Name: Key Class: _____ Date: _____ ID: A

Algebra I CP Quarter 2 Review Chapters 6 and 8

Find the *x*-intercept.

1. $x+6y=7$

x-int has $y=0$

$x+6(0)=7$

$x=7$

$(7,0)$

2. $4x+y=3$

$4x+0=3$

$4x=3$

$x=\frac{3}{4}$

$\left(\frac{3}{4},0\right)$

Find the *y*-intercept.

3. $y-3x=4$

y-int has $x=0$

$y-3(0)=4$

$y=4$

$(0,4)$

4. $2y+x=8$

$2y+0=8$

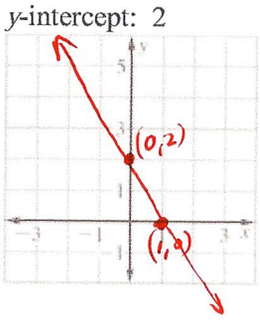
$2y=8$

$y=4$

$(0,4)$

Sketch the line that has the given intercepts.

5. *x*-intercept: 1
y-intercept: 2



Find the slope of the line passing through the points.

6. $(3,4)$ $(1,3)$

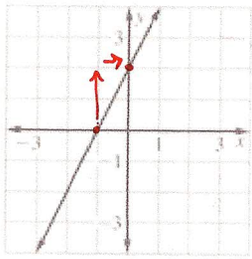
$\frac{\Delta y}{\Delta x}=\frac{4-3}{3-1}=\frac{1}{2}$

7. $(2,7)$, $(5,6)$

$\frac{\Delta y}{\Delta x}=\frac{7-6}{2-5}=\frac{1}{-3}=-\frac{1}{3}$

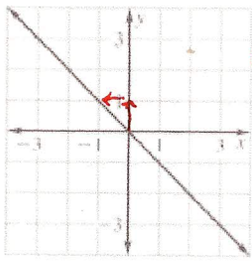
Find the slope of the line.

8.



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

9.



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

Find the slope and *y*-intercept.

$y=mx+b$ (slope, y-int)

10. $y=2x+5$

$m=2$

y-int $(0,5)$

11. $y=5-3x$

$m=-3$

y-int $(0,5)$

Name: Key ID: A

Decide whether the graphs of the two functions are parallel lines.

12. $f(x) = 2x + 1; f(x) = 2x - 8$

$m = 2$ $m = 2$

Since slopes are equal, lines are parallel

13. $f(x) = 4x - 3; f(x) = -4x + 3$

$m = 4$ $m = -4$

slopes not eq ∴ not parallel

Write an equation of the line in slope-intercept form.

14. The slope is –5; the *y*-intercept is 7.

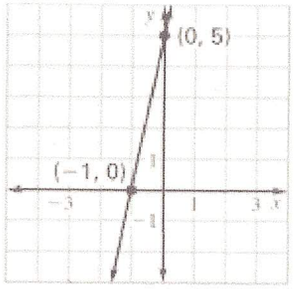
$y = -5x + 7$

15. The slope is 10; the *y*-intercept is –3.

$y = 10x - 3$

Write an equation of the line shown in the graph.

16.



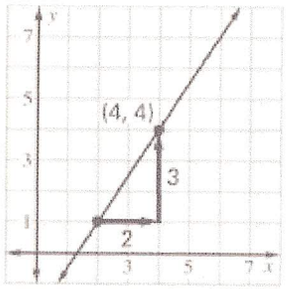
y-int = (0, 5)

∴ $b = 5$

$m = \frac{\Delta y}{\Delta x} = \frac{5-0}{0+1} = \frac{5}{1}$

$y = 5x + 5$

17.



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

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

pt (4, 4)

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

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

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

Write an equation of the line that passes through the point and has the given slope. Write the equation in slope-intercept form.

18. $(3, 0)$, $m = -2$

x-int.

use pt-slope form.

$y - 0 = -2(x - 3)$

$y = -2x + 6$

19. $(1, 2)$, $m = 2$

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

$y = 2x - 2 + 2$

$y = 2x$

Write an equation in slope-intercept form of the line that passes through the points.

