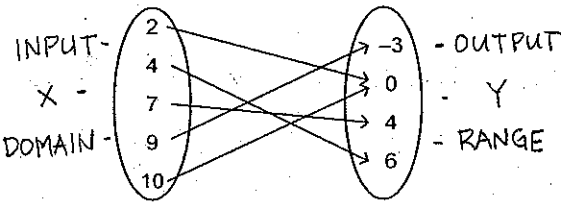
Name: KEY Class: _____ Date: _____ ID: A

Chapter 4 Practice Test- Relations and Functions

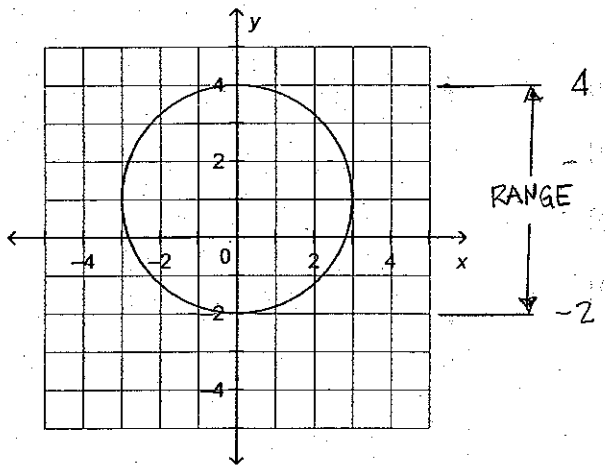
Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Identify the range of this relation.



a. $\{-3,4,6\}$ b. $\{4,7,9\}$ (c.) $\{-3,0,4,6\}$ d. $\{2,4,7,9,10\}$

2. Determine the **range** of the graph.



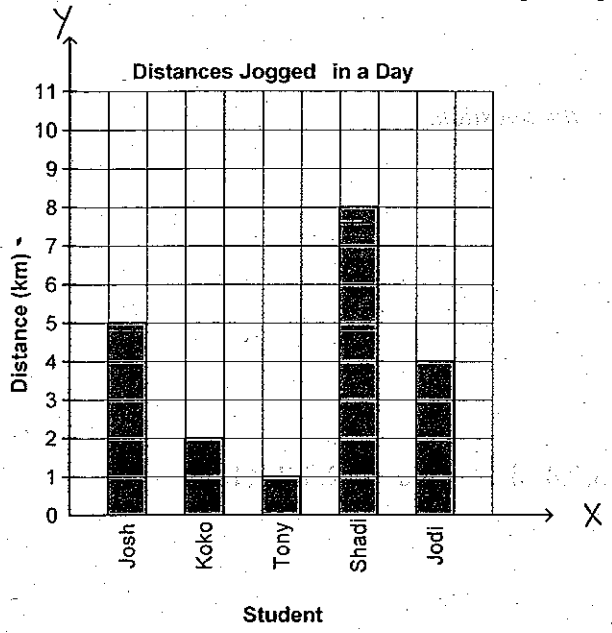
(a.) $-2 \le y \le 4$

b. $-2 \le y \le 3$

c. $-3 \le x \le 3$

d. $-3 \le y \le 4$

3. Consider the relation represented by this graph. Represent the relation as a set of ordered pairs.



ordered pairs are listed as (x, y)

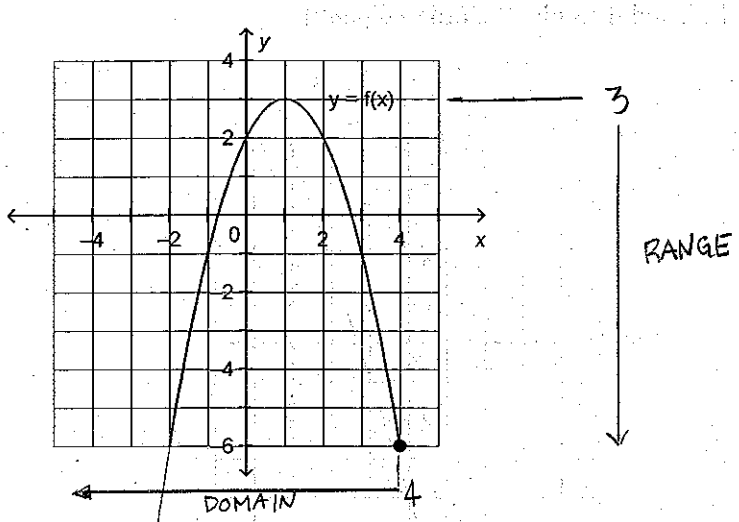
(a.) {(Josh, 5), (Koko, 2), (Tony, 1), (Shadi, 8), (Jodi, 4)}

