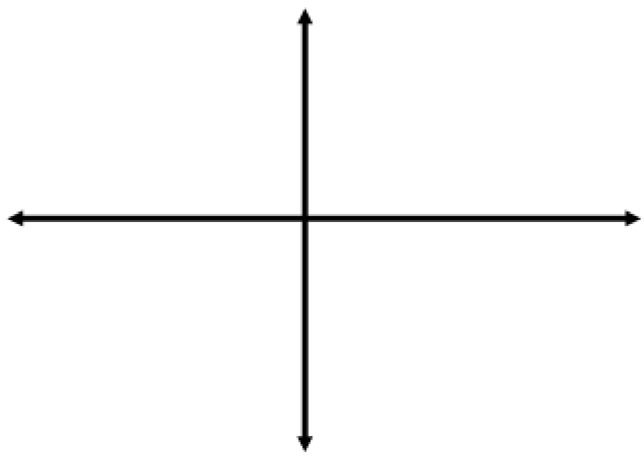
1.7: Represent Functions as Graphs

Goals: *Graph ordered pairs (*x*, *y*)
*Graph functions so you can visualize trends
*Decide if a graph represents a function based on the "vertical line test"

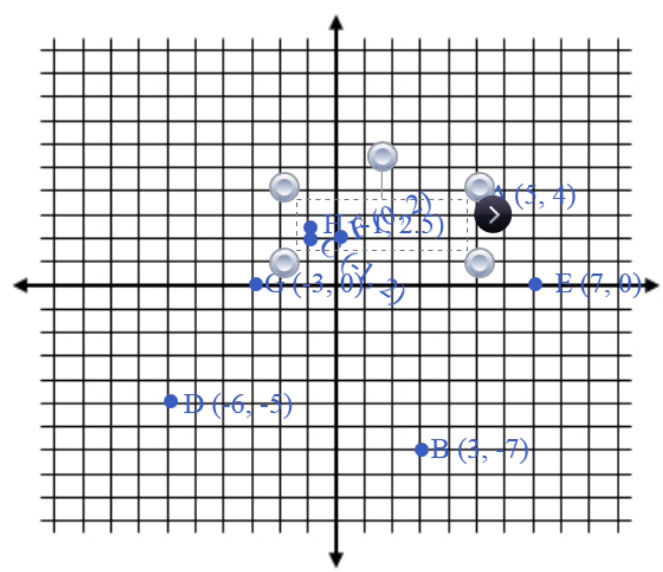
RECALL

Coordinate Plane



To graph ordered pairs:

1. Start at the ____origin______________.
2. First go __left_________ or ____right_________.
3. Then go __up________ or ____down__________.

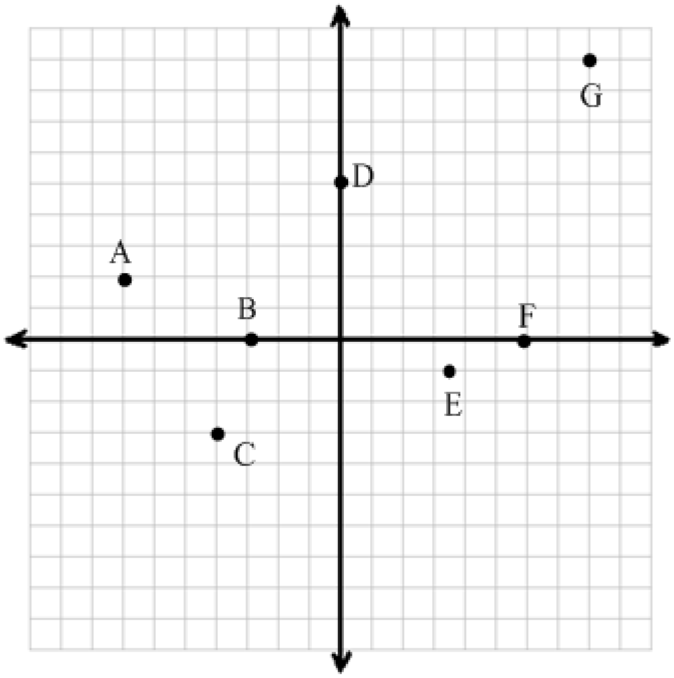


Ex: Graph, and label, the following ordered pairs.