20. $(-4, 2)$, $(1, -1)$

$m = \frac{2+1}{-4-1} = \frac{3}{-5}$

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

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

$y = \frac{-3}{5}x - \frac{2}{5}$

21. $(-2, -1)$, $(3, 5)$

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

$y - 5 = \frac{6}{5}(x - 3)$

$y = \frac{6}{5}x - \frac{18}{5} + 5$

$y = \frac{6}{5}x + \frac{7}{5}$

Write an equation in point-slope form of the line that passes through the given points.

22. $(-3, -4)$, $(3, 4)$

$m = \frac{-4-4}{-3-3} = \frac{-8}{-6} = \frac{8}{6} = \frac{4}{3}$

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

OR

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

Name: Key ID: A

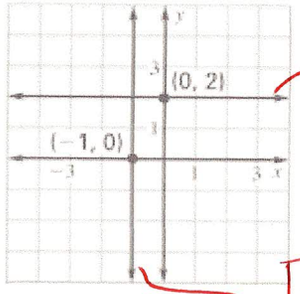
23. $(-5, -4), (7, -5)$

$m = \frac{-4+5}{-5-7} = \frac{1}{-12}$

$y+5 = \frac{1}{-12}(x-7)$ OR $y+4 = -\frac{1}{12}(x+5)$

Write the equations in standard form of the horizontal and vertical lines.

24.

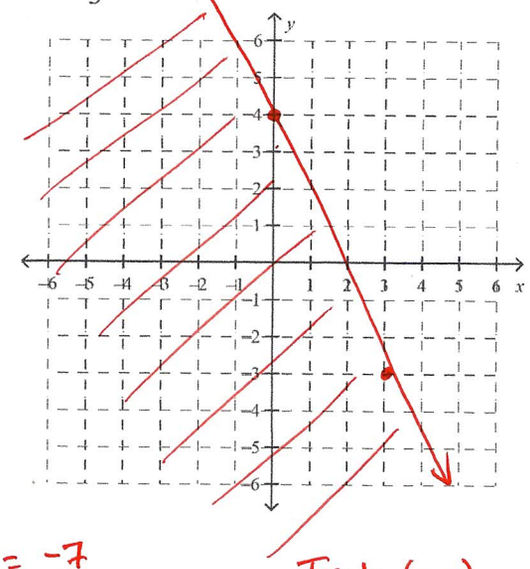


$y = 2$

$x = -1$

25. Sketch the graph for the linear inequality.

$y \le -\frac{7}{3}x + 4$



$m = -\frac{7}{3}$

y-int = $(0, 4)$

Test $(0,0)$

$0 \le -\frac{7}{3}(0) + 4$

$0 \le 4$

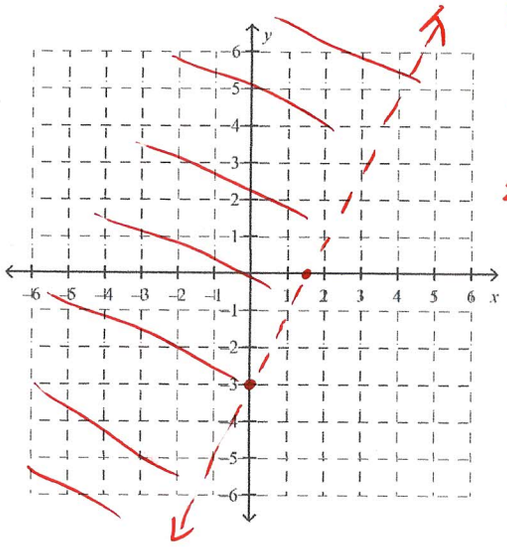
TRUE

∴ shade in direction of $(0,0)$

26. Sketch the graph for the linear inequality.

$2x - y < 3$

x	y
0	−3
3/2	0



Test $(0,0)$

$2(0) - 0 < 3$

$0 < 3$

True

27. Write a linear equation to model the situation. You borrow \$70 from your brother. To repay the loan, you pay him \$7 per week.

let y = amt of loan left

x = week

$y = -7w + 70$ or $y = 70 - 7w$

Simplify. Your answer should contain only positive exponents.