b. {(5, Josh), (2, Koko), (Tony, 1), (8, Shadi), (Jodi, 4)}

c. {(5, Josh), (2, Koko), (1, Tony), (8, Shadi), (4, Jodi)}

d. {(Josh, 5), (Koko, 2), (Tony, 1), (Shadi, 4), (Jodi, 8)}

4. Determine the domain and range of the graph of this function.

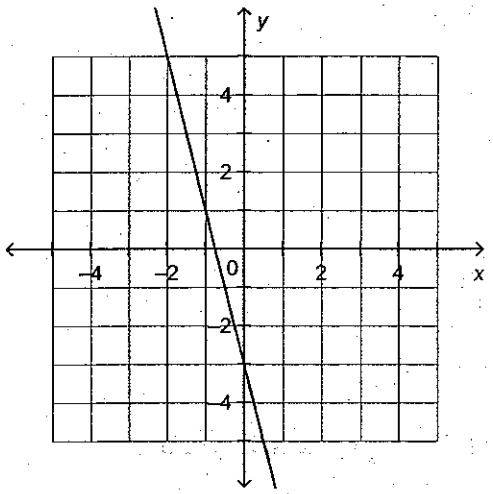


a. $x \le 4;\ -6 \le y \le 3$ b. $1 \le x \le 4;\ y \le 3$ c. $x \le 3;\ y \le 4$ (d.) $x \le 4;\ y \le 3$

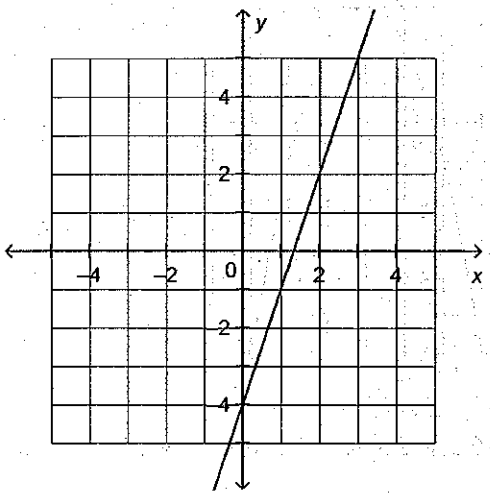
THIS PART CONTINUES INFINITELY DOWN AND TO THE LEFT →

5. Which graph represents the linear function $y = -4x + 3$?
(HINT: Create a table of values using x = 0 , 1 , 2 and then plot the ordered pairs)

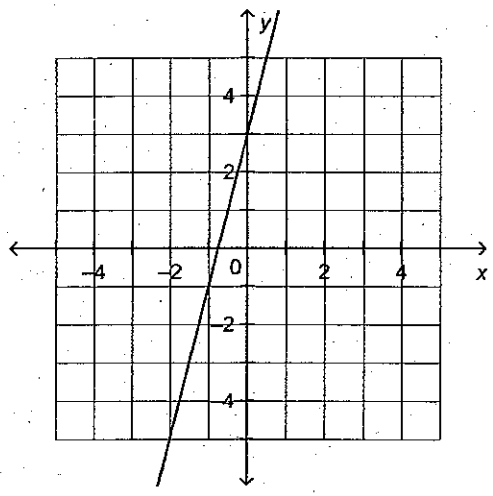
a.