A (5, 4) B (3, –7) C (–1, 2) D (–6, –5)

E (7, 0) F (0, –2) G (–3, 0) H (–1, 2.5)

Ex: Match the ordered pairs with correct point on the graph.



(-7, 2) = A

(6, 0) = F

(8, 9) = G

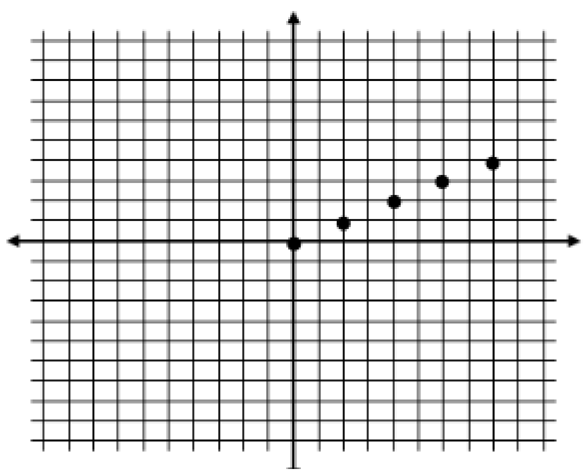
(-4, -3) = C

(0, 5) = D

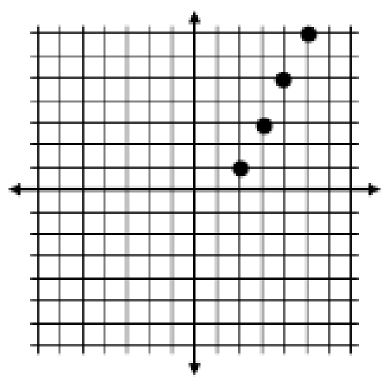
(-3, 0) = B

(3.5, -1) = E

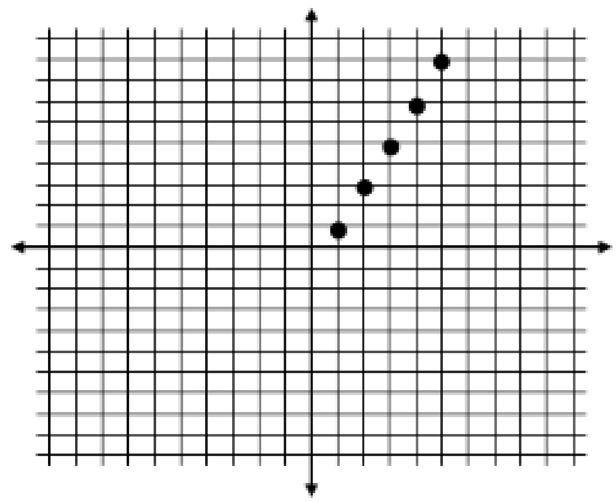
Ex: Graph the function $y = \frac{1}{2}x$ with a domain of 0, 2, 4, 6, 8



Ex: Graph the function $y = 2x - 3$ with a domain of 2, 3, 4, 5



Ex: Graph the function $y = 2x - 1$ with a domain of 1, 2, 3, 4, 5

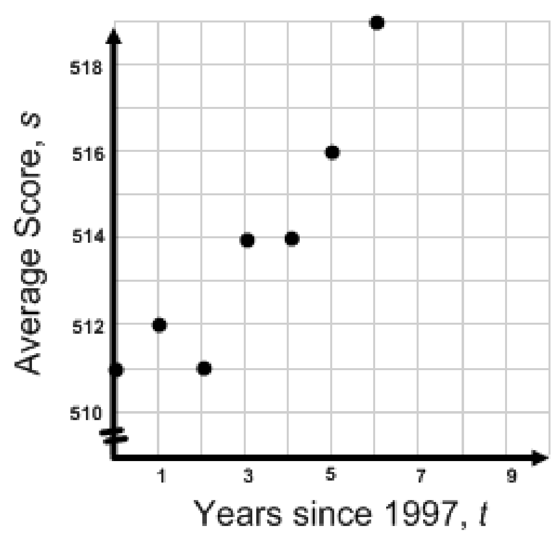


Ex: The table shows the average score, *s*, on the mathematics section of the SAT in the United States from 1997 to 2003 as a function of time, *t*, since 1997. In the table, 0 corresponds to the year 1997, 1 to 1998 and so on. Graph the function. What trend, if any, do you notice?