28. $3b \cdot 3b \cdot 2b^3$

$18b^5$

29. $\left(\frac{2y^2z^{-3}}{6y^{-3}z^4}\right)^{-2}$

$\frac{2^{-2}y^{-4}z^6}{6^{-2}y^6z^{-8}} = \frac{6^2z^6z^8}{2^2y^6y^4}$

$= \frac{36z^{14}}{4y^{10}}$

$= \frac{9z^{14}}{y^{10}}$

30. $(-8a^3b^4) \cdot (2a^{-7}b^6)$

$-16a^{-4}b^{10}$

$\frac{-16b^{10}}{a^4}$

Name: Key ID: A

31. $3v^3 \bullet 3v$ = $9v^4$

32. $(4jh^0k^2)^4$ $4^4j^4h^0k^8$ = $256j^4k^8$

33. $(3x^2y^3)^3$ $3^3x^6y^9$ = $27x^6y^9$

34. $\frac{q^2}{2pqr^3}$ = $\frac{q}{2pr^3}$

35. $\frac{x^3z^4}{3x^2y^4}$ = $\frac{xz^4}{3y^4}$

36. $2x^3y^5z \bullet (-3xy^5z^8)$ = $-6x^4y^{10}z^9$

37. $\left(\left(489x^{23}y^3z^{17}\right)^7\right)^0$ = 1

38. $(-2a^2bc^2)^4$ = $(-2)^4a^8b^4c^8$ = $16a^8b^4c^8$

39. $(-2pm^2q^3)^{-3}$

$(-2)^{-3}p^{-3}m^{-6}q^{-9}$

$\frac{1}{-8p^3m^6q^9}$

40. $\frac{12x^3y^2z^4}{3x^4yz^2}$ $\frac{4yz^2}{x}$

41. Simplify $\left(\frac{4x^4y^3}{3x^2y^{-3}}\right)^{-3}$ = $\left(\frac{3x^2y^{-3}}{4x^4y^3}\right)^3$

= $\frac{27x^6y^{-9}}{64x^{12}y^9}$ = $\frac{27}{64x^6y^{18}}$

42. $\frac{2r^3 \bullet (3r)^2}{2r^{-1}}$ $\frac{2r^3 \cdot 9r^2}{2r^{-1}} = 9r^5 \cdot r^1$ = $9r^6$

43. $x^{-2}y^3$ $\frac{y^3}{x^2}$

44. $\frac{n^{-2}}{(3n)^3n^2}$ $\frac{n^{-2}}{27n^3n^2}$ = $\frac{1}{27n^7}$

45. $\frac{(2b^2 \bullet b)^2}{3b}$ $\frac{4b^6}{3b}$ = $\frac{4b^5}{3}$

46. $\frac{\frac{x^3}{y^5}}{\frac{3}{y^3}}$ $\frac{x^3}{y^5} \cdot \frac{y^3}{3}$ = $\frac{x}{3y^2}$

Name: Key ID: A

47. $\dfrac{\dfrac{-2ab^2}{3xy}}{\dfrac{4a^3}{9x^3y}}$

$\dfrac{-2ab^2}{3xy} \cdot \dfrac{9x^3y}{4a^3} = \dfrac{-b^2 \cdot 3x^2}{2a^2} = \dfrac{-3b^2x^2}{2a^2}$

48. A quiz consists of 5 true and false questions. How many different sets of answers are possible?

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \quad 2^5 = 32$

49. A test has 10 multiple choice questions with 5 answer choices for each question. How many different sets of answers are possible?

$5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \cdot 5 \quad 5^{10} = 9{,}765{,}625$

50. The local prison is making new license plates for New York. If the plates use a pattern of

1 letter 2 numbers 2 letters 1 number

$26 \cdot 10 \cdot 10 \cdot 26 \cdot 26 \cdot 10 =$

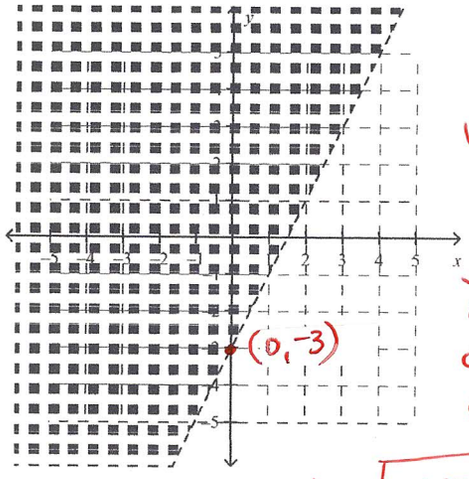
how many different combinations are possible if letters and numbers may be repeated?

