WHS Algebra 1-2 Name: _____
Dr. Hartman
3.1-3.2, graphing, motion rangers quiz! Period: _____ Date: _____

Show all work / give justification on the **left** hand side. **Save** the **right** hand side for corrections.

For 1-2, determine whether the relation is a function. Explain.

1.

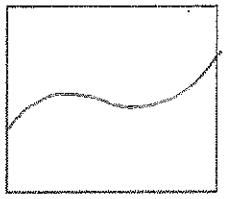
Input, *x*	9	7	5	3	1
Output, *y*	1	2	2	3	4

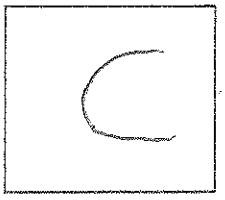
Function. Each input is different! Each input Thus gets exactly one output!

2. {(5, 4), (3, 10), (1, 16), (3, 8), (-1, 6)}

Not a function the input of 3 cannot have two different outputs!

3. Draw a graph that IS a function and is NOT a function





IS NOT

Pass vertical line test Fails VLT

4. The function $c = 15 + 9h$ represents the amount c (in \$) it will cost you for a one-time lawn care service of h hours.

Identify the independent and dependent variables.

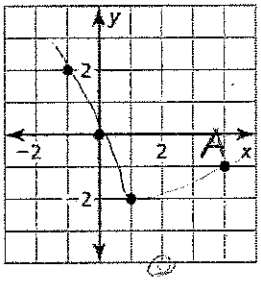
x or inputs: h hours y or output: C cost in $

Is the domain discrete or continuous? Explain.

Continuous as time continues ... its not stopping like buying 1 cup, 2 cups, 3 cups...

Determine whether the graph, table, or equation represents a *linear* or *nonlinear* function. Explain.

5.



Non linear, you would need to move point A from (4, −1) of (2, −4) to make a LINE

6.

x	y
−3	4
0	6
3	8

+3 +2 +3 +2

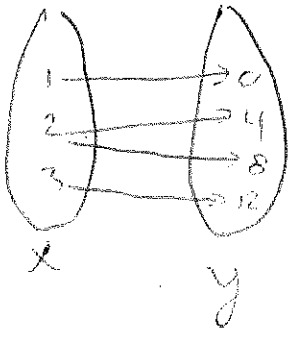
y's change by 2 as x's change by 3

Linear

7. $4x^2 + y = -3$

Non linear Can't have!

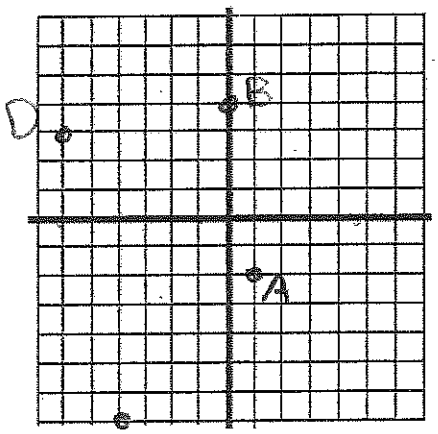
8. Sketch a mapping diagram that is NOT a function.

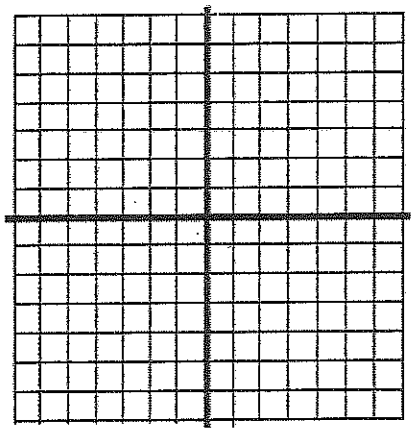


Can't have 2 arrows leaving the same input

9. Plot the coordinates on the graph.
(Please label your points.)

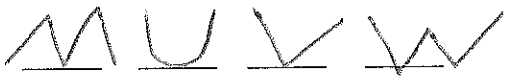
A (1, -2) B (0, 4) C (-4, -7) D (-6, 3)





10. Dr. Pepper says he can <u>for sure</u> make 4 different capital letters with the motion ranger (click, click, click). He also says there are 2 or 3 MORE capital letters that he can <u>almost</u> make not perfect, but pretty good.

