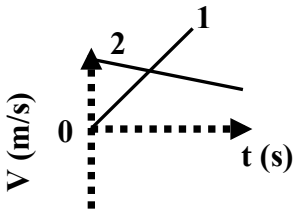

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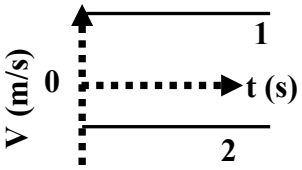

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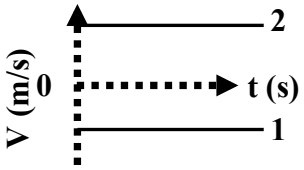
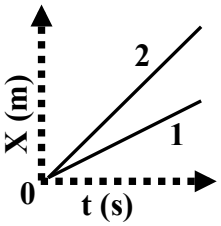
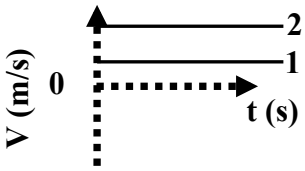


E. None of the answers are correct.

5. Part 1



A.



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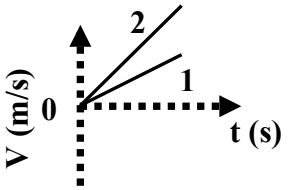

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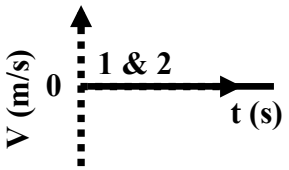

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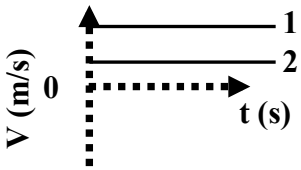
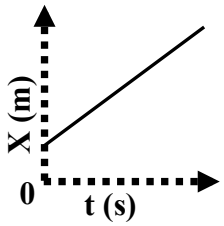
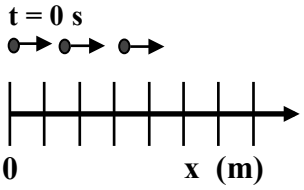


E. None of the answers are correct.

6. Part 1



A.



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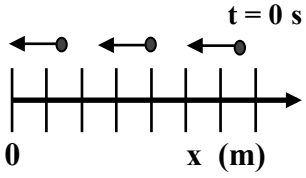

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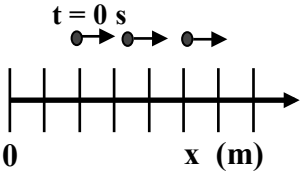
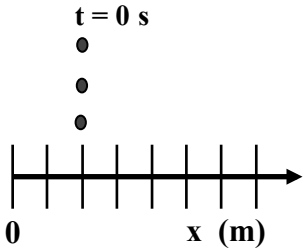
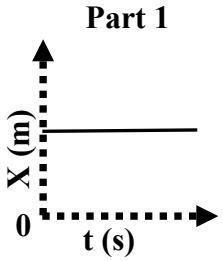


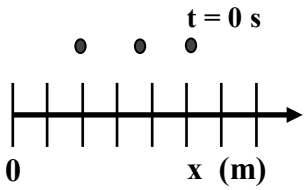
D.



E. None of the answers are correct.

7.



A.


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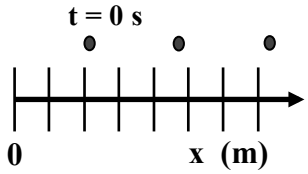
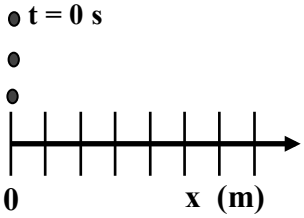
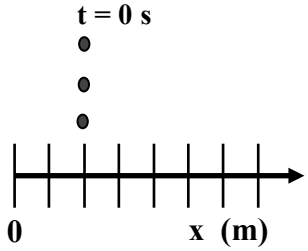
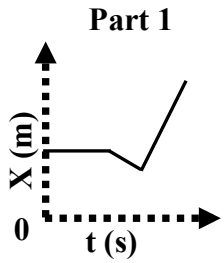


