

Algebra I
Unit 2 Reasoning with Linear Equations and Inequalities
Pre-Test

1. A family's cell phone plan costs \$70 per month for 1,300 minutes and 40 cents per minute over the limit. This month, the family paid \$118.40. By how much time did they exceed their plan?
 - a. 121 minutes
 - b. 471 minutes
 - c. 20 minutes
 - d. 76 minutes

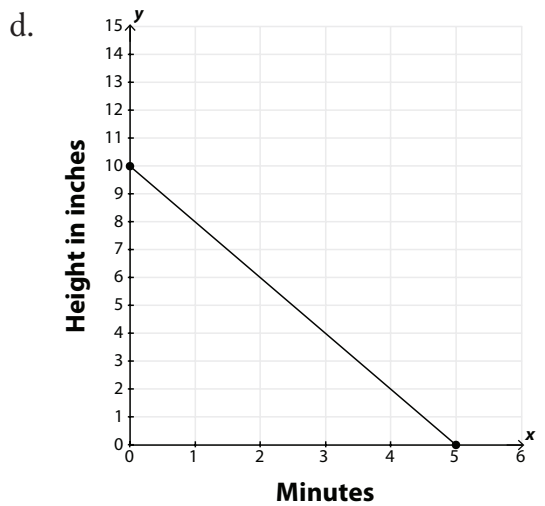
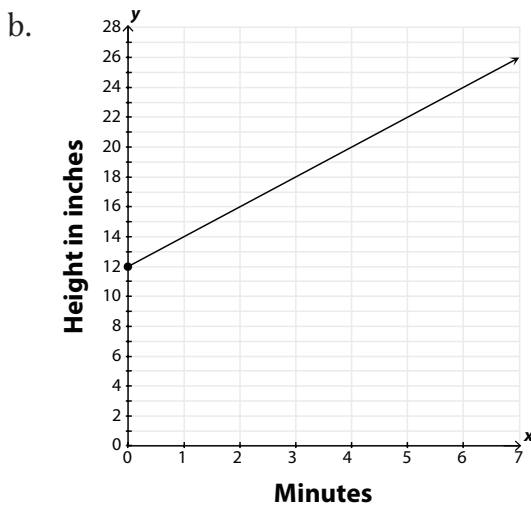
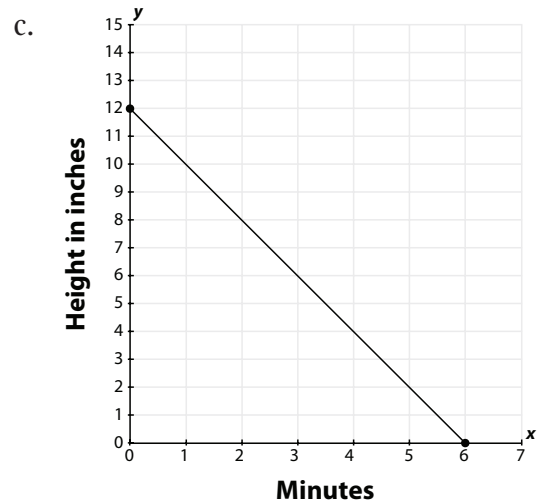
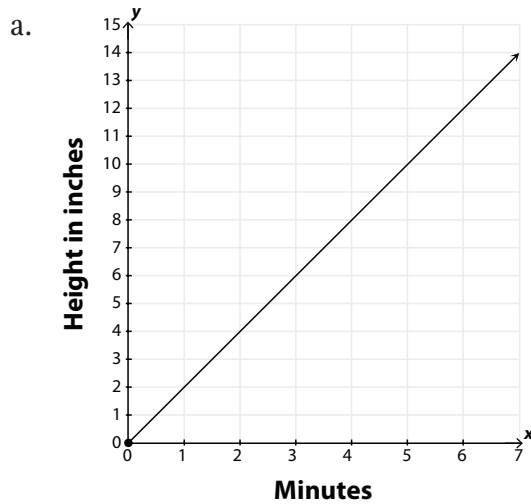
2. You have no more than \$60 to spend. You want a drink that costs \$1.50 including tax, and you want to buy a pair of pants, which will have 4% sales tax. What is the inequality that represents the amount of money you have to spend?
 - a. $x + 0.04x + 1.50 > 60$
 - b. $x + 0.04x + 1.50 \geq 60$
 - c. $x + 0.04x + 1.50 < 60$
 - d. $x + 0.04x + 1.50 \leq 60$

3. The formula for calculating a person's body mass index is $B = \frac{w}{h^2}$, for which w represents weight in kilograms and h represents height in meters. Solve this formula for w .
 - a. $w = Bh^2$
 - b. $w = B - h^2$
 - c. $w = \frac{B}{h^2}$
 - d. $w = (Bh)^2$

4. The recursive formula for an arithmetic sequence is given as $a_n = a_{n-1} + 12$, with $a_1 = 9$. What are the first four terms of the sequence?
 - a. 12, 21, 30, 39
 - b. 9, 21, 33, 45
 - c. 9, 84, 1008, 12,096
 - d. 1, 12, 144, 1728

5. It costs \$80 to buy an air conditioner and about \$0.40 per minute to run it. Which equation models the total cost of using an air conditioner?
 - a. $x + y = 80.40$
 - b. $y = 80.40x$
 - c. $y = 80x + 0.40$
 - d. $y = 0.40x + 80$

6. A 12-inch candle burns at a rate of 2 inches per hour. What is the graph of the equation that models the height of the candle over time?



