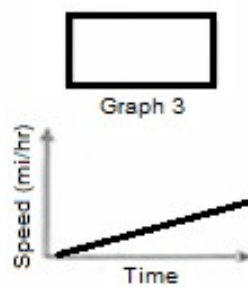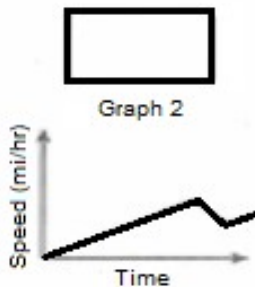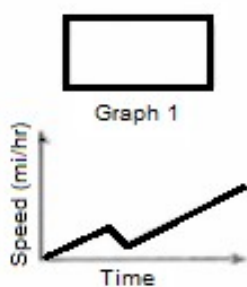Name _____                    Period _____

# Functions Unit Review

1.  The graphs give the speeds in miles per hour of three dogs during an obstacle course race.  Tell which graph corresponds to each situation by writing the corresponding letter above each graph.



Graph 1                    Graph 2                    Graph 3

A.  Brandy increases her speed throughout the race.
B.  Bruno starts well but soon has to slow down to run around cones.  After this, he steadily increases his speed.
C.  Max gets off to a fast start and picks up speed.  He slows down near the end of the race for a tunnel but then increases his speed right afterward.

2.  Which of the following situation corresponds to this graph?
    A.  A car accelerates from a stop, travels at a constant speed, slows, and then travels at a lower speed.
    B.  A car accelerates from a stop, travels at a constant speed, slows, stops, then accelerates for the remaining time.
    C.  A car accelerates from a stop, travels at a constant speed, slows, stops, then speeds up and continues at a lower constant speed.
    D.  A car travels at a constant speed, slows, stops, then speeds up and continues at a lower constant speed.
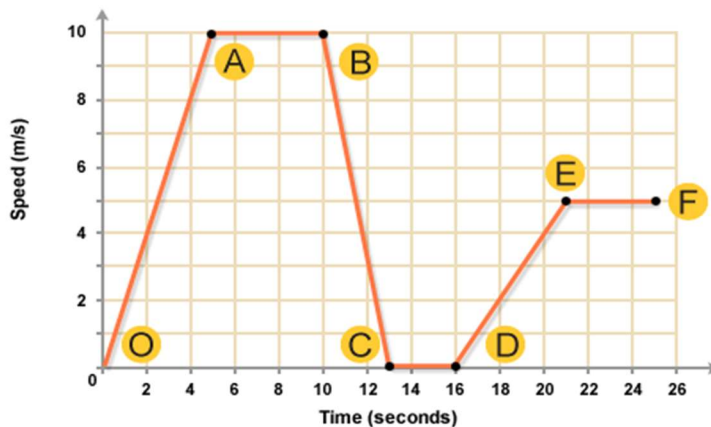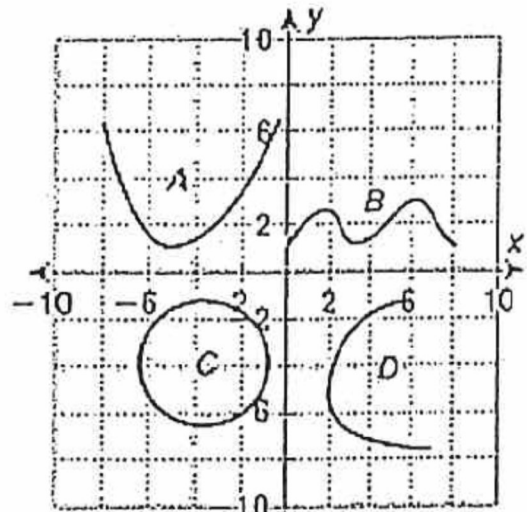
3. Which of the following curves are functions?
   Justify your answer.

