Inspiring Greatness

ISD

INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

Pre-Algebra

Equation of a Line From a Table

May 19, 2020

Pre-Algebra
Lesson: May 19, 2020

Objective/Learning Target:
I can write an equation given a table.

Warm-Up:

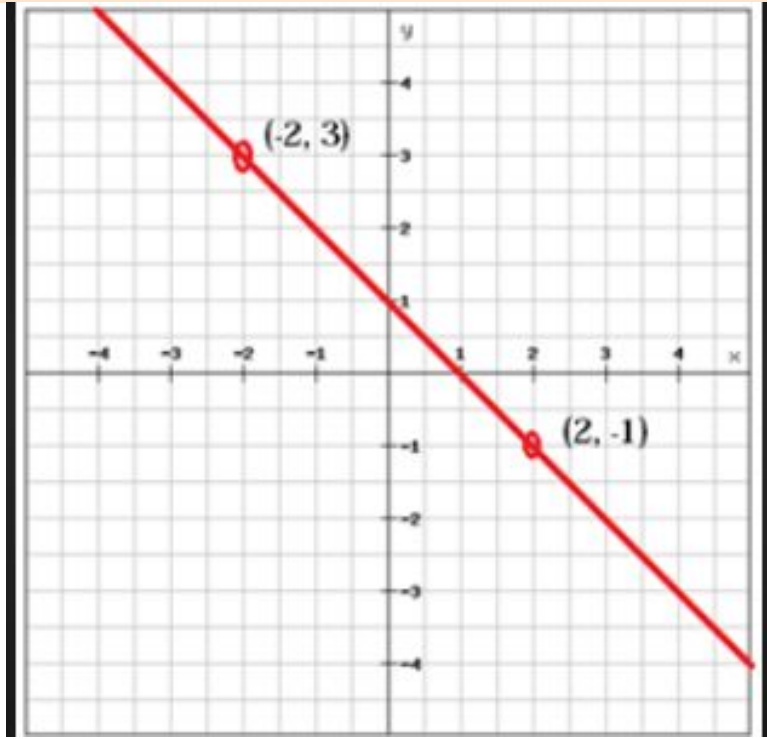
Answers on next slide

Match the slope for each of the following:

1) $Y = 4x - 2$

2) (3, 4) (7, 6)

3)



A) m = ½

B) m = -1

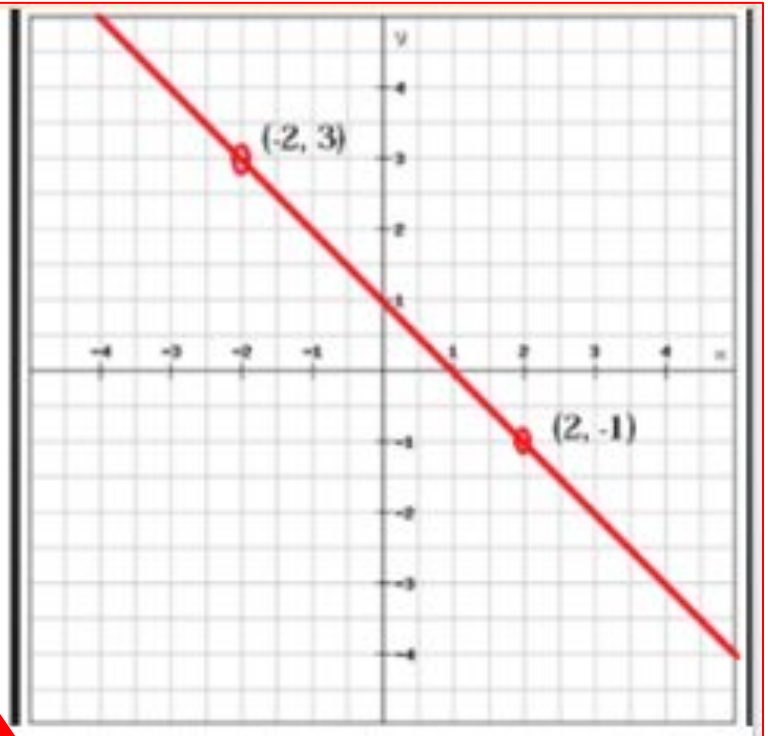
C) m = 4

Warm-Up: *Answer Key*

1) $y = 4x - 2$

2) (3, 4) (7, 6)

3)



A) $m = \frac{1}{2}$

B) $m = -1$

C) $m = 4$

Review: How to Use the Slope Formula

Find the slope of the line that goes through the points (2,5) and (4,8).

