

PART I GET STARTED**Today's Mathematics**

We will write $y = mx + b$ from points and real-world information.

Essential Question

What information determines an equation in slope-intercept form?

DO NOW

1. Find both intercepts of $2x + 5y = 20$.

2. Rewrite it as $y = mx + b$.

3. Identify its slope and y -intercept.

SEE IT

A gym charges \$25 to join and \$18 each month. Identify the initial value and rate of change.

QUICK WRITE | 2 MINUTES

Explain how the joining fee and monthly cost would appear in a linear equation.

PART II INVESTIGATE**BUILD THE IDEA**

1. Write an equation when $m = 3$ and $b = -5$.
2. Use $(0, 4)$ and $(3, 10)$ to write an equation.
3. Find b when $m = -2$ and the line passes through $(4, 1)$.
4. Write an equation for the gym in See It. Define both variables and check the cost after 2 months.

COMPARE AND EXPLAIN

Compare finding b from an intercept with finding it from a point whose x -coordinate is nonzero.

APPLY

1. Write the equation with $m = 5$ through $(0, -7)$.
2. Write the equation through $(-2, 1)$ and $(2, 9)$.

PART III MAKE SENSE AND PRACTICE**WHAT WE CAN CONCLUDE**

Slope-intercept form is $y = mx + b$. Calculate m if needed. Substitute a known point to solve for b when it is not given.

WORKED MODEL

Through $(2, 7)$ with $m = 3$: $7 = 3(2) + b$, so $b = 1$ and $y = 3x + 1$. Check: $3(2) + 1 = 7$.

FOCUSED PRACTICE

1. Write the line with slope -4 and y -intercept 6 .
2. Write the line through $(0, -3)$ and $(5, 7)$.
3. A tank starts with 80 gallons and loses 6 gallons per minute. Write its model and define the variables.

MATH WRITE | 5 MINUTES

Explain how to find b when a point is known but the y -intercept is not shown.

PART IV PUZZLE PRACTICE

Homework

What Should You Know If You Want To Become
A Lion Tamer?

Write the letter of each answer in the box containing the exercise number.

Write an equation of the line that passes through the points.

1. (0, 3), (1, 4)

2. (0, 0), (5, -2)

3. (-2, 0), (0, 4)

4. (-3, 2), (0, -3)

5. (-7, 4), (0, 4)

6. (0, -8), (4, 8)

7. (0, -2), (-5, -2)

8. (-12, -9), (0, -3)

9. (0, 10), (5, 0)

10. (-14, 12), (0, 6)

11. (0, -6), (6, -24)

12. (0, -15), (5, 0)
13. You are planning to make a scrapbook. The album costs \$20 and each of the scrapbook papers cost an additional \$1. Write an equation that represents the cost of the completed scrapbook where x represents the number of scrapbook papers you purchase.

14. A hot tub that holds 300 gallons of water drains at a rate of 8 gallons per minute. Write an equation that represents how many gallons of water are left in the tub after it has drained for x minutes.

15. An elevator in a tall building is at a point 180 feet above the ground. The elevator descends at a rate of 12 feet per second. Write an equation that represents how far above the ground the elevator is after descending for x seconds.

Answers

- T. $y = -2x + 10$

N. $y = \frac{1}{2}x - 3$

H. $y = x + 3$

R. $y = -12x + 180$

E. $y = 2x + 4$

A. $y = -\frac{2}{5}x$

H. $y = -\frac{3}{7}x + 6$

N. $y = x + 20$

E. $y = 4$

T. $y = 4x - 8$

I. $y = 3x - 15$

L. $y = -3x - 6$

M. $y = -8x + 300$

O. $y = -2$

O. $y = -\frac{5}{3}x - 3$

14	7	15	3		6	10	2	13		9	1	5		11	12	4	8
----	---	----	---	--	---	----	---	----	--	---	---	---	--	----	----	---	---