

Rate of Change (Slope) from a TOV.notebook

UNIT 2: Graphing Linear Relations

Calculate Rate of Change from Table of Values

Learning Goal:

I will learn how to calculate rate of change from a table of values.



Calculate Rate of Change from Table of Values

$$\text{Slope} = \frac{\text{difference in y-values}}{\text{difference in x-values}} = \frac{\text{rise}}{\text{run}}$$

y-intercept: Where the line crosses the y-axis AND the value of $x = 0$.

Calculate Rates of Change from a Table of Values

Calculate the rate of change (slope) and the y-intercept from the table of values.

a)

X	Y
0	9
1	6
2	3
3	0

$1-0=1$ \leftarrow $6-9=-3$
 $2-1=1$ \leftarrow $3-6=-3$
 $3-2=1$ \leftarrow $0-3=-3$

$m = \frac{\text{rise} = -3}{\text{run} = 1}$
 $b = 9, \text{ when } x = 0$
 Equation:
 $y = -3x + 9$

b)

X	Y
0	0
1	4
2	8
3	12

1 \leftarrow 4
 1 \leftarrow 8
 1 \leftarrow 12

$m = \frac{\text{rise} = 4}{\text{run} = 1}$
 $b = 0$
 Equation:
 $y = 4x$

c)

X	Y
5	13
10	17
15	21
20	25

5 \leftarrow 17
 5 \leftarrow 21
 5 \leftarrow 25

$m = \frac{\text{rise} = 4}{\text{run} = 5}$
 $b = 8$
 Equation:
 $y = 4x + 8$

d)

X	Y
0	-5
1	-3
2	-1
3	1

1 \leftarrow -3
 1 \leftarrow -1
 1 \leftarrow 1

$m =$
 $b =$
 Equation:

e)

X	Y
7	3
9	7
11	11
13	15

2 \leftarrow 7
 2 \leftarrow 11
 2 \leftarrow 15

$m =$
 $b =$
 Equation:

X	Y
6	9
9	8
12	7
15	6

3 \leftarrow 8
 3 \leftarrow 7
 3 \leftarrow 6

$m =$
 $b =$
 Equation:

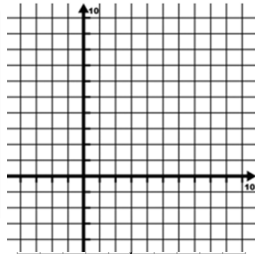
Rate of Change (Slope) from a TOV.notebook

Calculate Rates of Change from a Table of Values

1. For the linear relation $y = 3x + 1$,

a) Create a table of values, determine the rate of change, then graph.

x	y	Rate of Change (y-values)
0	$3(0) + 1 = 1$	$\rightarrow 4 - 1 = 3$
1	$3(1) + 1 = 4$	$\rightarrow 7 - 4 = 3$
2	$3(2) + 1 = 7$	$\rightarrow 10 - 7 = 3$
3	$3(3) + 1 = 10$	



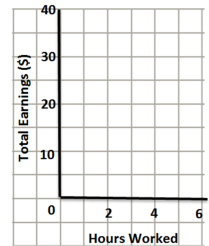
b) What does the rate of change mean?

The change in the y-value is 3 each time the x-value increases by 1

2. Sam earns \$8 per hour babysitting the children next door.

- Make a table of values showing Sam's total earnings for up to 5 hours of babysitting.
- Determine the rate of change in Sam's total earnings.
- Graph Sam's earnings.

Hours Worked	Total Earnings	Rate of Change (y-values)
0	$8 \times 0 = 0$	$\rightarrow 8 - 0 = 8$
1	$8 \times 1 = 8$	$\rightarrow 16 - 8 = 8$
2	$8 \times 2 = 16$	$\rightarrow 24 - 16 = 8$
3	$8 \times 3 = 24$	$\rightarrow 32 - 24 = 8$
4	$8 \times 4 = 32$	$\rightarrow 40 - 32 = 8$
5	$8 \times 5 = 40$	



- Find the slope of the line. How is the slope related to the rate of change from part b)? Explain. **Slope is 8. For every hour worked, Sam earns \$8.**

UNIT 2: Graphing Linear Relations

Calculate Rate of Change from Table of Values

Learning Goal:

I will learn how to calculate the rate of change (slope) from a table of values.

Success Criteria:

To be successful, I must be able to..

- Find the difference in the y-values and x-values to calculate slope (rise/run)
- Create a table of values and calculate the rate of change (difference in y-values)

Homework:
Worksheet:
Slope as a Rate of Change - Practice