Step 1: Label the points. It doesn't matter which one you pick as "Point 1" and "Point 2."

Remember the x's are listed first in an ordered pair and the y's are listed second.

$$(2,5) \text{ and } (4,8)$$
$$x_1 \quad y_1 \qquad x_2 \quad y_2$$

Step 2: Plug in the values. Subtract the y's on the top, subtract the x's on the bottom. Make sure to subtract in the same order in the numerator and denominator.

$$\text{Slope} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - 5}{4 - 2} = \boxed{\frac{3}{2}}$$

Step 3: Make sure your answer is simplified. 3/2 cannot be reduced, so we leave the answer as 3/2.

Review: Equation in Slope-Intercept Form

$$y = mx + b$$

slope — y-intercept

Example:

$$y = 2x + 3$$

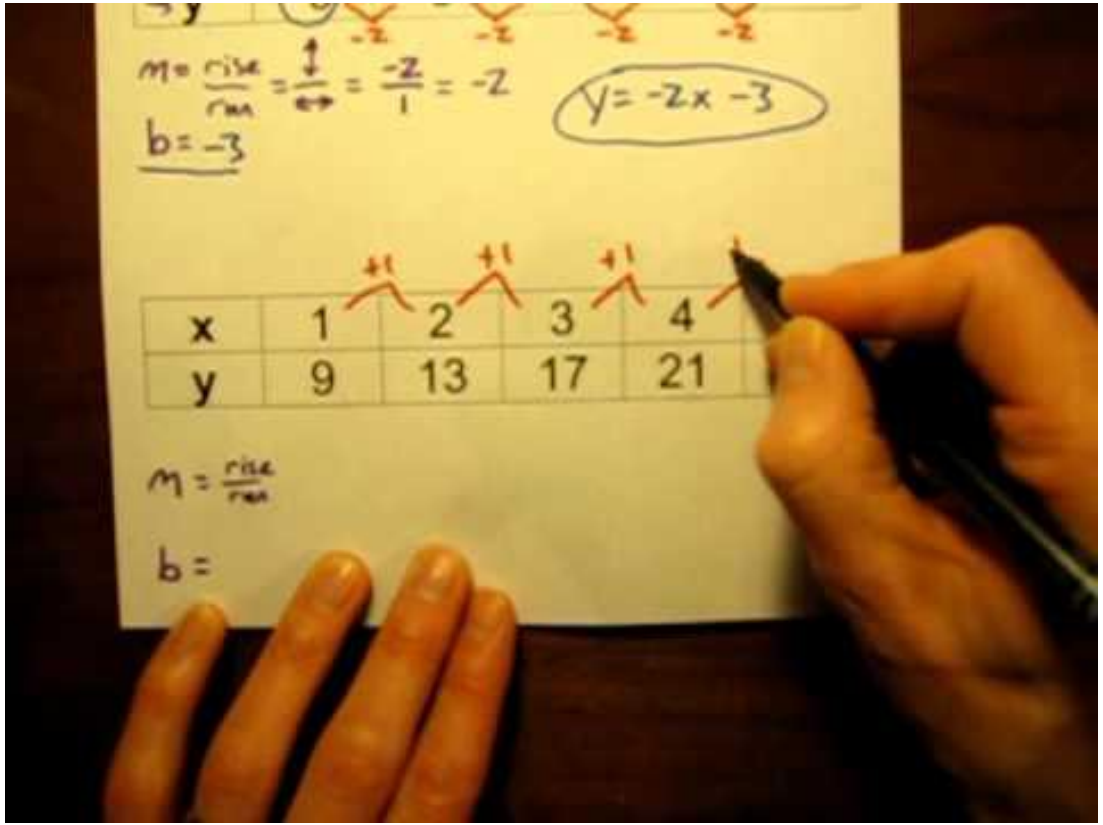
slope — y-intercept

2/1 is the slope

(0,3) is the y-intercept

Video:

Take notes on a piece of paper as you watch this video.