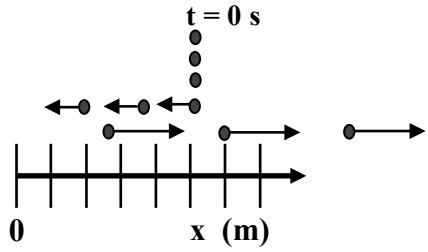
C.


D.


E. None of the answers are correct.

8.



A.


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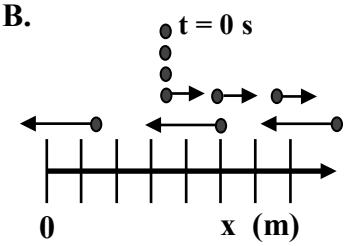

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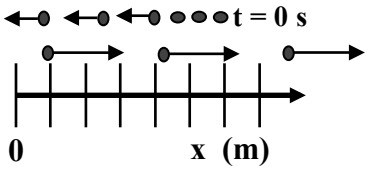
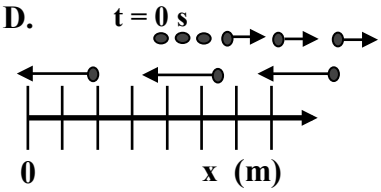


D.


E. None of the answers are correct.

For the following questions choose the answer that best fits.

9. What is the formula for finding **speed**?
   A. Change in Position / Change in Time B. Displacement / Time
   C. Distance / Time D. Distance * Time

10. In the Buggy Lab, the units for the slope of the position versus time graph are:
   A. Position / Time B. Meters C. Seconds D. Meters / Seconds E. Distance / Time

11. On a position vs time graph a positive velocity is shown by a:
   A. straight line with constant negative slope. B. straight line with constant positive slope.
   C. straight line with zero slope. D. straight line

12. On a velocity vs time graph what does it not tell you:
   A. The initial velocity. B. The final velocity.
   C. The initial position. D. The change in position.

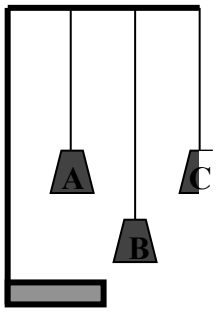
13. How on a position vs time graph is the velocity found?
    A. The area under the curve. B. The final y-axis coordinates – the initial y-axis coordinates.
    C. The slope of the line. D. The final x-axis coordinates – the initial x-axis coordinates.

14. How on a position vs time graph is the displacement found?
    A. The area under the curve. B. The final y-axis coordinates – the initial y-axis coordinates.
    C. The slope of the line. D. The final x-axis coordinates – the initial x-axis coordinates.

15. How on a velocity vs time graph is the displacement found?
    A. The area under the curve. B. The final y-axis coordinates – the initial y-axis coordinates.
    C. The slope of the line. D. The final x-axis coordinates – the initial x-axis coordinates.

16. In the pendulum lab, the variable(s) which affected the period of the pendulum was (were):
    a. mass b. length c. amplitude d. all of the them

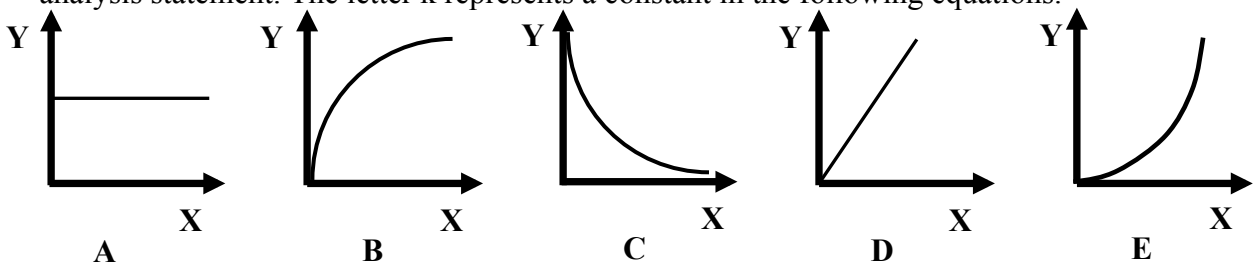
    For the following questions consider the pendulum apparatus shown below.
    Bobs **a** and **b** have masses of 20. g; bob **c** has a mass of 10. g.



