

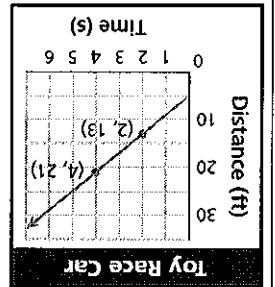
Unit 3: Linear Functions Part 1

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Class: \_\_\_\_\_

GRADE: \_\_\_\_\_



1 The graph below shows a relationship. a) Create a verbal description of the relationship.

b) Is the relationship a linear function? How do you know?   
 YES THE GRAPH IS A STRAIGHT LINE

c) How many solutions are there for the relationship?   
 ALL INFINITE AMOUNT BECAUSE OF ARROW

How do you know?

ALL INFINITE AMOUNT BECAUSE OF ARROW

3 A hot air balloon rose from a height of 100 meters to 400 meters in 3 minutes. What was the balloon's rate of change?

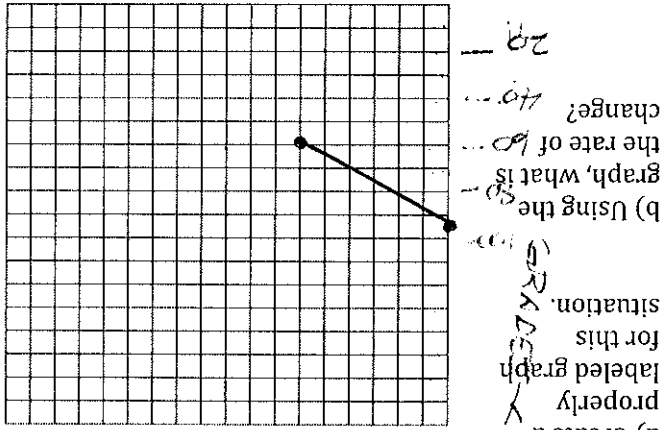
RATE OF CHANGE =  $m = \frac{y_2 - y_1}{x_2 - x_1}$

$$= \frac{400 - 100}{3 - 0} = \frac{300}{3} = 100$$

RATE OF CHANGE: 100  
 TIME: 3  
 HEIGHT: 400

100 METERS

4 A student's grade fell from a 96 to a 60 over 3 weeks because they slacked off and stopped doing their work.



RATE OF CHANGE:  $m = \frac{60 - 96}{3 - 0} = \frac{-36}{3} = -12$

a) Create a properly labeled graph for this situation.

b) Using the graph, what is the rate of change?

40

20

THE GRAPH IS A STRAIGHT LINE

relationship is linear?

b) how do you know by looking at the graph that the relationship is linear?

EXAMINATION

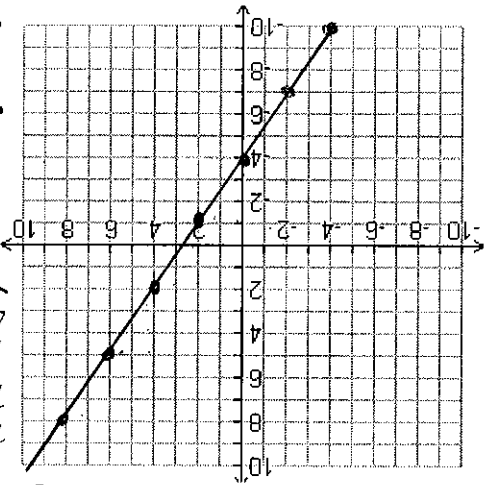
$$y = \frac{3}{2}x - 4$$

ALSO X KKS

IN THE FORM  $y = mx + b$

relationship is linear?

a) how do you know by looking at the equation that the relationship is linear?



2 Graph the solutions to the equation  $y = \frac{3}{2}x - 4$ .

TO GRAPH BEGIN AT Y-INTERCEPT WHICH IS 0 IN EQUATION  $y = \frac{3}{2}x - 4$

$\frac{3}{2}$  USE  $\frac{3}{2}$  RISE

AT Y-INTERCEPT WHICH IS 0 IN EQUATION  $y = \frac{3}{2}x - 4$

⑥ What kind of number is 0.12345678909898765432101234...?

IRRATIONAL

How do you know?

IRRATIONAL NUMBERS

NEVER END OR

TERMINATE

$$3(x+2) = 2+3x$$

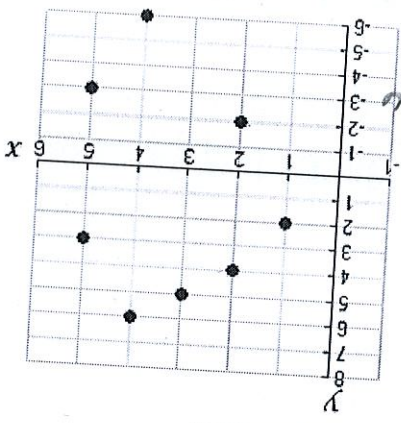
$$\begin{array}{r} 3(x+2) = 2+3x \\ 3x+6 = 2+3x \\ -3x \quad -3x \\ \hline 6 = 2 \end{array}$$

6 CAN NEVER EQUAL 2

∴ NO SOLUTION

⑤ Solve:

⑦ The graph below shows a relation.



a) Which point(s) need to be changed in order to make this relation a linear function?

TO BE A

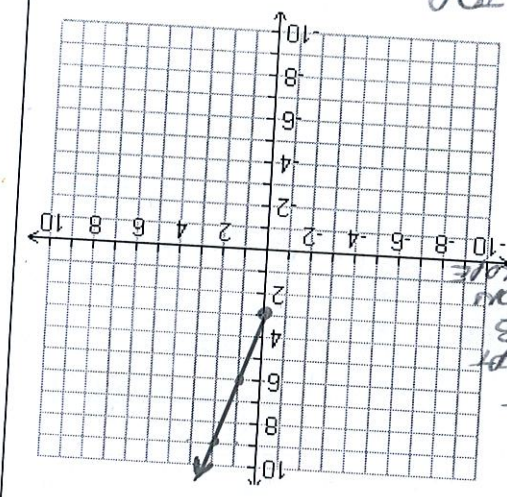
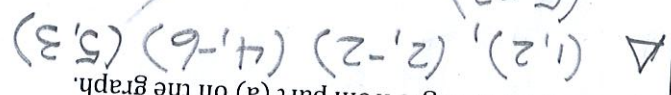
LINEAR FUNCTION

EACH X VALUE

CAN ONLY

BE USED ONCE, AND NEEDS TO BE IN A STRAIGHT LINE

b) Draw your changes from part (a) on the graph.



c) graph the situation.  
 START AT Y INTERCEPT WHICH IS 2 THEN USE SLOPE TO INCLUDE APPROPRIATE ARROWS FOR THIS GRAPH?

ONLY AT THE TOP

number of dogs	money earned
0	3
1	6
2	9
3	12
4	15
5	18

$$y = 3x + 3$$

b) create an equation for this situation.

a) complete the chart. FIND THE RATE OF CHANGE 18-9 / 5-2

⑧ Over the summer you work walking dogs around your neighborhood. You decide to charge a flat fee for the service, and then an additional rate per dog that you walk. If you walk 5 dogs, you earn \$18.00. If you walk 2 dogs, you earn \$9.00.