How To: Write an Equation *from a Table*

x	–2	0	2	4
y	–5	3	11	19

① **Find the slope by finding the difference in y values and the difference in x values.** ***Think: Slope Formula.***

*Between each of the **y values**, there is a difference of +8.*

*Between each of the **x values**, there is a difference of +2.*

Slope is the ratio of $\Delta y / \Delta x$, so the slope is 8/2 or 4

② **Find the y-intercept in the table.**

The y-intercept is given. It is (0,3).

③ **Plug the slope and y-intercept into the equation in slope-intercept form.**

$y = 4x + 3$

Example 1:

x	3	5	7	9
y	7	13	19	25

① **Find the slope by finding the difference in y values and the difference in x values.**

Think: Slope Formula.

*Between each of the **y values**, there is a difference of +6.*

*Between each of the **x values**, there is a difference of +2.*

Slope is the ratio of $\Delta y / \Delta x$, so the slope is 6/2 or 3

② **Find the y-intercept by plugging the slope and a point into the slope-intercept equation.**

Set up: $y = 3x + b$ *and let's use the point (3, 7).*

Plug in: $7 = 3(3) + b$

Solve: $7 = 9 + b$

$-9 \quad -9$

$-2 = b$

③ **Plug the slope and y-intercept into the equation in slope-intercept form.**

$y = 3x - 2$ **You can check your equation using any point from the table.*

Example 2:

x	–3	0	3	6
y	–10	–10	–10	–10

① **Find the slope by finding the difference in y values and the difference in x values.**

Think: Slope Formula.

*Between each of the **y values**, there is a difference of **+0**.*

*Between each of the **x values**, there is a difference of **+3**.*

*Slope is the ratio of $\Delta y / \Delta x$, so the slope is **0/3** or **0***

② **Find the y-intercept in the table.**

The y-intercept is given. It is (0, –10).

③ **Plug the slope and y-intercept into the equation in slope-intercept form.**

$y = 0x - 10$ *or* $y = -10$

Example 3:

x	5	4	3	2
y	4	6	8	10

① **Find the slope by finding the difference in y values and the difference in x values.**

Think: Slope Formula.

*Between each of the **y values**, there is a difference of +2.*

*Between each of the **x values**, there is a difference of –1.*

Slope is the ratio of $\Delta y / \Delta x$, so the slope is 2/–1 or – 2

② **Find the y-intercept by plugging the slope and a point into the slope-intercept equation.**

Set up: $y = -2x + b$ *and let's use the point (5,4).*

Plug in: $4 = -2(5) + b$

Solve: $4 = -10 + b$

$+10 \quad +10$

$14 = b$

③ **Plug the slope and y-intercept into the equation in slope-intercept form.**

$y = -2x + 14$ **You can check your equation using any point from the table.*

Practice 1:

Answers on next slide

Write the equation of each line. (A table is given.)

①

x	0	2	4	6	8
y	-7	-9	-11	-13	-15

②

x	3	6	9	12	15
y	-2	4	10	16	22

③

x	20	40	60	80	100
y	140	140	140	140	140

④ A local bike rental company charges $7 an hour to rent a bike and a deposit of $15 for insurance. A table for the cost for the first 5 hours of bike rental is shown below.

Time (hr)	1	2	3	4	5
Cost ($)	22	29	36	43	50

Practice 1: *Answer Key*

① $y = -x - 7$

② $y = 2x - 8$

③ $y = 140$

④ $y = 7x + 15$

Exit Ticket:

Answers on next slide

Complete the table and write the equation to match the scenario.

A fish tank holds 82 gallons of water, but has a leak.
The fish tank is emptying at a rate of 2 gallons per hour.

Time (hr)								
Water (gal)								

Exit Ticket: *Answer Key*

Time (hr)	0	1	2	3	4	5	6	7
Water (gal)	82	80	78	76	74	72	70	68

$$y = -2x + 82$$

Additional Resources:

Write an Equation From a Table - IXL

Write a Linear Function from a Table - IXL

Linear Equations Word Problems: Tables - Khan Academy