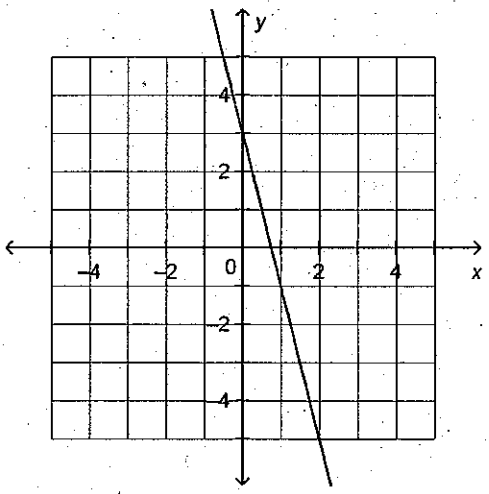
c.



b.



(d.)



$y = -4x + 3$

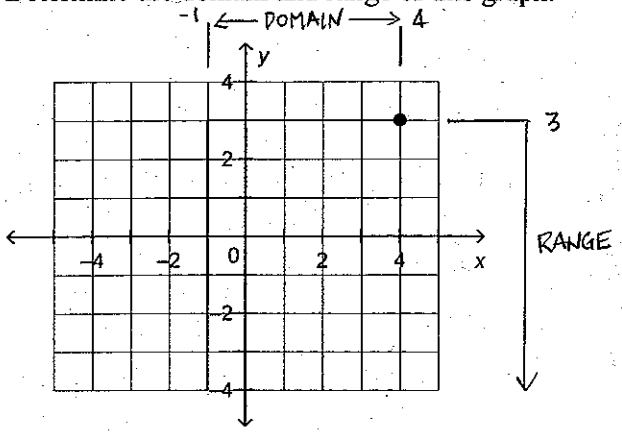
y-intercept is @ (0,3)

∴ eliminate a.

slope is negative

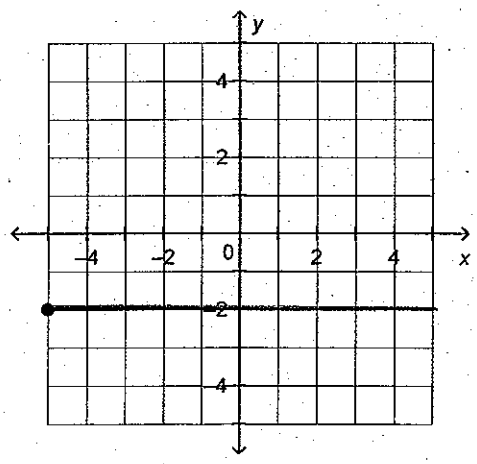
∴ eliminate b. and c.

6. Determine the domain and range of this graph.



a. $x \le 3; -1 \le y \le 4$ b. $-1 \ge x \ge 4; y \le 3$ c. $3 \le x \le 4; y \le -1$ (d.) $-1 \le x \le 4; y \le 3$