Which Letters CAN he make for sure?



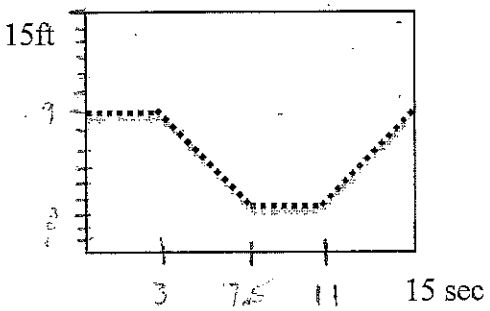
What do you think the other "2 or 3" letters are that Dr. Pepper is talking about?

Maybe  Maybe  (Maybe )

N J L

A B C D E F G H I K OPQRST XYZ

11. Describe in fine DETAIL the steps one would take to match the following graph using the motion ranger.



Start 9 feet from the wall.

Stand still for 3 seconds.

Start walking towards the wall

at a steady pace, approx $\frac{6\text{ ft}}{4\frac{1}{2}\text{ sec}}$

Walk at this pace for about 4 ½ sec.

Then stand still for about 3 ½ sec.

Then start walking away from

the wall at a steady pace,

approx $\frac{6\text{ ft}}{4\text{ sec}}$, for about 4 seconds.

