Algebra 1 CSL Writing Equations of Lines Name KEY

Writing Equations of Lines Review for Quiz

Period ____

A. Write the slope-intercept form of the equation of each line given the slope and y-intercept. $y = mx + b$

1) Slope = 5, y-intercept = −3

$y = 5x - 3$

2) Slope = $-\frac{1}{3}$, y-intercept = 5

$y = -\frac{1}{3}x + 5$

3) Slope = 0, y-intercept = 2

$y = 2$

4) Slope = −1, y-intercept = 5

$y = -x + 5$

B. Write the point-slope form of the equation of the line through the given point with the given slope.

5) through: (5, 3), slope = $\frac{4}{5}$

$3 = \frac{4}{5}(5) + b$

$3 = 4 + b$

$-1 = b$

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

6) through: (−3, −2), slope = $-\frac{2}{3}$

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

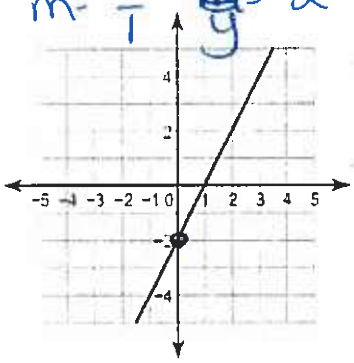
$-2 = 2 + b$

$-4 = b$

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

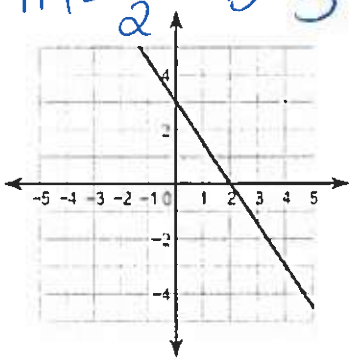
C. Write the slope-intercept form of the equation of each line.

7) $m = \frac{2}{1}$ $b = -2$



$y = 2x - 2$

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



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

D. Write the point-slope form of the equation of the line through the given points. $y - y_1 = m(x - x_1)$

9) through: (−5, −5) and (1, −3)

$m = \frac{-3 + (5)}{1 + (5)} = \frac{2}{6} = \frac{1}{3}$

$y + 5 = \frac{1}{3}(x + 5)$

10) through: (4, 3) and (1, 2)

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

$y - 3 = \frac{1}{3}(x - 4)$

E. Write the point-slope form of the equation of the line described. find new "b" then write eq.

11) through: (−5, −1), parallel to $y = x + 5$ $m = 1$

$-1 = 1(-5) + b$

$-1 = -5 + b$

$4 = b$

$y = x + 4$

12) through: (4, −5), parallel to $y = -\frac{5}{2}x + 5$ $m = -\frac{5}{2}$

$-5 = -\frac{5}{2}(4) + b$

$-5 = -10 + b$

$5 = b$

$y = -\frac{5}{2}x + 5$

13) through: (−3, 0), perp. to $y = -\frac{3}{5}x - 2$ $m = \frac{5}{3}$

$0 = \frac{5}{3}(-3) + b$

$0 = -5 + b$

$5 = b$

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

$-3 = \frac{-15}{5}$

14) through: (4, −3), perp. to $y = -\frac{5}{2}x - 1$ $m = \frac{2}{5}$

$-3 = \frac{2}{5}(4) + b$

$-3 = \frac{8}{5} + b$

$-\frac{8}{5} \quad -\frac{8}{5}$

$-\frac{23}{5} = b$

$y = \frac{2}{5}x - \frac{23}{5}$

F. Write the slope-intercept form of the equation of each line. distrib, solve for y

15) $y - 5 = -10(x - 4)$

$y - 5 = -10x + 40$

$+5 \quad +5$

$\boxed{y = -10x + 45}$

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

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

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

$-3 \quad -3$

$\boxed{y = \frac{5}{3}x + 2}$

K. Write the slope-intercept form of the equation of the line through the given point with the given slope. $y = mx + b$ find new b

17) through: $(4, -4)$, slope $= 2$ (x y)

$-4 = 2(4) + b$

$-4 = 8 + b$

$-8 \quad -8$

$-12 = b$

$\boxed{y = 2x - 12}$

18) through: $(5, -1)$, slope $= \frac{2}{7}$ (x y)

$-1 = \frac{2}{7}(5) + b$

$-1 = \frac{10}{7} + b$

$-\frac{10}{7} \quad -\frac{10}{7}$

$-\frac{17}{7} = b$

$\boxed{y = \frac{2}{7}x - \frac{17}{7}}$

19) through: $(0, 2)$, slope $= 0$ ⟷

$y = 2$

20) through: $(-5, 1)$, slope = undefined ↕

$x = -5$

L. Write the slope-intercept form of the equation of the line through the given points. find slope, find b

21) through: $(3, -3)$ and $(4, 0)$ (x y)

$m = \frac{0 - (-3)}{4 - 3} = \frac{3}{1} = 3$

$0 = 3(4) + b$

$0 = 12 + b$

$-12 = b$

$\boxed{y = 3x - 12}$

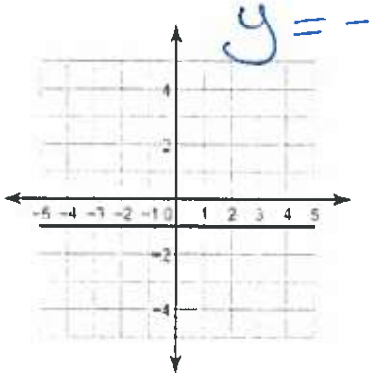
22) through: $(3, 5)$ and $(0, 1)$ (x y)