7. Given the inequality $y \leq -3x + 6$, which point is NOT a solution?

- | | |
|------------|-------------|
| a. (1, -3) | c. (-1, -9) |
| b. (0, -2) | d. (2, 3) |

8. Your cell phone company charges \$29.99 a month plus \$0.25 for each text message sent. You have budgeted no more than \$35.00 for cell phone service each month. Given this situation, determine the minimum and maximum number of texts you can send without going over budget. Let x represent the number of texts.

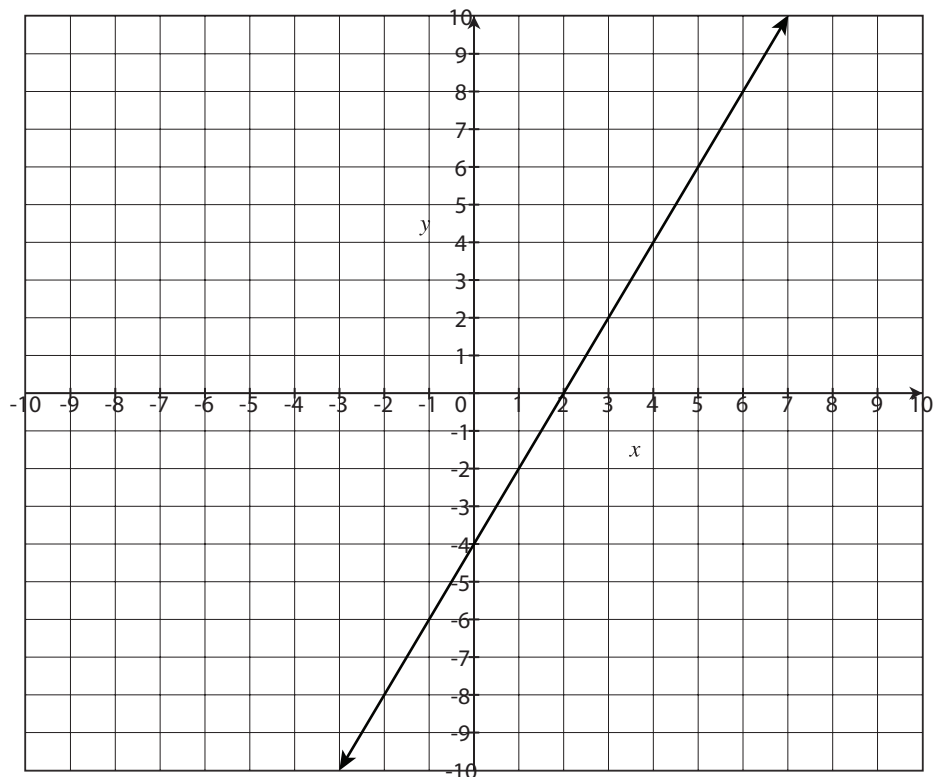
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|----------------------------------|-------------------------------|
| a. $x < 20.04$ | c. $x > 0$ and $x < 20$ |
| b. $x \geq 0$ and $x \leq 20.04$ | d. $x \geq 0$ and $x \leq 20$ |

14. What is the solution to the system $\begin{cases} 4x - 6y = 42 \\ x + 6y = 48 \end{cases}$?
- (5, 18)
 - (18, 5)
 - There are infinitely many solutions to this system of equations.
 - There are no solutions to this system of equations.

15. Which of the following is true at the intersection of $y = f(x)$ and $y = g(x)$?
- $f(x) = g(x)$
 - $x = 0$
 - $f(x) = 0$
 - $g(x) < f(x)$

16. If $f(x) = 3x - 5$ and the domain of f is $\{2, 4, 6\}$, what is the range of $f(x)$?
- $\{11, 17, 20\}$
 - $\{-6, -4, -2\}$
 - $\{2, 4, 6\}$
 - $\{1, 7, 13\}$

17. Given the graph below, what is $f(6)$?



- $f(6) = 5$
- $f(6) = 8$
- $f(6) = -4$
- $f(6) = 0$

18. How does increasing the slope in a linear function change the graph of the line?
- The line rises more steeply.
 - The line is less steep.
 - The y -intercept increases.
 - The y -intercept decreases.
19. Given the equation and table below, which of the following statements is true about the functions $f(x)$ and $g(x)$?

$$f(x) = \frac{2}{5}x - 3$$

x	$g(x)$
-4	-29
-2	-17
2	7
4	19

- The y -intercept of the function $f(x)$ is less than the y -intercept of the function $g(x)$.
 - The y -intercept of the function $f(x)$ is greater than the y -intercept of the function $g(x)$.
 - The y -intercept of the function $f(x)$ is equal to the y -intercept of the function $g(x)$.
 - The y -intercepts cannot be determined.
20. The starting balance of Adam's savings account is \$575. Each month, Adam deposits \$60.
- Write a function to model this scenario.
 - Identify the key features of the function. Determine the x - and y -intercepts, the maximum, the minimum, whether the function is increasing or decreasing, and the rate of change of the function.
21. Your car broke down, and the final bill was \$261.50. The part that was replaced cost \$99, and the charge for the mechanic's labor is \$65 per hour. Write an equation to model this situation, then solve the equation for the number of hours the mechanic worked on your car.
22. A photographer sells large photos for a \$27 profit and small photos for an \$11 profit. This past year, she sold 126 photos and made a profit of \$2,250. How many of each size photo did she sell?