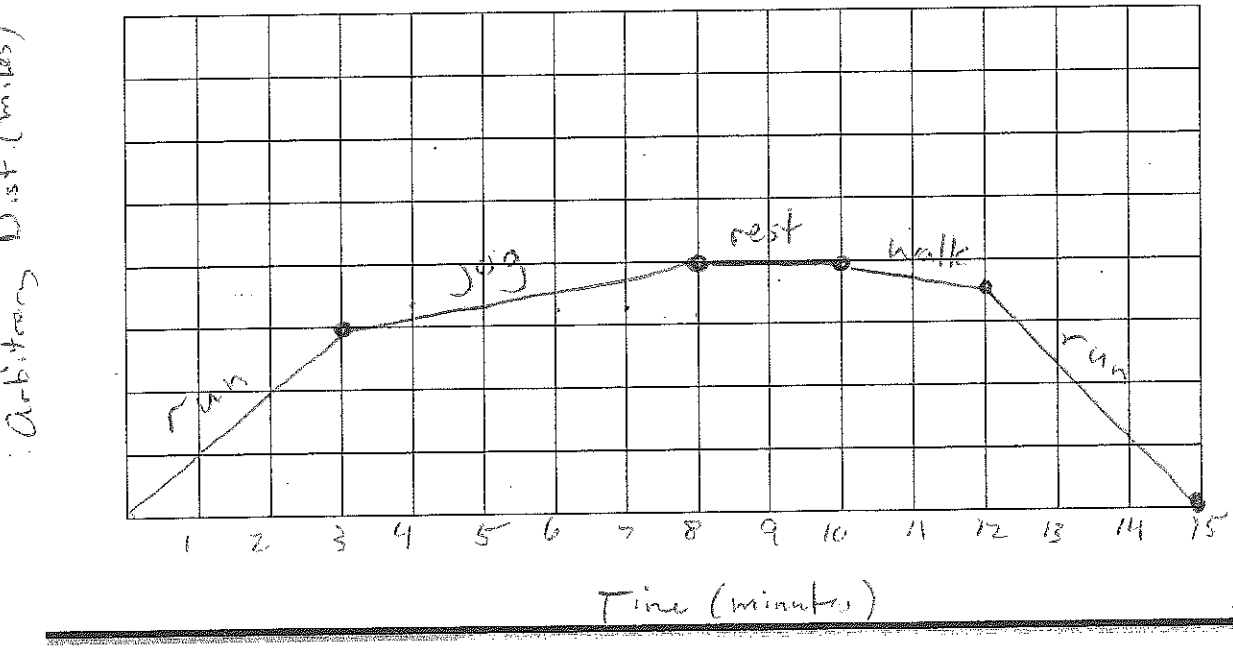
You should end 9 ft from

the wall. This took a total

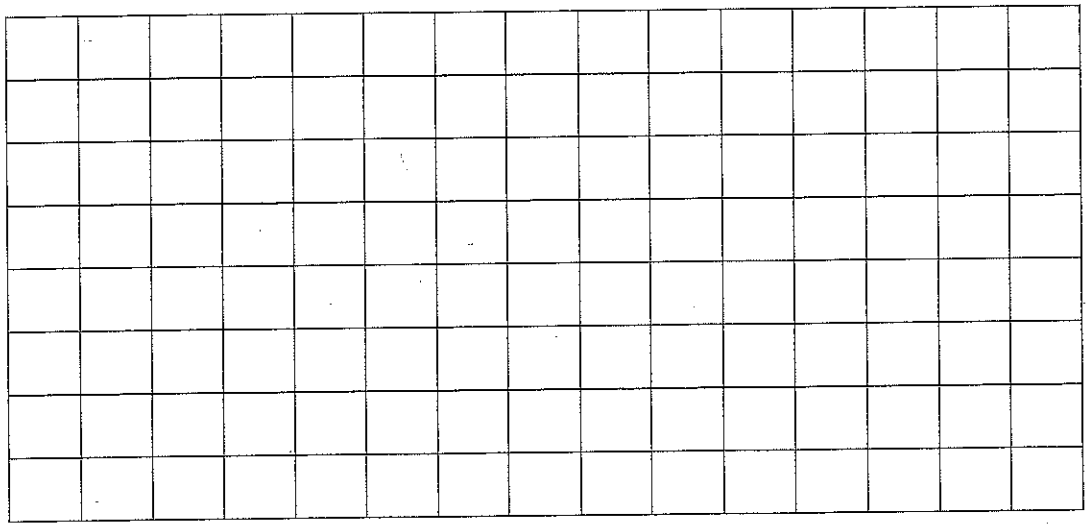
of 15 seconds.

12. Sketch the graph that fits the scenario:

I begin training for the 5K run today. I decide to start my training out at 15 minutes. I start running right away (I head North) at a steady pace for 3 minutes. I start to hurt and so I slow down a bit but maintain a steady "jog" for the next 5 minutes. I need to rest and so I stop running altogether for just 2 minutes. Then I turn around and start walking back toward home for 2 minutes. (I'm heading South.) After those 2 minutes, I realize it will take me a LONG time to get home. So I finally running towards home at a constant pace until get home exactly 15 minutes after I started running.



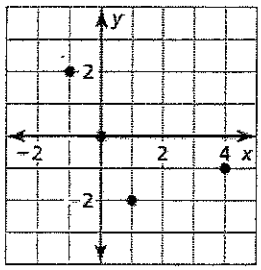
Save this part for corrections



Place for "written" part of corrections:

For 13-15, state the domain and range for each graph. Also tell whether it is discrete or continuous.

13.

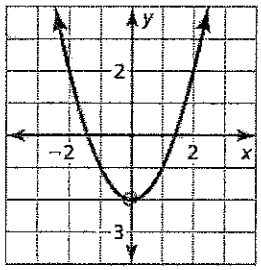


X Domain: $\{-1, 0, 1, 4\}$

y Range: $\{-2, -1, 0, 2\}$

Discrete or Continuous? Discrete

14.

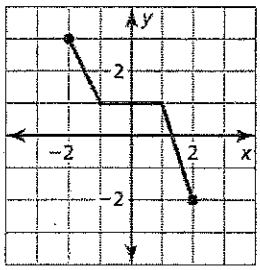


X Domain: all reals

y Range: $y \geq -2$

Discrete or Continuous? Continuous

15.