17,576,000

51. Tony is getting a sandwich from the local deli. There are 3 different breads, 4 meats, and 2 cheese selections. How many different sandwiches containing 1 bread type, 1 meat and 1 cheese could he make?

$3 \cdot 4 \cdot 2 = 24$

52. What inequality is represented by the following graph?



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

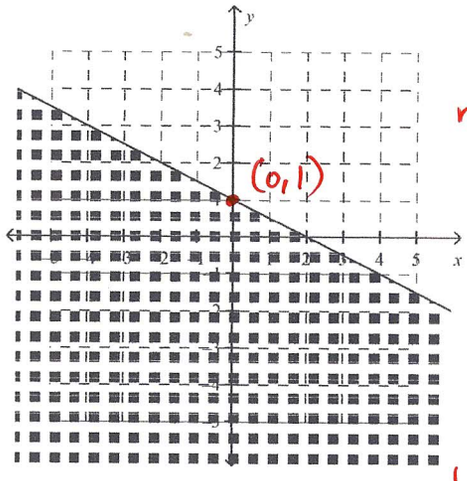
$y = 2x - 3$

$0 \quad 2(0) - 3$

$0 > -3$

$\therefore \quad y > 2x - 3$

53. What inequality is represented by the following graph?



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

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

$0 \quad -\frac{1}{2}(0) + 1$

$0 \leq 1$

$\therefore \quad y \leq -\frac{1}{2}x + 1$

Simplify the radical as far as possible.

54. $\sqrt{300}$

$\sqrt{3 \cdot 100}$

$\sqrt{3} \cdot \sqrt{100}$

$\sqrt{100} \cdot \sqrt{3}$

$10\sqrt{3}$

300 → 3, 100 → 10, 10 (perfect square)

Name: Key ID: A

55. $\sqrt{450}$ $= \sqrt{9}\sqrt{25}\sqrt{2}$ $= 3 \cdot 5\sqrt{2}$ $= \boxed{15\sqrt{2}}$

450 = 45 · 10 = 9 · 5 · 5 · 2 = 3 · 3 · 5 · 5 · 2

56. $\sqrt{20x^4y^6}$

$\sqrt{4 \cdot 5 x^4 y^6}$ $= \boxed{2x^2y^3\sqrt{5}}$

57. $\sqrt{54a^2b^2}$

$\sqrt{9 \cdot 6\, a^2 b^2}$ $= \boxed{3ab\sqrt{6}}$

58. $\sqrt{147x^5y^7}$ $= \sqrt{49 \cdot 3 \cdot x^5 y^7}$ $= \boxed{7x^2y^3\sqrt{3xy}}$

59. $\sqrt{\frac{5n^5}{4m^5}}$ $= \frac{n^2\sqrt{5n}}{2m^2\sqrt{m}}$ $= \frac{n^2}{2m^2}\sqrt{\frac{5n}{m}}$

60. $\frac{\sqrt{9x^5y}}{\sqrt{12x^2y^6}}$ $= \sqrt{\frac{9x^5y}{12x^2y^6}}$ $= \sqrt{\frac{3x^3}{4y^5}}$ $= \frac{x\sqrt{3x}}{2y^2\sqrt{y}}$ $= \frac{x}{2y^2}\sqrt{\frac{3x}{y}}$

Find the exact and approximate distance between these two points in a coordinate plane.