$m = \frac{1 - 5}{0 - 3} = \frac{-4}{-3} = \frac{4}{3}$ m, y-int

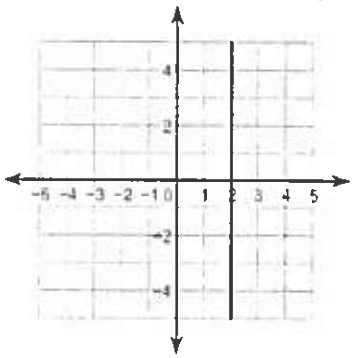
$\boxed{y = \frac{4}{3}x + 1}$

M. Write the equation of each line.

23) $y = -1$



24) $x = 2$



T. Write the slope-intercept form of the equation of the line described.

25) through: (1, −1), parallel to $y = -6x + 1$ $y = mx + b$ $m = -6$

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

$-1 = -6 + b$

$+6 \quad +6$

$5 = b$

$y = -6x + 5$

26) through: (4, 5), parallel to $y = \frac{1}{2}x + 3$ $m = \frac{1}{2}$

$5 = \frac{1}{2}(4) + b$

$5 = 2 + b$

$3 = b$

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

27) through: (−2, −2), perp. to $y = -\frac{2}{7}x + 3$ $m = \frac{7}{2}$

$-2 = \frac{7}{2}(-2) + b$

$-2 = -7 + b$

$+7 \quad +7$

$5 = b$

$y = \frac{7}{2}x + 5$

28) through: (−2, 5), perp. to $y = 2x - 5$ $m = -\frac{1}{2}$

$5 = -\frac{1}{2}(-2) + b$

$5 = 1 + b$

$4 = b$

$y = -\frac{1}{2}x + 4$

U. Write the standard form of the equation of each line given the slope and y-intercept. from $y = mx + b$ no fractions

29) Slope = −2, y-intercept = −2

$y = -2x - 2$

$+2x \quad +2x$

$2x + y = -2$

30) Slope = $-\frac{1}{5}$, y-intercept = −4

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

$+\frac{1}{5}x \quad +\frac{1}{5}x$

$5\left(\frac{1}{5}x + y = -4\right)$

$x + 5y = -20$

V. Write the standard form of the equation of the line through the given point with the given slope. from point-slope

31) through: (−4, 4), slope = $-\frac{7}{4}$

$y - 4 = -\frac{7}{4}(x + 4)$ $4\left(y + \frac{7}{4}x = -3\right)$

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

$+4 \quad +4$

$y = -\frac{7}{4}x - 3$

$4y + 7x = -12$

32) through: (1, 2), slope = 6

$y - 2 = 6(x - 1)$

$y - 2 = 6x - 6$

$+2 \quad +2$

$y = 6x - 4$

$y - 6x = -4$

X. Write the standard form of the equation of the line through the given points. find slope. use point-slope form

33) through: (0, −1) and (1, −4)

$m = \frac{-4 + (+1)}{1 - 0} = \frac{-3}{1} = -3$

$y + 1 = -3(x - 0)$

$y + 1 = -3x$

$y = -3x - 1$

$y + 3x = -1$

34) through: (2, 4) and (2, 1)

$m = \frac{4 - 1}{2 - 2} = \frac{3}{0} =$ undefined.

$0y + x = 3$

Y. Write the standard form of the equation of the line described. Point-slope

35) through: $(-1, 1)$, parallel to $y = -x + 2$ $m = -1$

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

$y - 1 = -x - 1$

$+1 \quad +1$

$y = -x$

$+x \quad +x$

$\boxed{y + x = 0}$

36) through: $(-4, -5)$, parallel to $y = x - 4$ $m = 1$

$y + 5 = 1(x+4)$

$y + 5 = x + 4$

$-x \quad -x$

$y - x + 5 = 4$

$-5 \quad -5$

$\boxed{y - x = -1}$

37) through: $(2, -4)$, perp. to $y = \frac{1}{2}x + 1$ $m = -2$

$y + 4 = -2(x-2)$

$y + 4 = -2x + 4$

$+2x \quad +2x$

$y + 2x + 4 = 4$

$-4 \quad -4$

$\boxed{y + 2x = 0}$

38) through: $(3, -1)$, perp. to $y = \frac{3}{2}x - 5$ $m = -\frac{2}{3}$

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

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

$-1 \quad -1$

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

$+\frac{2}{3}x \quad +\frac{2}{3}x$

$3(y + \frac{2}{3}x = 1)$

$\boxed{3y + 2x = 3}$

HORIZONTAL & VERTICAL LINES: Write the equation of the line through the given points.

39) through: $(-3, 4)$ and $(1, 4)$

$m = \frac{4-4}{1+3} = \frac{0}{4} = 0$ ↔ $\boxed{y = 4}$

40) through: $(2, 4)$ and $(2, 3)$

$m = \frac{3-4}{2-2} = \frac{-1}{0} =$ undefined ↕

$\boxed{x = 2}$

HORIZONTAL & VERTICAL LINES: Write the equation of the line.

41) through: $(-3, 3)$, parallel to $y = 0$

$y = 3$

42) through: $(-4, 0)$, parallel to $x = 0$

$\boxed{x = -4}$

43) through: $(5, -2)$, perp. to $x = 0$

$y = -2$

44) through: $(-1, 1)$, perp. to $y = -5$

$\boxed{x = -1}$