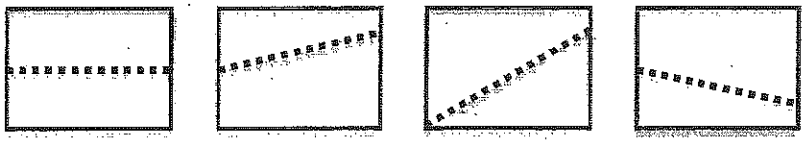


X Domain: $-2 \leq x \leq 2$

y Range: $-2 \leq y \leq 3$

Discrete or Continuous? Continuous

16. Compare and contrast Graphs A, B, C, and D



Graph A Graph B Graph C Graph D

Comparing and contrasting means talking about similarities and differences.

- Which parts (of the graphs) are similar?
- Which parts are different?

You should fill this page! Talk about 2 graphs at a time, 3 at a time, and/or all 4 graphs at a time

A, B, D all start at same place from wall

A, B, C, D all have a constant rate of change

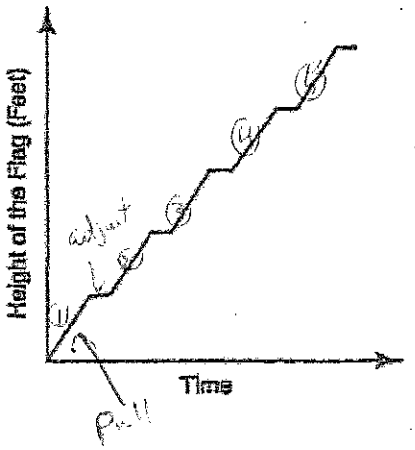
B + C walk away from the wall vs D towards the wall

ALL are linear

ALL are functions

Looks like B and D have the same rate of change (just in opposite directions!)

17. The graph represents a flag being raised on a flagpole. Write a story that describes what is happening to the flag, gives an estimate of the height of the flagpole, and explains the shape of the graph.



I pull the flag up (make 2-3 feet) but then need to pause to adjust my hands.

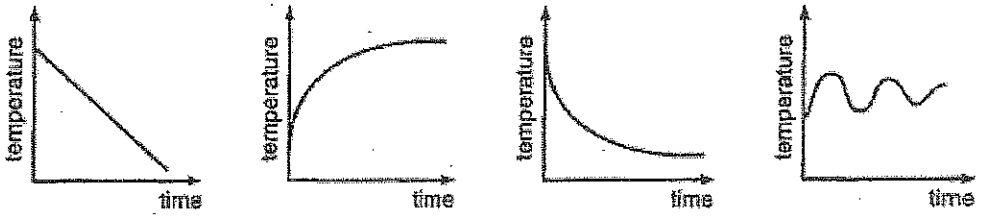
I then repeat + pull + adjust ... 4 more times

Be Creative!

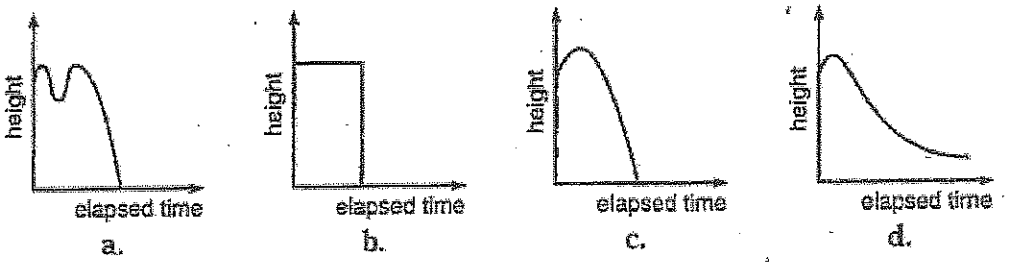
18. REVISE any problems from your pre-test (that is the next page). I have not graded them YET. I will grade them with this quiz. Be sure you like ALL of your answers!