7. Determine the domain of this graph.



a. $x > -5$

b. $-5 \le x \le 5$

c. $y \ge -2$

(d.) $x \ge -5$

8. This table shows the cost, C dollars, of different numbers of tickets sold, n. Identify the range.

X	Y
Number of Tickets, n	**Cost, C ($)**
1	11.50
2	23.00
3	34.50
4	46.00
5	57.50

The range is the list of all these numbers

a. {1, 11.50, 2, 23.00, 3, 34.50, 4, 46.00, 5, 57.50, ...}

b. {1, 2, 3, 4, 5, 11.50, 23.00, 34.50, 46.00, 57.50}

(c.) {11.50, 23.00, 34.50, 46.00, 57.50, ...}

d. {1, 2, 3, 4, 5, ...}

9. Identify the domain of this relation.

$\{(9,11),(6,8),(10,-12),(7,-9)\}$
x y x y x y x y

(a.) {6,7,9,10}

b. {−9,8,10,11}

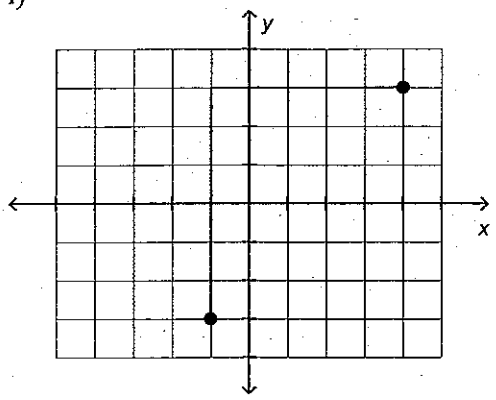
c. {6,7,10,11}

d. {−12,−9,8,11}

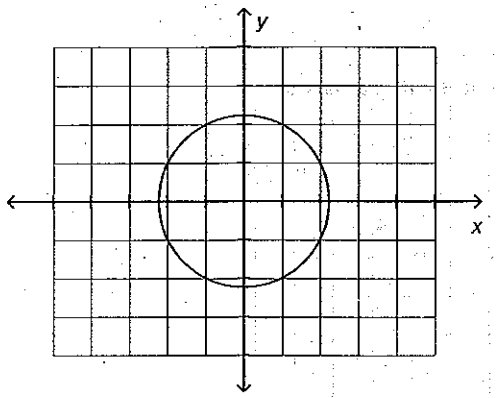
The domain is the list of all the x values

10. Which of these graphs represents a function? each x (input) must produce only one y (output)

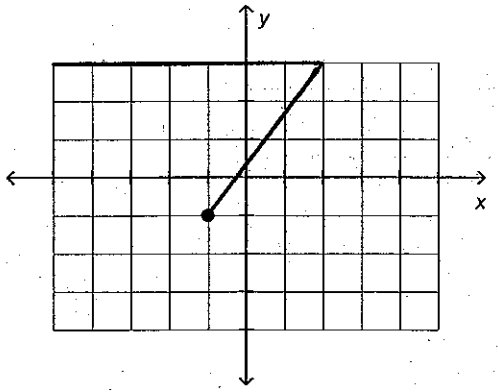
i)



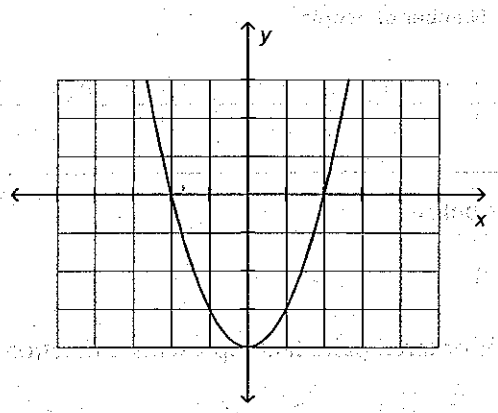
ii)



iii)



iv)



a. ii b. iii c. i d. iv

11. Which set of ordered pairs does not represent a function?

i) $\{(1,4),(2,7),(3,10),(1,-2)\}$ not a function because an input of 1 produces an output of -2 and 4

ii) $\{(3,5),(4,-6),(6,8),(7,-9)\}$

iii) $\{(-4,-7),(-2,-5),(-3,4),(-1,6)\}$

iv) $\{(6,0),(3,-2),(-5,4),(-7,0)\}$

a. iv b. iii c. ii d. i

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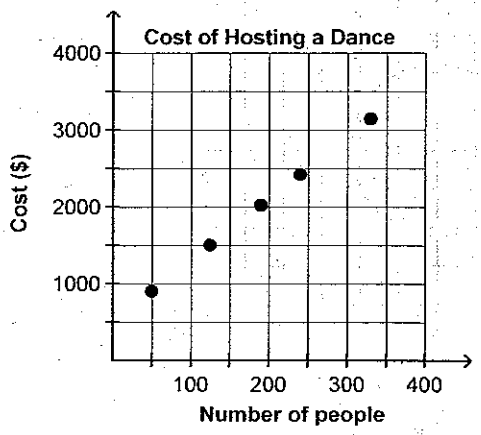
Short Answer

12. How can you tell that this graph represents a function?



For every x-value there is only one y-value.

13. Use the numbers below.

–7, 0, 3, –5, 6, 0

a) Write a set of ordered pairs that represents a function.

(-7, 0), (-5, 3), (0, 6)

b) Write a set of ordered pairs that does not represent a function.

