

Name _____

Algebra II Review for Unit 1 Test

Solve the following equations. You may leave your answers as fractions.

1. $\frac{1}{2}(4x+6) - 5(2x-3) = 42$

2. $\frac{6-2x}{2} = \frac{3x+9}{-4}$

$$\begin{aligned}
 -4(6-2x) &= 2(3x+9) \\
 -24 + 8x &= 6x + 18 \\
 2x &= 42 \\
 x &= 21
 \end{aligned}$$

3. $\frac{x}{6} + \frac{1}{3} = 5$

4. $\frac{4}{7}x - 1 = 3$

Write an algebraic expression for each example.

5. Nine times the square of a number plus one

$$9x^2 + 1$$

6. The product of a number and seven plus the quotient of the number and six

$$7x + \frac{x}{6}$$

Solve for the indicated variable.

7. $K = 3B + 5G$ solve for G

$$\begin{aligned}
 K - 3B &= 5G \\
 \frac{K - 3B}{5} &= G
 \end{aligned}$$

$$\frac{K}{5} - \frac{3B}{5}$$

8. $R = \frac{AC}{B}$ solve for C

Use the slope formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ to find the slope of the line that passes through the given points.

9. $(-9, 10)$ and $(-9, 5)$

10. $(-3, 5)$ and $(-8, 2)$

11. $(6, 8)$ and $(-11, 8)$

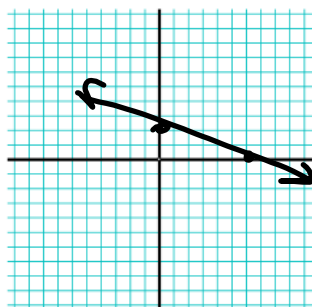
12. $(4, 0)$ $(0, 5)$
 12. x-intercept 4, y-intercept 5

$$\frac{5 - 0}{0 - 4} = -\frac{5}{4}$$

Find the x and y intercepts of the line and graph using the intercepts. Remember! Intercepts are points!

13. $5x + 15y = 30$

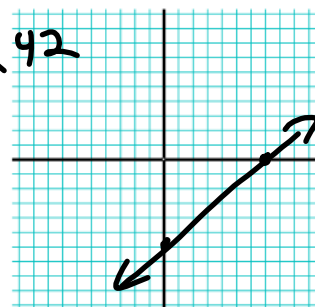
$y = 2$
 $x = 6$



x-int $(6, 0)$ y-int $(0, 2)$

14. $6x - 7y - 42 = 0$

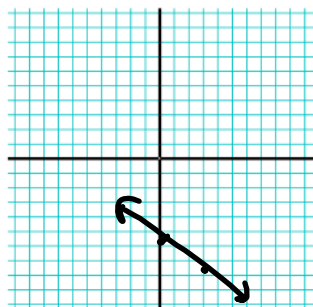
$6x - 7y = 42$



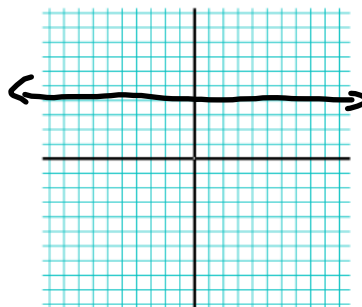
x-int $(7, 0)$ y-int $(0, -6)$

Graph the line using the slope-intercept form.

15. $y = -\frac{2}{3}x - 6$

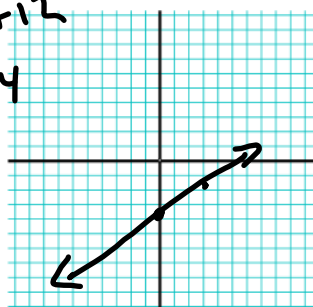


16. $y = 4$

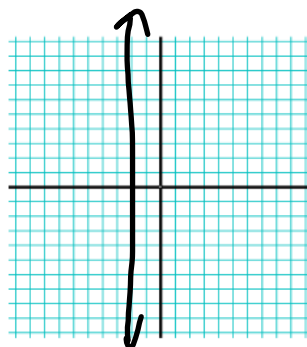


17. $2x - 3y = 12$

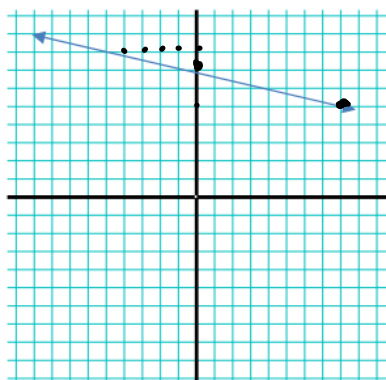
$-3y = -2x + 12$
 $y = \frac{2}{3}x - 4$