$d = \sqrt{(x_1-x_2)^2 + (y_1-y_2)^2}$

61. (-6,-7) and (-2, 0)

$d = \sqrt{(-6+2)^2 + (-7-0)^2}$

$= \sqrt{16 + 49}$ $= \boxed{\sqrt{65} \approx 8.0623}$

62. (4, 9) and (8, 6)

$d = \sqrt{(4-8)^2 + (9-6)^2}$

$= \sqrt{16 + 9}$

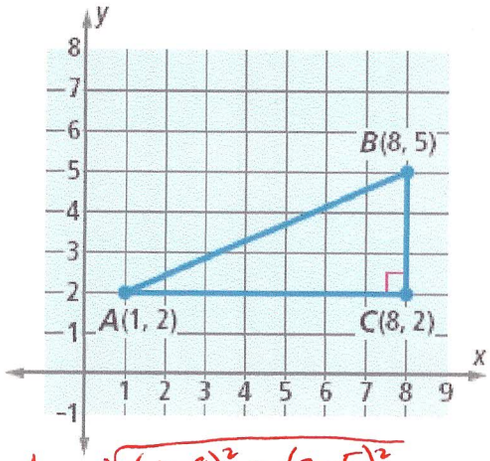
$= \sqrt{25}$ $= \boxed{5}$

63. (15, 2) and (20, -10)

$d = \sqrt{(15-20)^2 + (2+10)^2}$

$= \sqrt{25 + 144}$ $= \sqrt{169}$ $= \boxed{13}$

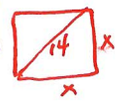
64. Find the exact distance from point A to point B.



$d = \sqrt{(1-8)^2 + (2-5)^2}$

$= \sqrt{49 + 9}$ $= \boxed{\sqrt{58}}$

65. A square has a diagonal length of 14 meters. What is the area of the square?



$x^2 + x^2 = 14^2$

$2x^2 = 196$

$x^2 = 98$

$x = \sqrt{98}$

$x = \sqrt{49 \cdot 2}$

$x = 7\sqrt{2}$

Area = s^2 $(7\sqrt{2})^2 = \boxed{98}$

66. A square has an area of 1,000 square units. What is the exact length of one side?

$x^2 = 1000$

$x = \sqrt{1000} = \sqrt{100 \cdot 10} = \boxed{10\sqrt{10}}$

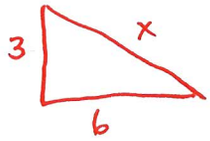
67. A cube has a volume of 2 cubic meters. What is the exact length of an edge?

$V = s^3$

$2 = s^3$

$s = \boxed{\sqrt[3]{2}}$

68. Find the exact length of the hypotenuse of a right triangle if the two sides are 6 and 3.



$6^2 + 3^2 = x^2$

$36 + 9 = x^2$

$45 = x^2$

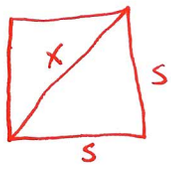
$\sqrt{45} = x^2$

$\sqrt{9 \cdot 5} = x^2$

$\boxed{x = 3\sqrt{5}}$

Name: Key ID: A

69. Find the length of the diagonal of a square if its area is 128 square centimeters.



$A = s^2$

$128 = s^2$

$\sqrt{128} = s$

$(\sqrt{128})^2 + (\sqrt{128})^2 = x^2$

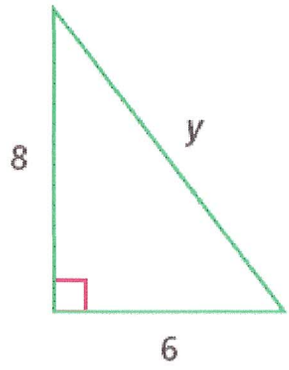
$2(\sqrt{128})^2 = x^2$

$2(128) = x^2$

$256 = x^2$

$16 = x$

70. Find the length of the missing side.



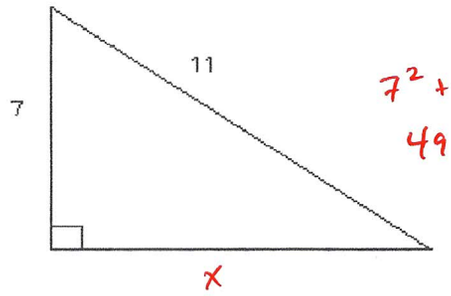
$8^2 + 6^2 = y^2$

$64 + 36 = y^2$

$100 = y^2$

$10 = y$

71. Find the length of the missing side.



$7^2 + x^2 = 11^2$

$49 + x^2 = 121$

$x^2 = 72$

$x = \sqrt{72}$

$x = \sqrt{36 \cdot 2}$

$x = 6\sqrt{2}$