

Bellringer

1. Lee charges \$3 for a basket and \$2.50 for each pound of fruit picked at the orchard. Write an equation in $y = mx + b$ form for the total cost of x pounds of fruit from the orchard.

5.2 Writing Linear Equations from a Table

8.F.4

Construct a function to model a linear relationship between two quantities.

Determine the rate of change and initial value of the function from a description of a relationship or from two (x,y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values

① # between 20-30

② X's between 1-10

X	1	2	3	4	5	6
Y	26	25	24	23	22	21

The table is annotated with handwritten notes. Above the X-axis, a green arrow labeled '-1' points from X=1 to X=2, and blue arrows labeled '+1' point from X=2 to X=3, X=3 to X=4, X=4 to X=5, and X=5 to X=6. A red '27' is written above X=3. Below the Y-axis, a green arrow labeled '+1' points from Y=26 to Y=25, and blue arrows labeled '-1' point from Y=25 to Y=24, Y=24 to Y=23, Y=23 to Y=22, and Y=22 to Y=21. A green '27' is written below Y=26.

$$m: \frac{\Delta y}{\Delta x} = \frac{-1}{1} = -1$$

$$b: 27$$

$$\text{Equation: } y = -1x + 27$$

$$y = mx + b$$

$$21 = -1(6) + b$$

$$21 = -6 + b$$

$$+6 \quad \underline{+6} \quad 27 = b$$

EXAMPLE 1

The table shows the temperature of a fish tank during an experiment. Graph the data, and find the slope and y-intercept from the graph. Then write the equation for the graph in slope-intercept form.

x	Time (h)	0	1	2	3	4	5
y	Temperature (°F)	82	80	78	76	74	72

STEP 1

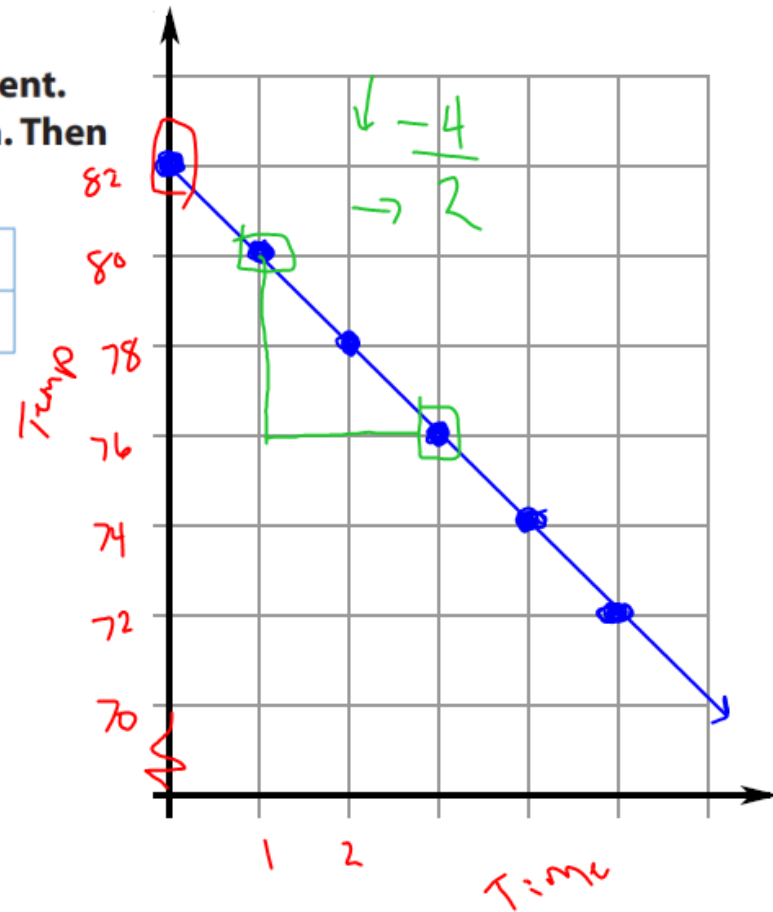
Graph

STEP 2

Draw line through points

STEP 3Find slope -2 **STEP 4**Find y-intercept 82 **STEP 5**Write
Equation

$$y = -2x + 82$$



ADDITIONAL EXAMPLE 1

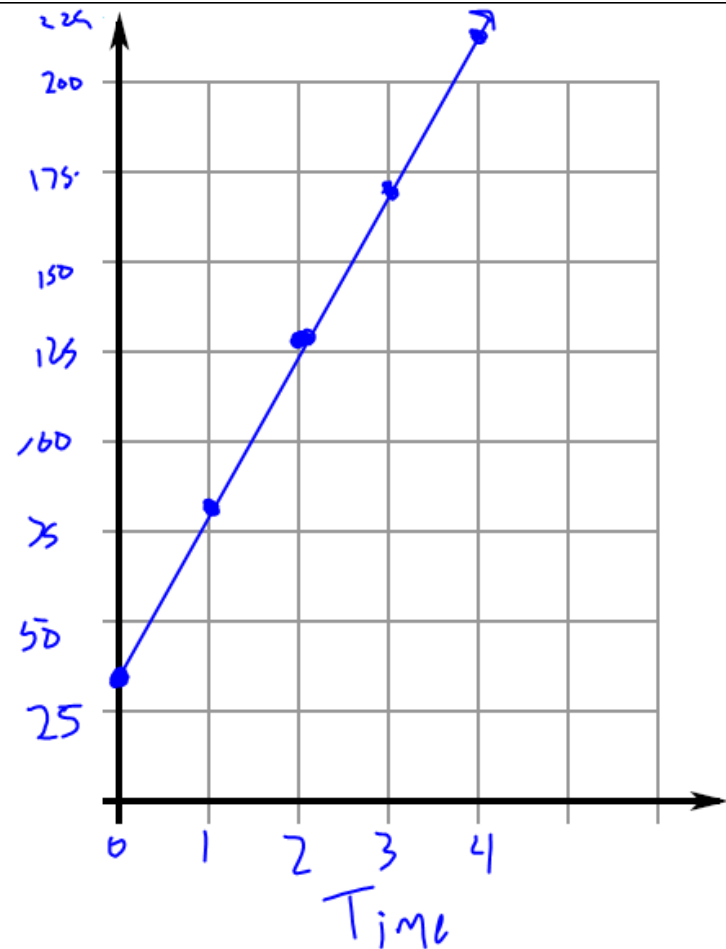
The Dailey family uses maple sap to make syrup. The table shows the temperature of the sap as it heats. Graph the data, and find the slope and y-intercept from the graph. Then write the equation for the graph in slope-intercept form.