   Curve A
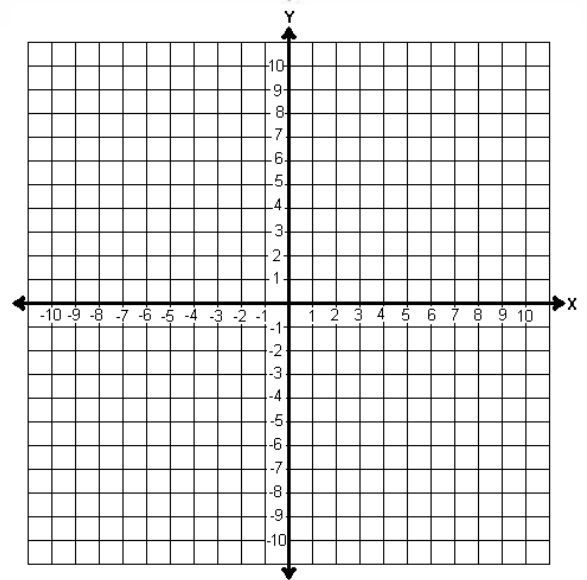
   Curve B

   Curve C

   Curve D



4. Create a graph after completing an
   input/output chart for the given equation.

| x | 2x - 4 | y |
|---|--------|---|
| -2 |  |  |
| 0 |  |  |
| 2 |  |  |
| 4 |  |  |

   Function?                    Justify your answer.



5. Create a graph after completing an input/output
   chart for the given equation.

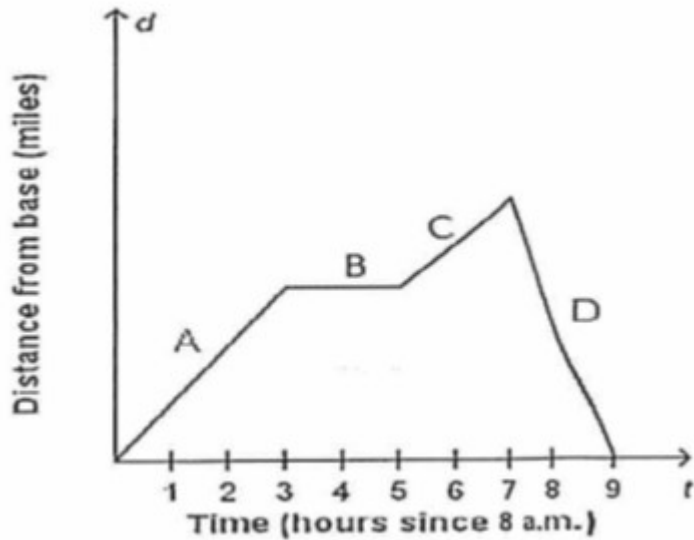| y | $8 - y^2$ | x |
|---|-----------|---|
| -2 |  |  |
| 0 |  |  |
| 2 |  |  |
| 4 |  |  |