(0, -7), (-5, 3), (0, 6)

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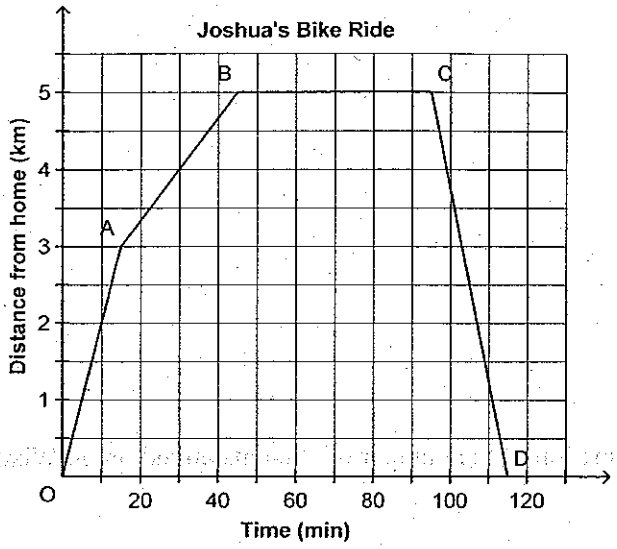
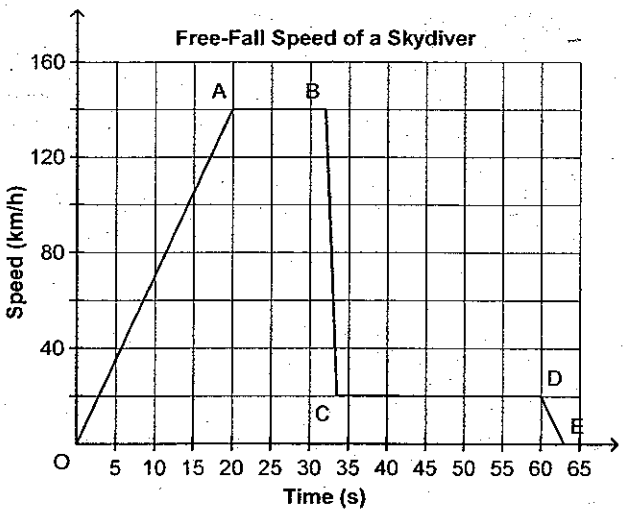
14. Joshua went on a bike ride. For part of the ride, Joshua stopped to play in a park with a friend. Which segment of the graph best describes this part of his bike ride?



SEGMENT BC DESCRIBES THIS PART, JOSHUA'S DISTANCE FROM HOME REMAINS CONSTANT FROM APPROX. 45 MIN. TO 75 MIN.

15. This graph shows the free-fall speed of a skydiver as a function of time. About how long did the skydiver's jump last?



OA - accelerates after jump
AB - reaches terminal velocity
BC - chute opens and speed reduces quickly
CD - approaches ground at slower speed
DE - lands

Jump lasts about 63 minutes

16. Suppose you were to graph the data in this table of values. Would you join the points? Justify your answer.

Number of Pop Bottles, *n*	Refund, *r* ($)
5	1.00
12	2.40
17	3.40
24	4.80
30	6.00

NO, YOU WOULD NOT JOIN THE POINTS BECAUSE POP BOTTLES ARE ITEMS THAT CANNOT BE PARTIALLY REFUNDED. YOU MUST HAVE A WHOLE NUMBER 9 OF BOTTLES.