Graph-Match Problems (pre-test) Name: _____

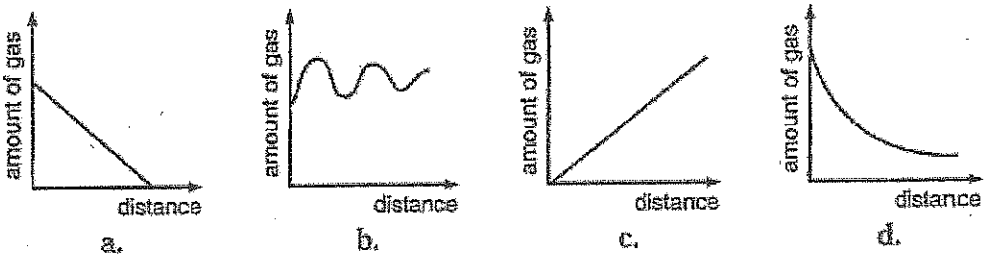
1. C After death, a body cools to the temperature of the room.



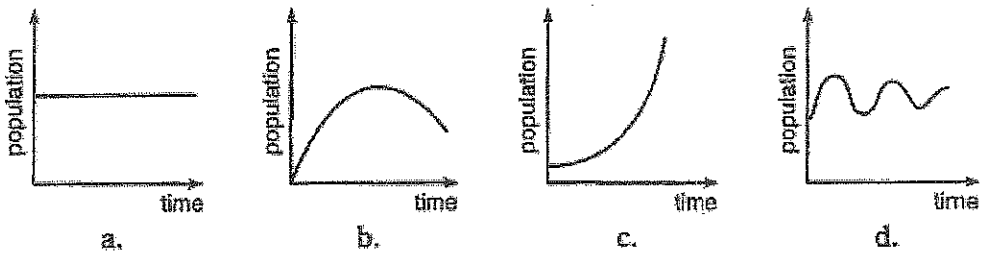
2. C A boy raises a book above his head and then lets the book fall.



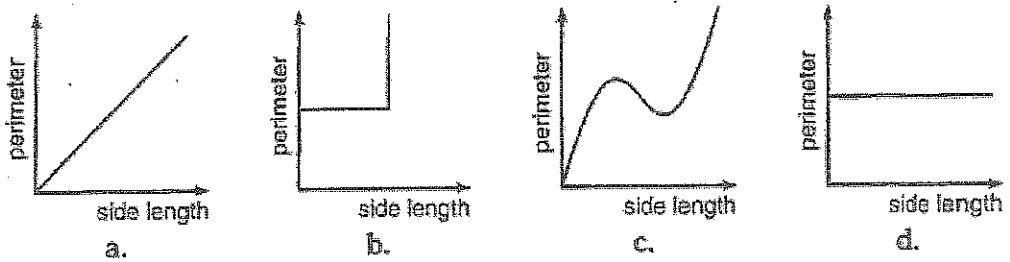
3. C The farther the car goes, the more gas it uses.



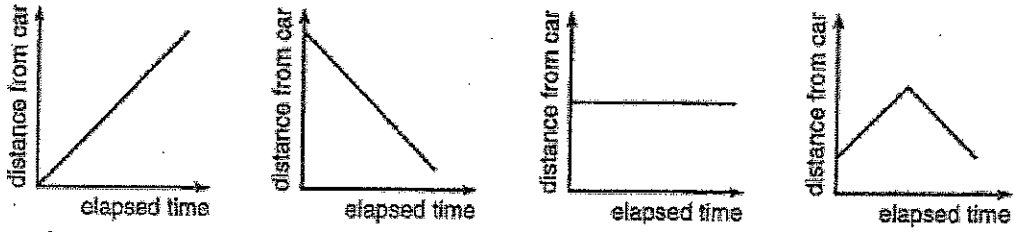
4. C The population has been increasing over the years.