17. Suppose you pulled bobs **a** and **c** back through an angle of 5°, how would their periods compare?
    a. the period of **a** is greater
    b. the period of **c** is greater
    c. the periods are equal
    d. you can't tell because the masses are different

18. Suppose that you pulled bobs **a** and **b** back through an angle of 5°, how would their periods compare?
    a. the period of **a** is greater b. the period of **b** is greater
    c. the periods are equal d. you can't tell because the lengths are different

    In questions 19-23, match a letter from each of the following graphs with its corresponding graphical analysis statement. The letter k represents a constant in the following equations.



19. Which graph would you linearize by plotting Y vs $\frac{1}{X}$

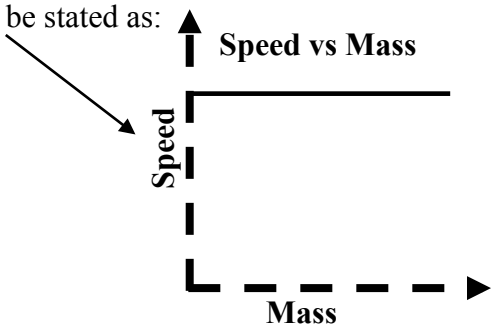
20. Which graph is does the equation $Y = kX + 0$.

21. Which of these graphs best represents the relationship between the time of a pendulum's swing and its release angle?

22. Which graph would you linearize by plotting Y^2 vs. X?

23. Which graph would you linearize by plotting y vs. x^2

24. The graphical representation between speed and mass could best be stated as:



Question 24 & 25

a. The speed of fall is directly proportional to the mass.
b. The speed of fall is proportional to the square root of the mass.
c. The speed of fall is inversely proportional to the mass.
d. The speed of fall is proportional to the square of the mass.
e. There is no relationship between the speed of fall and mass.

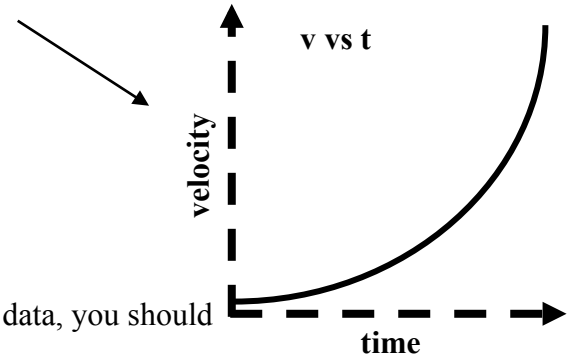
25. The mathematical equation for the graph above is best represented by

a. speed = k(mass)
b. $\text{speed}^2 = k(\text{mass})$

c. $\text{speed} = k\,\frac{1}{\text{mass}}$

d. $\text{speed} = k(\text{mass})^2$
e. speed = b

26. The graphical representation between velocity and time is best stated by



Question 26 & 27

a. Velocity is directly proportional to time.
b. Velocity is proportional to the square of time.
c. Velocity is inversely proportional to time.
d. Velocity is proportional to the square root of time.
e. There is no relationship between velocity and time.

27. In an effort to create a straight line graph from the above data, you should

a. square the time values.
b. invert the time values.
c. square the velocity values.
d. invert the velocity values.
e. do nothing; you can't get a straight line out of this.