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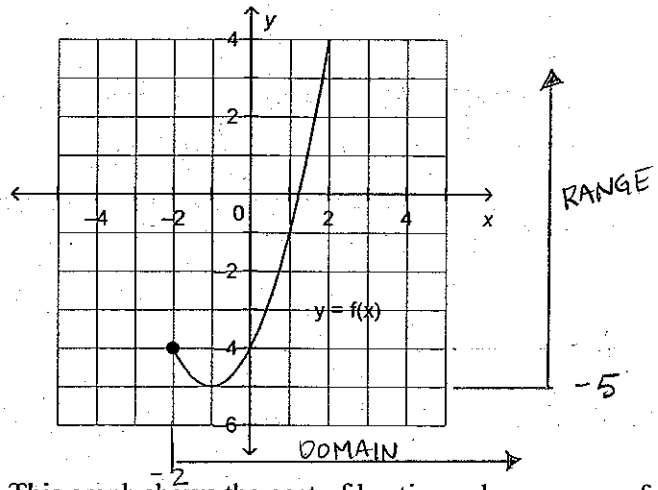
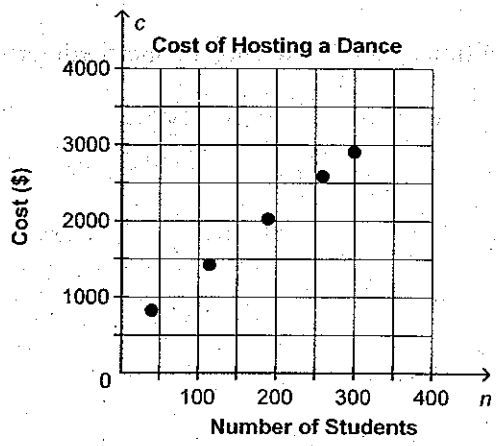
17. Determine the domain and range of the graph of this function.



D: $x \geq -2$

R: $y \geq -5$

18. This graph shows the cost of hosting a dance, c, as a function of the number of students attending, n. What is a restriction on the domain?