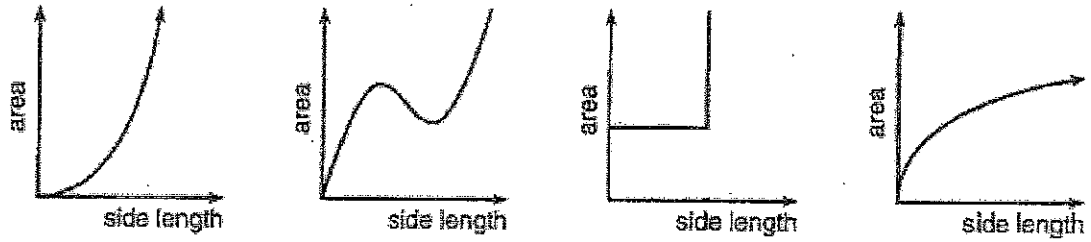
5. A As the length of the side of a square increases, its perimeter increases.



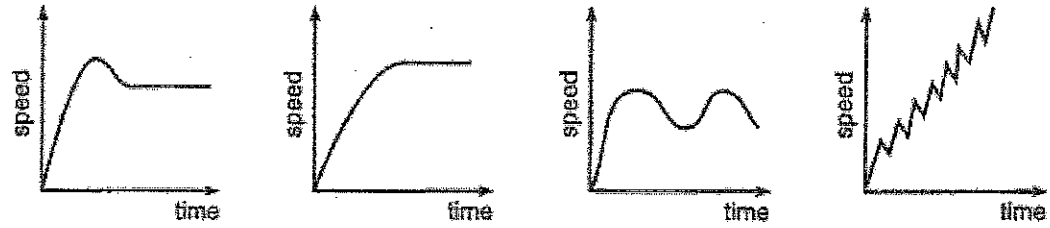
6. A Hugo walked at a steady pace away from the car.



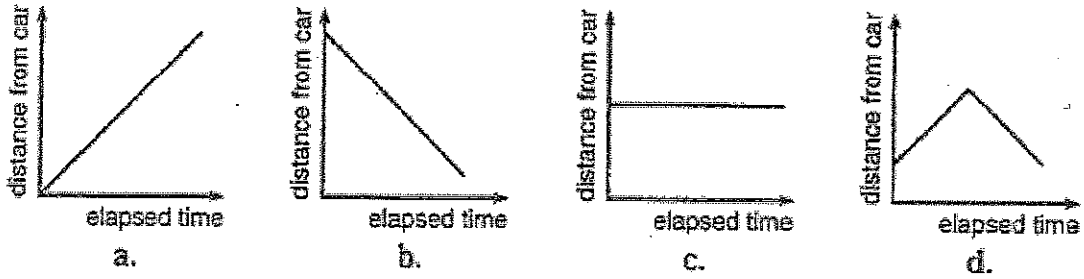
7. A As the length of the side of a square increases, its area increases.



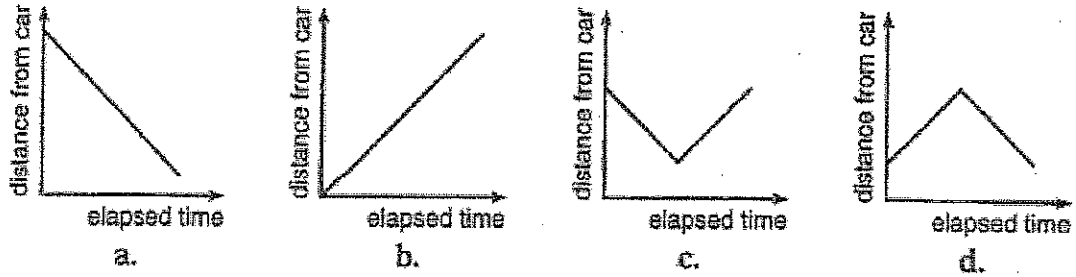
8. A Fumihiko kept increasing his speed until his mother made him slow down and proceed at a constant speed under the limit.



