

Writing equation Review

SHOW YOUR WORK

Level 2

1. What are the three forms of a linear equation? Write the equation and the name of the form?

Standard form
 $Ax + By = c$

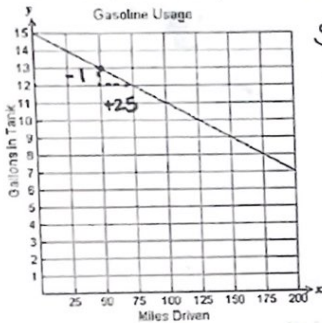
slope intercept
 $y = mx + b$

point-slope
 $y - y_1 = m(x - x_1)$

2. Define slope:

$\frac{\text{Change in } y}{\text{Change in } x}$

3. What is the slope of the line given the graph?



Slope
 $-\frac{1}{25}$

What does the slope represent?

gallons used per mi

What does the y-intercept represent?

Total gas. in tank at start.

4. What is the slope of the line given the table?

x	y
0	1
1	4
2	7
4	13
5	16

$$\frac{4-1}{1-0} = \frac{3}{1}$$

slope = 3

If x is time (weeks), and y is the height (inches) of a sunflower, what does the slope represent for this situation?

growth per week

What does the y-intercept represent in this situation?

Height of sunflower at $t=0$ (starting value)

5. What is the slope between the two points? (2, -3) and (1, 5). Show your calculation or explain your reasoning.

$$m = \frac{5 - (-3)}{1 - 2} = \frac{8}{-1}$$

$m = -8$

6. What is the slope between the two points? (-3, -5) and (2, -8). Show your calculations.

$$m = \frac{-8 - (-5)}{2 - (-3)}$$

$m = \frac{-3}{5}$

7. For the equation written in point-slope form,
 $(y - 3) = \frac{2}{3}(x + 4)$

What is the slope $\frac{2}{3}$?

What is a point on the line shown in the equation?

$(-4, 3)$

Level 3

8. Write the equation of the line that passes through $(-1, 4)$ and $(2, 7)$. Write it in point-slope form.

$$m = \frac{7 - 4}{2 - (-1)} = \frac{3}{3} = 1$$

$$y - 4 = (x + 1)$$

9. What is the equation for the line that goes

10. As a member of the hiking club, you have paid

Level 3

9 What is the equation for the line that goes through the two points: (-1, 9) and (-5, 1) Write your final equation in slope-intercept form.

$$m = \frac{1-9}{-5-(-1)} = \frac{-8}{-4} = 2$$

$$y - 9 = 2(x + 1)$$

$$y - 9 = 2x + 2$$

$$y = 2x + 11$$

$$y = 2x + 11$$

10 As a member of the hiking club, you have paid a total of \$51 after 4 months and a total of \$105 after 10 months. What is the linear equation in slope-intercept form that models this situation.

(4, 51) (10, 105)

$$m = \frac{105-51}{10-4} = \frac{54}{6} = 9$$

$$y - 51 = 9(x - 4)$$

$$y = 9x - 36 + 51$$

$$y = 9x + 15$$

Equation $y = 9x + 15$

What is the monthly cost of the club?

\$9/month

What is the fee to initially join?

\$15

11 Write the equation of the line that passes through the point (6, -3) and is parallel to the equation

$$y = \frac{3}{2}x - 4$$

$$m = \frac{3}{2}$$

parallel $m = \frac{3}{2}$

$$y + 3 = \frac{3}{2}(x - 6)$$

$$y + 3 = \frac{3}{2}x - 9$$

$$-3 \quad -3$$

$$y = \frac{3}{2}x - 12$$

12 Write the equation of the line that passes through the point (-5, 3) and is perpendicular to the equation $y = -\frac{1}{2}x + 2$ $m = -\frac{1}{2}$

perpendicular $m = 2$

$$y - 3 = 2(x + 5)$$

$$y - 3 = 2x + 10$$

$$y = 2x + 13$$

$$y = 2x + 13$$

13 Given the table, what is the equation of the line?

x	y
-5	2
-5	3
-5	4
-5	5
-5	6

$$x = -5$$

14 The water level of a tank was dropping at a rate of 1 liter every 2 months. It started with 500 liters. What is the equation (in slope-intercept form) that models that situation?

$$b = 500$$

$$m = -\frac{1}{2}$$

$$y = -\frac{1}{2}x + 500$$

How much water is in the tank after 24 months? Show your calculations.

$$y = -\frac{1}{2}(24) + 500$$

$$= -12 + 500$$

488 liters

How long until the tank is empty? Show your calculations.

$$0 = -\frac{1}{2}x + 500$$

$$-500 = -\frac{1}{2}x$$

$$x = -2(-500)$$

1000 months

15. To surf the internet at the airport for 15 minutes, costs \$4.05 and it costs \$5.80 for 40 minutes.

x : time (min)
 y : cost (\$)

a. Write an equation representing the cost as a function of the time. Your final equation should be in slope-intercept form.

$(40, 5.80)$ $(15, 4.05)$

$$m = \frac{5.80 - 4.05}{40 - 15} = 0.07$$

$$y - 4.05 = 0.07(x - 15)$$

$$y - 4.05 = 0.07x - 1.05$$

$$y = 0.07x + 3$$

b. How much does it cost for 1 hour?

$$y = 0.07(60) + 3$$

$$y = \$7.20$$

16. A car value decreases over time. 3 years after purchasing, the car's value is \$15,000. After 5 total years, it is worth \$11,000. Write an equation that models this situation. Your final equation should be in slope-intercept form.

$(3, 15000)$ $(5, 11000)$

$$m = \frac{15000 - 11000}{3 - 5}$$

$$m = \frac{4000}{-2} = -2000$$

$$y - 15000 = -2000(x - 3)$$

$$y - 15000 = -2000x + 6000$$

$$y = -2000x + 21000$$

c. At what time will the car's value be \$5000?

$$5000 = -2000x + 21000$$

$$-16000 = -2000x$$

$$x = 8 \text{ years}$$

17. Abby and her friends are going to have a fresh lemonade stand. They initially pay \$10 for supplies. They earn \$0.50 per cup. Write an equation that represents the profit of this situation. Be sure to label your x and y axis.

$$m = 0.5 = \frac{1}{2}$$

$$y = \frac{1}{2}x - 10$$

Graph the equation.