Years since 1997, *t*	0	1	2	3	4	5	6
Average score, *s*	511	512	511	514	514	516	519

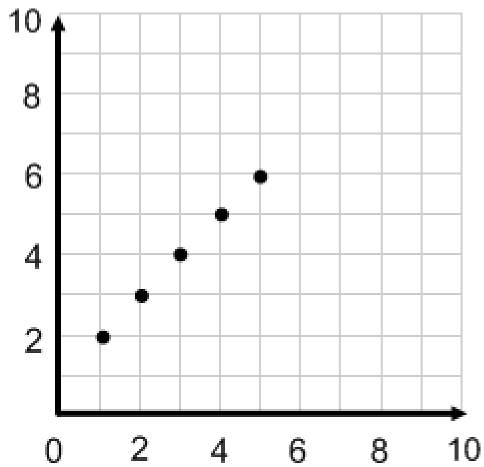
Keep in mind that the time row really represents years SINCE 1997, so 0 means 0 years since 1997, which is the year 1997, 1 is 1 year since 1997, which would be 1998 and so on.

Also, the score row starts at 511 and all the data is fairly close together (only 8 numbers away from each other) so while each box on the graph can still represent 1 space, we need to make the graph jump to somewhere close to 511 by using a break, represent by the two lines in the graph.

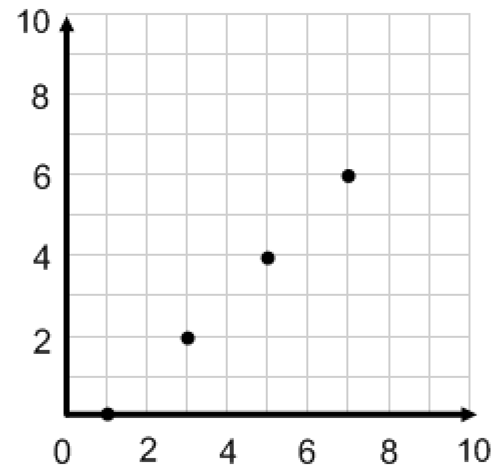


For each graph given, write a rule for the function, then identify the domain and range.

Ex:



Ex:



*If necessary you can use the same rules as before ($\Delta y/\Delta x$ method) if you first use the points on the graph to create an *x*/*y* table.

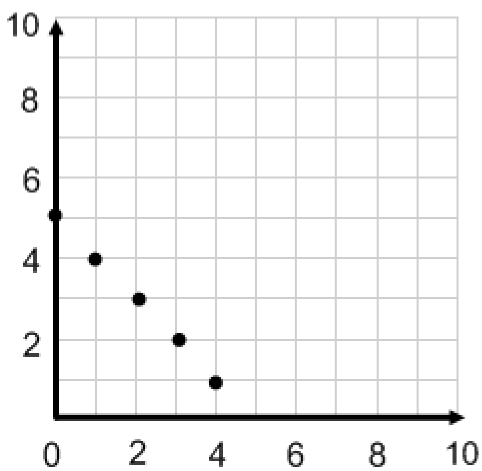
x	1	2	3	4	5
y	2	3	4	5	6

x	1	3	5	7
y	0	2	4	6

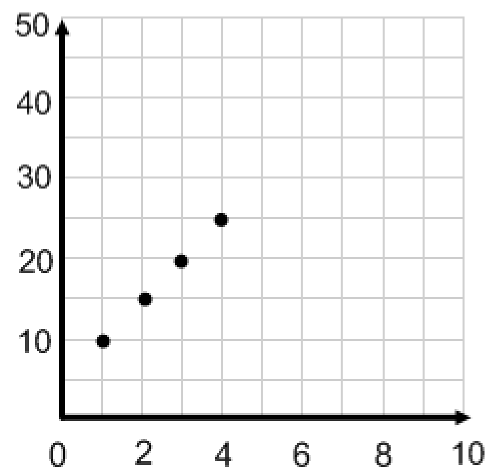
$y = x + 1$

$y = x - 1$

Ex:



Ex:



$y = -x + 5$

or

$y = 5 - x$

$y = 5x + 5$