Time (h)	0	1	2	3	4
Temp (°F)	38	83	128	173	218

$$y = 45x + 38$$

$$m = \frac{\Delta y}{\Delta x} = \frac{45}{1}$$

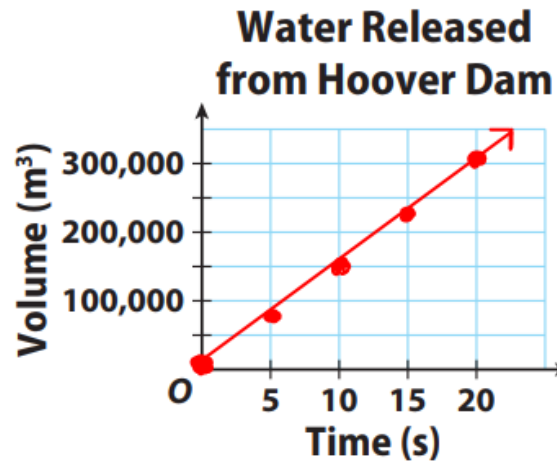
$$b = 38$$



YOUR TURN

- The table shows the volume of water released by Hoover Dam over a certain period of time. Graph the data, and find the slope and y-intercept from the graph. Then write the equation for the graph in slope-intercept form.

$(5, 75000)$ ✓
 $(10, 150000)$ ✓
 $(15, 225000)$ ✓
 $(20, 300000)$



Water Released from Hoover Dam

Time (s)	Volume of water (m ³)
5	75,000
10	150,000
15	225,000
20	300,000

$$m = \frac{\Delta y}{\Delta x} = \frac{75000}{5} = \frac{15000}{1}$$

EXAMPLE 2

Elizabeth's cell phone plan lets her choose how many minutes are included each month. The table shows the plan's monthly cost y for a given number of included minutes x . Write an equation in slope-intercept form to represent the situation.

Minutes included, x	100	200	300	400	500
Cost of plan (\$), y	14	20	26	32	38

STEP 1**STEP 3****STEP 2**

ADDITIONAL EXAMPLE 2

Zara made an initial deposit to a bank account and then added a fixed amount every week. The table shows the money in her account. Write an equation in slope-intercept form to represent the situation.

Number of weeks, x	1	2	3	4	5
Balance (\$), y	140	160	180	200	220

YOUR TURN 

4. A salesperson receives a weekly salary plus a commission for each computer sold. The table shows the total pay, p , and the number of computers sold, n . Write an equation in slope-intercept form to represent this situation.

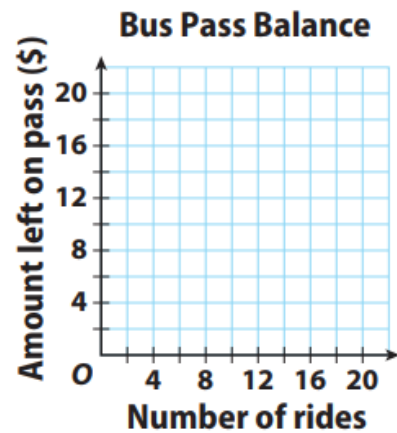
Number of computers sold, n	4	6	8	10	12
Total pay (\$), p	550	700	850	1000	1150

5. To rent a van, a moving company charges \$40.00 plus \$0.50 per mile. The table shows the total cost, c , and the number of miles driven, d . Write an equation in slope-intercept form to represent this situation.

Number of miles driven, d	10	20	30	40	50
Total cost (\$), c	45	50	55	60	65

Guided Practice

1. Jaime purchased a \$20 bus pass. Each time he rides the bus, a certain amount is deducted from the pass. The table shows the amount, y , left on his pass after x rides. Graph the data, and find the slope and y -intercept from the graph or from the table. Then write the equation for the graph in slope-intercept form. (Example 1)



Number of rides, x	0	4	8	12	16
Amount left on pass (\$), y	20	15	10	5	0

The table shows the temperature (y) at different altitudes (x).

This is a linear relationship. (Example 2)

Altitude (ft), x	0	2,000	4,000	6,000	8,000	10,000	12,000
Temperature ($^{\circ}$ F), y	59	51	43	35	27	19	11

2. Find the slope for this relationship.

3. Find the y -intercept for this relationship.

4. Write an equation in slope-intercept form that represents this relationship.

5. Use your equation to determine the temperature at an altitude of 5000 feet.

