

Name _____ Date _____

$$y = mx + b$$

GIVEN A TABLE

- Find the Slope: m (in a row)
 - If the x's are consecutive: find the common difference between the y's
 - If the x's are NOT consecutive: Use the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$
- Find the y- intercept: b
 - Where $x = 0$ in the table
 - If $x=0$ isn't in the table:
 - Follow the pattern backwards or forwards until $x = 0$
 - Plug in the slope (m) and a point from the table (x,y) into $y = mx + b$ and solve for b

Examples:

1.

x	y
-2	4
-1	3.5
0	3
1	2.5
2	2

$\rightarrow -0.5$
 $\rightarrow -0.5$
 $\rightarrow -0.5$
 $\rightarrow -0.5$

$m = -0.5$ $b = 3$

$y = -0.5x + 3$

2.

x	y
-2	-3
-1	-1
0	1
1	3
2	5

$\rightarrow +2$
 $\rightarrow +2$
 $\rightarrow +2$
 $\rightarrow +2$

$m = 2$ $b = 1$

$y = 2x + 1$

3.

x	y
-5	-16
-2	-7
0	-1
3	8
5	14

$\frac{y_2 - y_1}{x_2 - x_1}$
 $(3, 8)(5, 14)$
 $\frac{14 - 8}{5 - 3} = \frac{6}{2}$
 $m = 3$

$b = -1$

$y = 3x - 1$

4.

x	y
1	11
2	15
3	19
4	23
5	27

$\rightarrow +4 = m$
 $\rightarrow +4$
 $\rightarrow +4$
 $\rightarrow +4$

$b = 7$

$y = 4x + 7$

5.

x	y
2	5
4	13
7	25
9	33
12	45

$(2, 5)(4, 13)$
 $\frac{13 - 5}{4 - 2} = \frac{8}{2} = 4$

$*m = 4$

$*5 = 4(2) + b$

$5 = 8 + b$

$b = -3$

$y = 4x - 3$

From a word problem:

- Identify the base cost, start-up fee, or one-time fee → this is the Y-intercept
- Identify the rate the problem is increasing or decreasing at → this is your positive or negative slope

Examples:

$y = mx + b$

1. In order to join a dancing club, there is a $\$30$ startup fee and a $\$4$ monthly fee. Write an equation in slope-intercept form that models this situation. How much would it cost to join and be a member for 6 months?

$$y = 4x + 30$$

$$y = mx + b$$

$$y = 4(6) + 30$$

$$y = \$54$$

2. When visiting San Diego, CA, you need to rent a taxi to get from your hotel to the Zoo. The taxi company charges a flat fee of $\$3.00$ for using the taxi and $\$0.75$ per mile. Write an equation in slope-intercept form that models the situation. How much would the ride be if your hotel was 15 miles from the zoo?

$$y = .75x + 3$$

$$y = .75(15) + 3$$

$$y = \$14.25$$

3. A cell phone company charge $\$20$ for 10 GB of data and $\$1.25$ for every GB over that you use. Write an equation in slope intercept form that models the situation. How much would it cost if you used 35 GB of data?

$$y = 1.25x + 20$$

$$y = 1.25(25) + 20$$

$$y = \$51.25$$

4. 8 more than 4 times a number is the same as 16. Find the number

$$(Flip\ the\ order) \quad 4x + 8 = 16$$

$$x = 2$$

5. The sum of two consecutive numbers is 253. Find the numbers

$$x + x + 1 = 253$$

$$2x + 1 = 253$$

$$2x = 252$$

$$x = 126$$

$$126, 127$$

6. The sum of three consecutive ODD numbers is 429. Find the numbers

$$x + x + 2 + x + 4 = 429$$

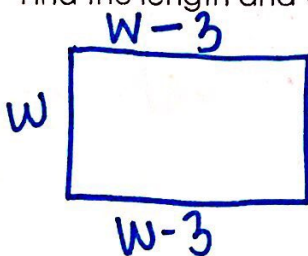
$$3x + 6 = 429$$

$$3x = 423$$

$$x = 141$$

$$141, 143, 145$$

7. The length of a rectangle is 3cm less than the width. The perimeter of the rectangle is 66cm. Find the length and width of the rectangle.



$$\text{width} = 18$$

$$\text{length} = 15$$

$$w + w - 3 + w + w - 3 = 66$$

$$4w - 6 = 66$$

$$4w = 72$$

$$w = 18$$

only have 1 variable