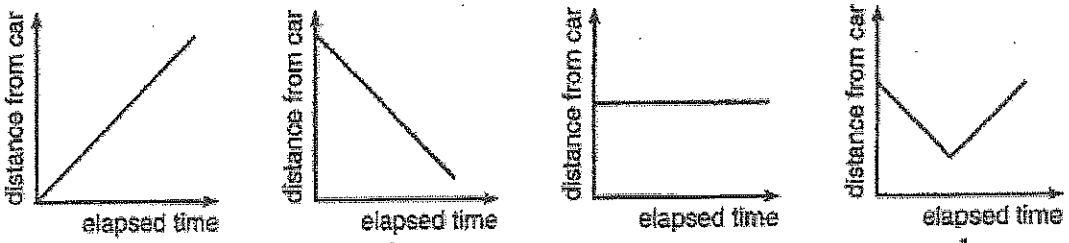
9. C Chris stood at a distance from the car.



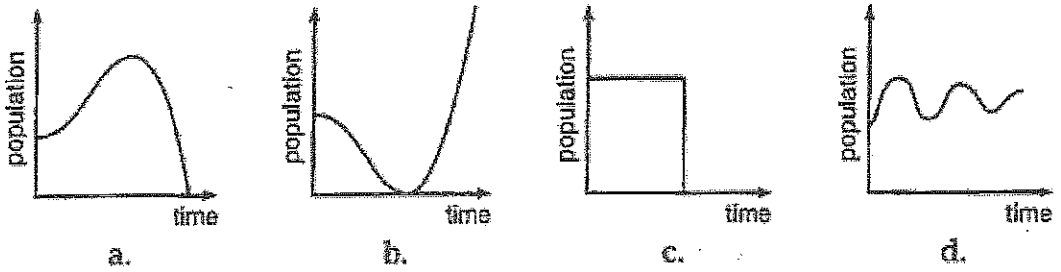
10. C Nancy first walked toward the car and then away from it.



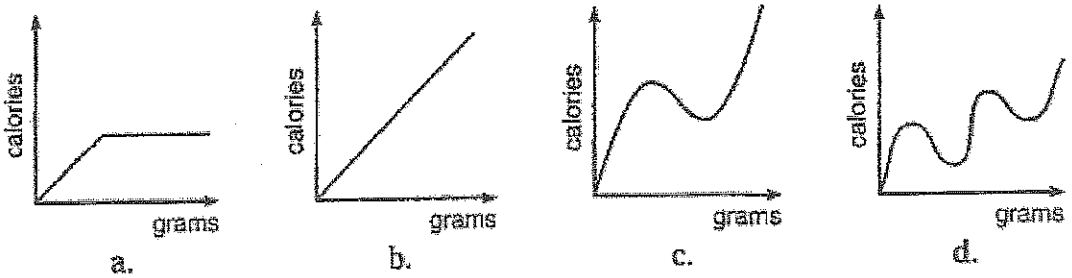
11. B Mary walked at a steady pace toward the car.



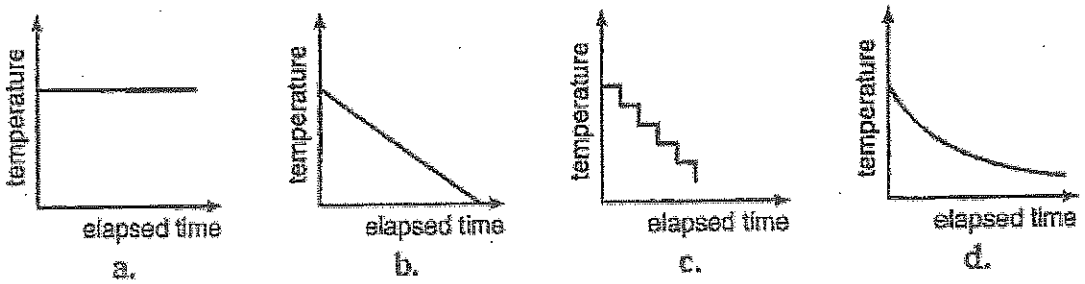
12. A In the 1930s in Arizona, the deer population first increased and then decreased until deer became extinct.



13. B The greater the number of grams of fudge eaten, the more calories consumed.



14. D A hot piece of aluminum foil cools to the temperature of the room.



15: How many of these 14 problems are you really CONFIDENT about??? _____