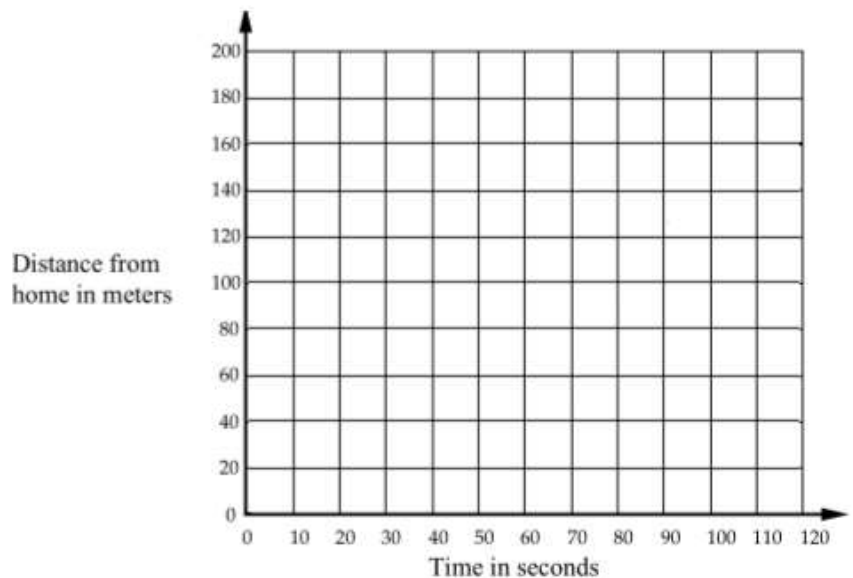   Function?                    Justify your answer.
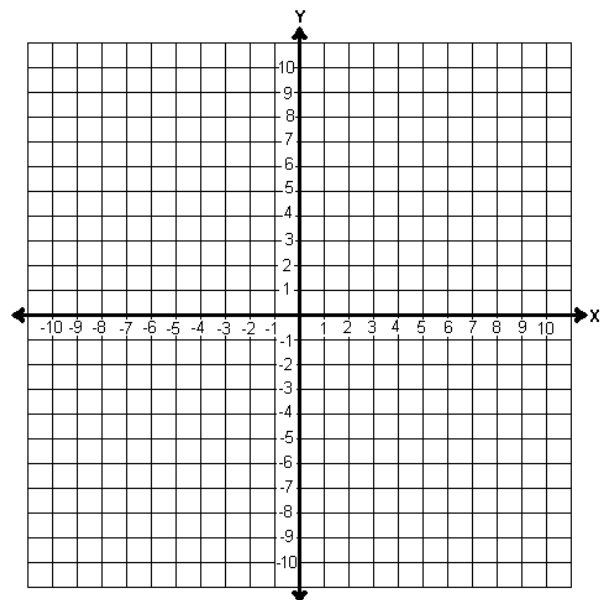
6. The graph shows Oliver hiking a mountain. His hike is split into 4 sections. The straight lines indicate that Oliver moves at a constant but different speed in each section.
   - Describe what may have happened.
   - Include details like how fast he walked.

A.

B.

C.

D.

7. Every morning Tom walks along a straight road from his home to a bus stop.

A. Tom walks away from home at a constant speed for 30 seconds and then decreases his speed for an additional 20 seconds. He walks 100 meters.

B. At 100 meters from home Tom starts to walk towards home for 20 seconds. He walks for 60 meters.

C. Tom again changes direction. He is now walking away from home at a fast pace. He moves at this speed for 30 seconds and covers 120 meters.

D. Tom waits for the bus for 20 seconds.

8.  ( -2 , 1 ) ( -1 , 2 ) ( 0 , 3 ) ( 1 , 4 )

Function?                          Justify your answer.

9.

| x | 1 | 2 | 1 | 2 |
|---|---|---|---|---|
| y | 6 | 5 | -6 | -5 |

Function?                          Justify your answer.

10.

| x | y |
|---|---|
| 0 | 0 |
| 1 | -1 |
| 2 | -8 |
| 3 | -27 |
| 4 | -64 |

Function?                          Justify your answer.

11.

| Equation | Function? | Justify you answer. |
|---|---|---|
| $y = 2x - 7$ | | |
| $x = 9$ | | |
| $y = x^2$ | | |
| $-2x - 7 = y$ | | |

12. Create a relation that is NOT a function.          Create a relation that IS a function.

| X | y |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |

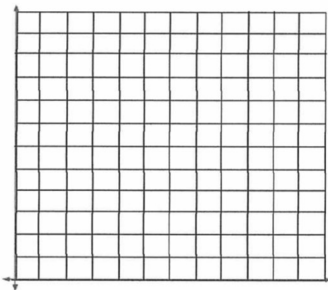| X | y |
|---|---|
|   |   |
|   |   |
|   |   |
|   |   |

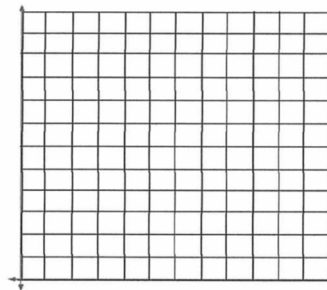13.     Sketch a graph:

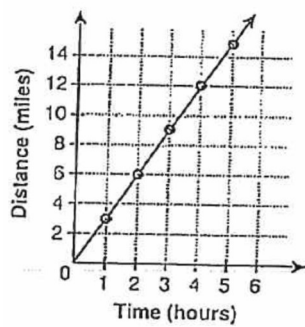That IS a function                                  That is NOT a function.