18. $x = -2$



19. Write an equation in slope-intercept form for the graph below.



$$y = \frac{-2}{8}x + 7$$

$$y = -\frac{1}{4}x + 7$$

20. Circle the correct answer.

What is the equation of a line that contains the point $(6, -5)$ and has an x -intercept of 3?

A) $y = -\frac{5}{3}x + 5$

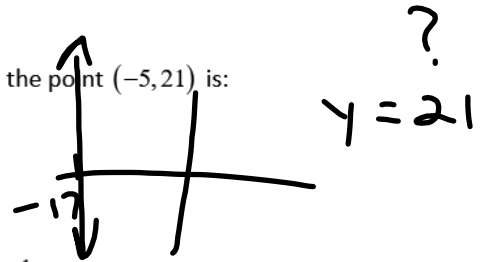
B) $y = -\frac{4}{3}x + 3$

C) $y = -\frac{3}{5}x + 3$

D) $y = \frac{5}{3}x + 5$

$(3, 0)$
 $m = \frac{0 - (-5)}{3 - 6} = \frac{5}{-3}$

21. The equation of the line perpendicular to $x = -17$ through the point $(-5, 21)$ is:



22. Write an equation in slope-intercept form with a slope of $-\frac{1}{4}$ that passes through

$(16, -9)$.

$x \ y$
 $-9 = -\frac{1}{4}(16) + b$

$-9 = -4 + b$

$-5 = b$

$y = -\frac{1}{4}x - 5$

23. Write an equation in slope-intercept form that passes through $(6, -3)$

and is perpendicular to $y = 2x + 8$.

$x \ y$
 $m_{\perp} = -\frac{1}{2}$

$-3 = -\frac{1}{2}(6) + b$

$-3 = -3 + b$

$0 = b$

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

$$y = mx + b$$

24. Write an equation in slope-intercept form that is **parallel** to the graph of $3x + y = 1$ and passes through the point $(-7, -3)$.

$y = -3x + 1$

$$-3 = -3(-7) + b$$

$$-3 = 21 + b$$

$$\begin{array}{r} -21 \\ -21 \\ \hline -24 = b \end{array}$$

$$y = -3x - 24 \quad m = -3$$

State whether the following lines are parallel, perpendicular or neither.

25. $y = \frac{1}{2}x + 3$

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

neither

26. $x = 6$

$x = -4$

parallel

Solve the inequality and graph on the given number line.

27. $-3x - 5 \leq -2$



Write an inequality and then solve.

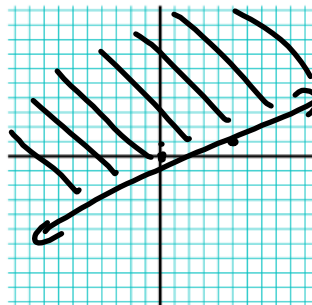
28. The sum of seven times a number and three is less than four times the number.

$$7x + 3 < 4x$$

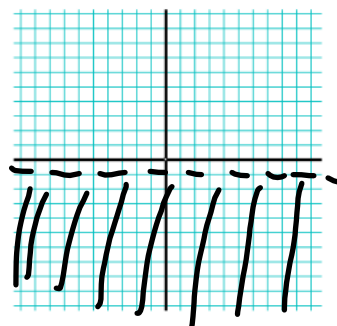
$$\begin{array}{r} -4x \\ -3 \\ \hline 3x < -3 \end{array}$$

$$x < -1$$

29. $y \geq \frac{1}{5}x$

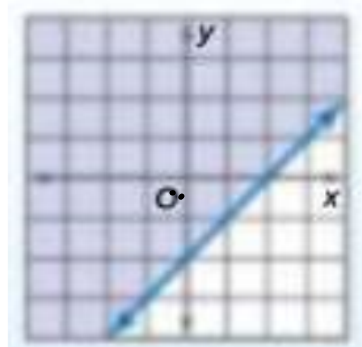


30. $y < -1$



Write an inequality from the graph.

31.



$$\underline{y \geq x - 2}$$