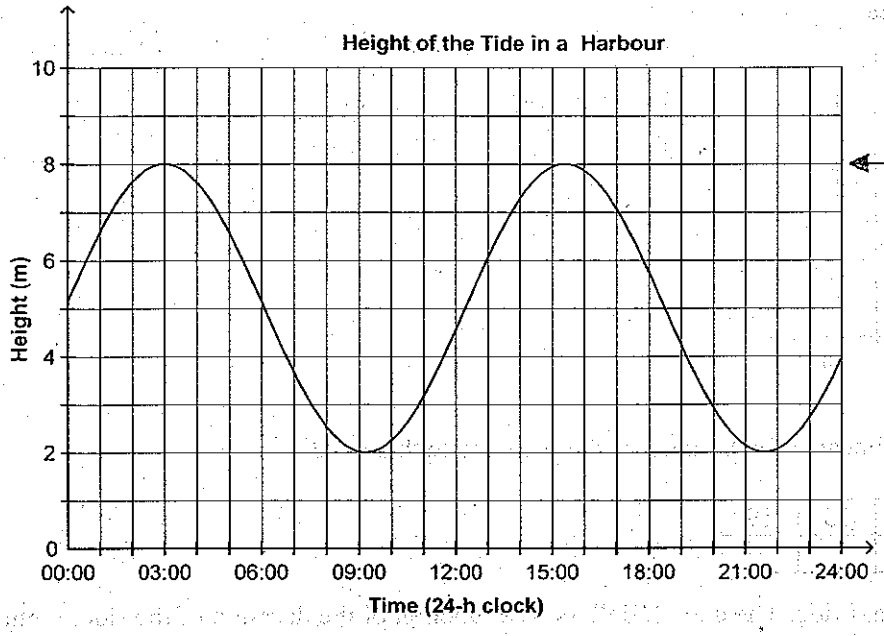
DOMAIN MUST BE A WHOLE NUMBER

OR

D: $x \geq 0$

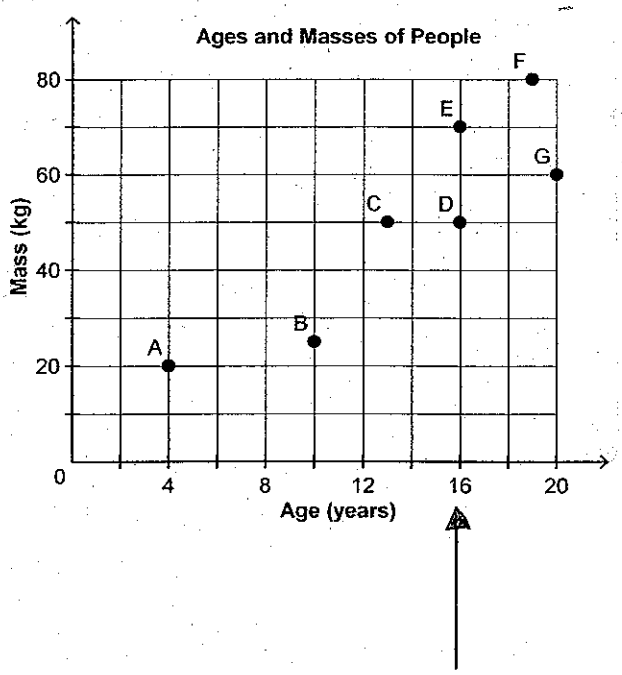
where x is an integer

19. This graph shows the height of the tide in a harbour as a function of time in one day. What is the greatest height of the tide?



8 m

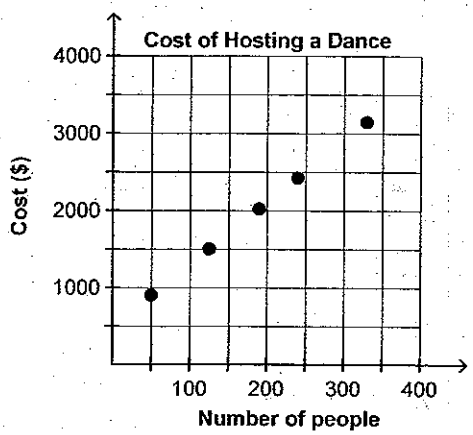
20. Each point on this graph represents a person. Which two people are the same age?



D and E are the same age

Name: _____ ID: A

21. Explain why the points on this graph are not joined.



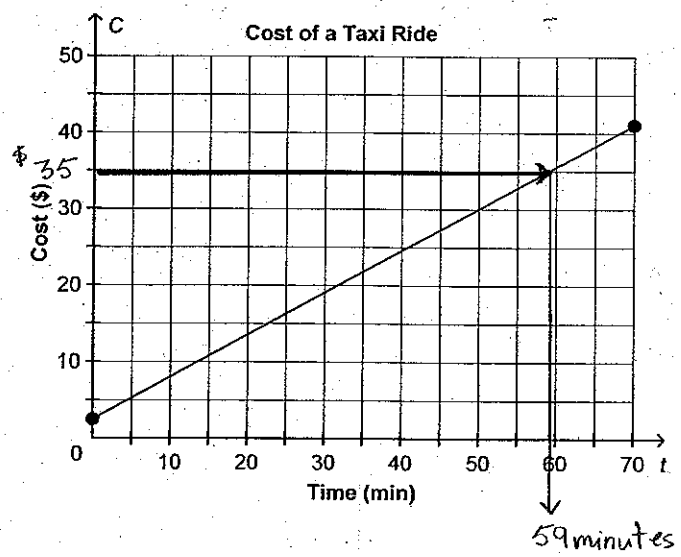
The points are not joined because x represents PEOPLE. You cannot have a fraction of a person-which is what connected points would depict.

22. The relation between x and y is linear. Which number would complete this table?

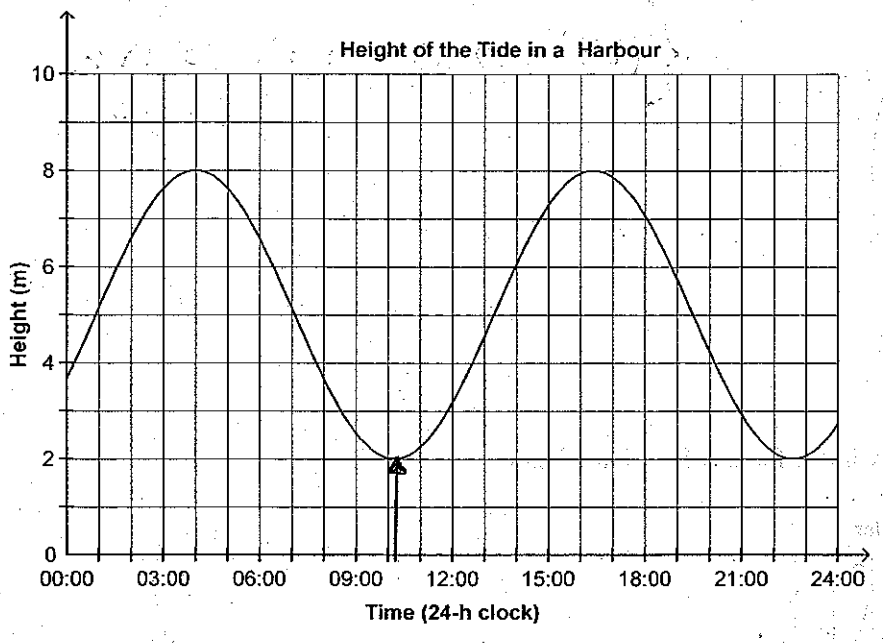
		4	4	4	4
x	3	7	11	15	19
y	18	11	4	-3	-10
		7	7	7	