14. Fran and Frank both went on a hike Saturday.
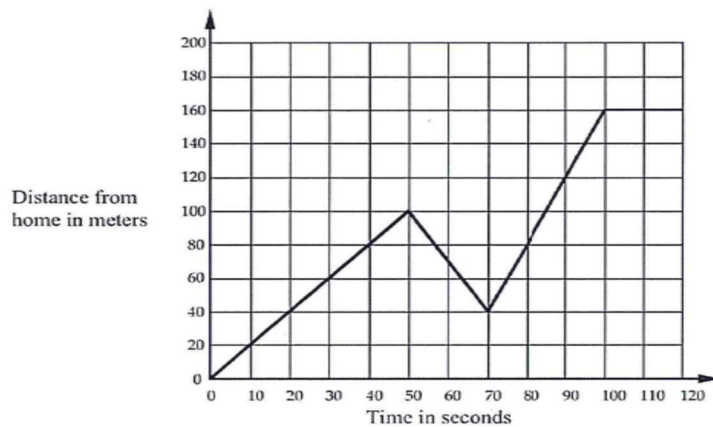
Fran's Hike On Saturday                                        Frank's Hike On Saturday



| Hours hiked | Distance in miles |
|---|---|
| 0 | 0 |
| 1 | 4 |
| 2 | 7.5 |
| 3 | 9.0 |
| 4 | 9.5 |

Describe and compare their progress.

15.

The graph below shows your distance from home over the course of 2 minutes.  *(Level 2/Basic)*



Distance from home in meters

Time in seconds

1. For how long was your speed increasing?

2. For how long was your speed decreasing?
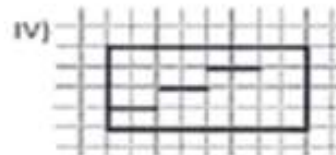
3. For how long was your speed constant?

16.

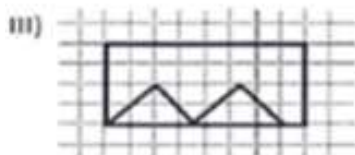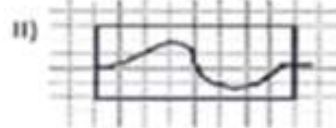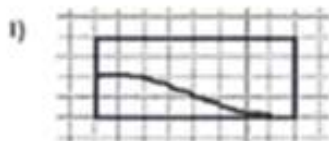Circle the graph that most likely represents a car approaching a stop sign?



A
Speed (mi/h)
Time

B
Speed (mi/h)
Time

C
Speed (mi/h)
Time

D
Speed (mi/h)
Time
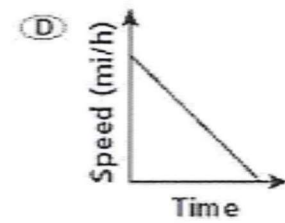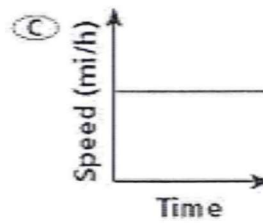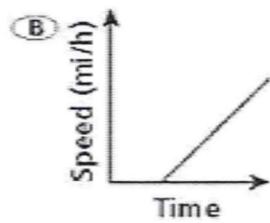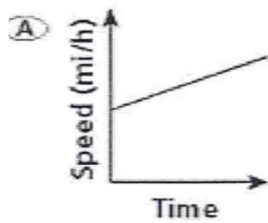
17.
Identify the graph that best represents each of the situations given below.

I)



II)



III)



IV)



1. Graph _____
   A person's body temperature as he enters a sauna and then cools off in a pool.
2. Graph _____
   The rise and fall of an elevator as it carries passengers from the ground floor to an observation tower
3. Graph _____
   The cost to mail a package based on weight categories.