for each increase of 4 there is a decrease of 7 ∴ -3

23. This graph shows the cost of a taxi ride. The cost, C dollars, is a function of the duration of the ride, t min. What is the duration of the ride when the cost is \$35?

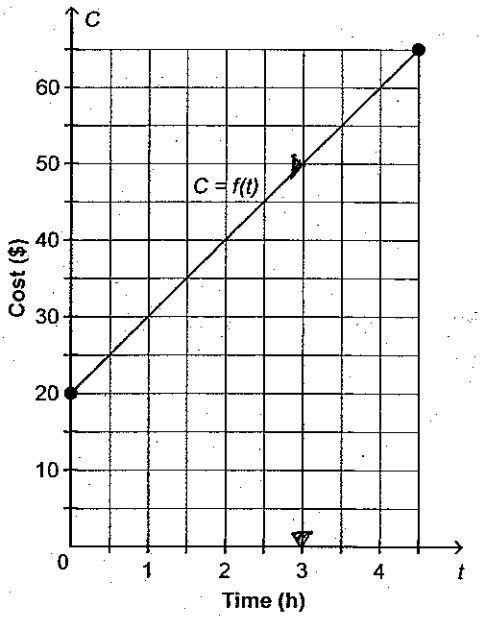


24. This graph shows the height of the tide in a harbour as a function of time in one day. At about what time in the morning does the least height occur?



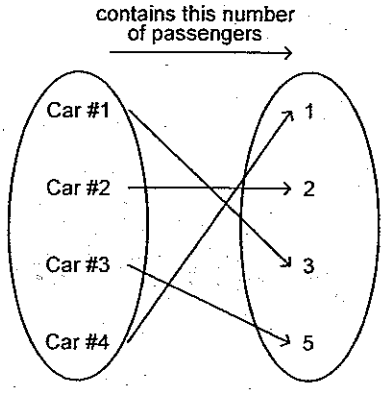
just after 10:00am

25. This graph shows cost, C dollars, as a function of time, t hours. What is the time when the cost is $50?



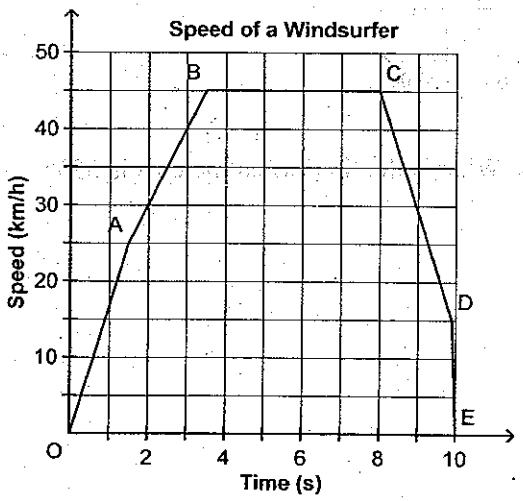
3 hours

26. Consider the relation represented by this arrow diagram. Represent the relation as a set of ordered pairs.



$\{(1,3), (2,2), (3,5), (4,1)\}$

27. The graph shows the speed of a windsurfer as a function of time.



a) For how long did the windsurfer travel at a speed of 45 km/h? $\overline{BC}$ 8 min − 3.5 min = 4.5 min

b) How long did the windsurfer's ride last? 10 minutes