

Summer Packet Answers

PART A:

$$\begin{aligned} 1. & (-2)^3 \cdot (4-8) \\ & -8 \cdot -4 \\ & \boxed{32} \end{aligned}$$

$$\begin{aligned} 2. & 2^2 - 3(-2) - 12 \\ & 4 + 6 - 12 \\ & 10 - 12 \\ & \boxed{-2} \end{aligned}$$

$$\begin{aligned} 3. & 3 - 2(-1 \cdot 3^2) + 6 \\ & 3 + 4 \cdot -3 \end{aligned}$$

$$\begin{aligned} & 3 - 2(-9) + 6 \\ & 3 + -12 \end{aligned}$$

$$\begin{aligned} & 3 + 18 + 6 \\ & -9 \end{aligned}$$

$$\begin{aligned} & 21 + 6 \\ & -9 \end{aligned}$$

$$\begin{aligned} & 27 \\ & -9 \\ & \boxed{-3} \end{aligned}$$

$$\begin{aligned} 4. & (-1)(-2)(8-2)^2 - 9 + (-1) \\ & (-1)(-2)(6)^2 - 9 - 1 \\ & (-1)(-2)(36) - 9 - 1 \\ & 72 - 9 - 1 \\ & \boxed{62} \end{aligned}$$

$$\begin{aligned} 5. & (1-3^4) - 2 + -1 \cdot 3 \\ & (1-81) - 2 + -3 \\ & -80 - 2 - 3 \\ & \boxed{-85} \end{aligned}$$

$$6. 9 - 3|4-8|^2$$

$$9 - 3|-4|^2$$

$$9 - 3(4)^2$$

$$9 - 3(16)$$

$$9 - 48$$

$$\boxed{-39}$$

* Treat absolute value signs as parentheses and complete first

* Then exponent

* Next multiplication

* Finally subtract!

PART B:

7. Real, Rational
8. Real, Rational, Integer
9. Real, Rational, Integer, Whole, Natural
10. Real, Rational, Integer, Whole
11. Real, Irrational
12. Real, Rational, Integer, Whole, Natural
13. Real, Irrational
14. Real, Irrational

Understanding a Flow Chart

\downarrow Sometimes \uparrow Always NO connection = NEVER

15. Sometimes
16. Never
17. Sometimes
18. Sometimes
19. sometimes

PART C:

20. $3x - 9(2x - 1)$
 $3x - 18x + 9$
 $\boxed{-15x + 9}$

23. $23b - 28c + 4b(2 + c) - b$
 $23b - 28c + 8b + 4bc - bc$
 $\boxed{31b - 28c + 3bc}$

21. $(4w + 5)(3w - 12)$
 $12w^2 - 48w + 15w - 60$
 $\boxed{12w^2 - 33w - 60}$

24. When you combine like terms, you don't change the exponent. Ans: $-7x^2$

22. $(8x + 3)^2$
 $(8x + 3)(8x + 3)$
 $64x^2 + 24x + 24x + 9$
 $\boxed{64x^2 + 48x + 9}$

25. You need to EXPAND and FOIL.
 $(x - 2)(x - 2)$
 $x^2 - 4x + 4$

26. $2x - 5$ 28. $(x + 1) + 2$
 27. $\frac{5x}{9}$ or $5x \div 9$ 29. $x - 12$

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PART D:

$$30. \begin{array}{r} 2x - 9 = 51 \\ +9 \quad +9 \end{array}$$

$$\frac{2x}{2} = \frac{60}{2}$$

$$\boxed{x = 30}$$

$$31. \begin{array}{r} 3x + 2 = -2x - 13 \\ +2x \quad +2x \end{array}$$

$$\frac{5x + 2}{-2} = \frac{-13}{-2}$$

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

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

$$32. -2(x + 9) = 8x - 4$$

$$-2x - 18 = 8x - 4$$

$$\begin{array}{r} +2x \quad +2x \end{array}$$

$$-18 = 10x - 4$$

$$\begin{array}{r} +4 \quad +4 \end{array}$$

$$\frac{-14}{10} = \frac{10x}{10}$$

$$\boxed{-1.4 = x}$$

$$33. -13 + 7(3x - 1) = -4(-3 + 3x) - 2x$$

$$-13 + 21x - 7 = 12 - 12x - 2x$$

$$-20 + 21x = 12 - 14x$$

$$\begin{array}{r} +14x \quad +14x \end{array}$$

$$-20 + 35x = 12$$

$$\begin{array}{r} +20 \quad +20 \end{array}$$

$$\frac{35x}{35} = \frac{32}{35}$$

$$\boxed{x = \frac{32}{35}}$$

$$34. -5n - 3n = -5(n+3) - 4(n-1)$$

$$-8n = -5n - 15 - 4n + 4$$

$$-8n = -9n - 11$$

$$\begin{array}{r} +9n \quad +9n \\ \hline \end{array}$$

$$\boxed{n = -11}$$

$$35. 3(2x-4) = -2(8x+5)$$

$$6x - 12 = -16x - 10$$

$$\begin{array}{r} +16x \quad +16x \\ \hline \end{array}$$

$$22x - 12 = -10$$

$$\begin{array}{r} +12 \quad +12 \\ \hline \end{array}$$

$$22x = 2$$

$$\begin{array}{r} 22 \quad 22 \\ \hline \end{array}$$

$$\boxed{x = \frac{1}{11}}$$

$$36. \frac{x+5}{3} = \frac{8}{x-5}$$

$$(x+5)(x-5) = 3(8)$$

$$x^2 - 25 = 24$$

$$\begin{array}{r} +25 \quad +25 \\ \hline \end{array}$$

$$x^2 = 49$$

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

$$\boxed{x = \pm 7}$$

$$37. \frac{x-2}{5} = \frac{3x}{9}$$

$$9(x-2) = 5(3x)$$

$$9x - 18 = 15x$$

$$\begin{array}{r} -9x \quad -9x \\ \hline \end{array}$$

$$-18 = 6x$$

$$\begin{array}{r} 6 \quad 6 \\ \hline \end{array}$$

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

$$38. \frac{-(x+9)}{4} = \frac{8x+1}{3}$$

$$-3(x+9) = 4(8x+1)$$

$$-3x - 27 = 32x + 4$$

$$\begin{array}{r} +3x \quad +3x \\ \hline \end{array}$$

$$-27 = 35x + 4$$

$$\begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$-31 = 35x$$

$$\begin{array}{r} 35 \quad 35 \\ \hline \end{array}$$

$$\boxed{x = \frac{-31}{35}}$$

$$39. \quad 9v - 27 = -3(9 - 3v)$$

$$9v - 27 = -27 + 9v \quad \text{TR}$$

Both sides of the equation are the same. This means you can substitute any real # into the equation.

PART E:

$$40. \quad 4(m-3) + 14 < 22$$

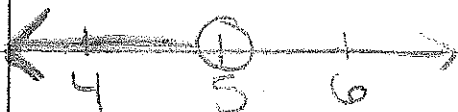
$$4m - 12 + 14 < 22$$

$$4m + 2 < 22$$

$$\begin{array}{r} -2 \\ -2 \end{array}$$

$$\frac{4m}{4} < \frac{20}{4}$$

$$m < 5$$



$$41. \quad 8k > -32 \text{ AND } -6k + 1 < 49$$

$$\frac{8k}{8} > \frac{-32}{8} \quad \frac{-6k + 1}{-1} < \frac{49}{-1}$$

$$k > -4 \text{ AND } \frac{-6k < 48}{-6} < \frac{48}{-6}$$

$$k > -8$$



$$42. \quad 2 + 3x \leq 4x + 3 \leq 3x + 5$$

$$2 + 3x \leq 4x + 3 \quad \text{AND} \quad 4x + 3 \leq 3x + 5$$

$$\frac{-3x \quad -3x}{-3x \quad -3x}$$

$$2 \leq x + 3$$

$$\begin{array}{r} -3 \\ -3 \end{array}$$

$$-1 \leq x$$

$$\frac{-3x \quad -3x}{-3x \quad -3x}$$

$$x + 3 \leq 5$$

$$\begin{array}{r} -3 \\ -3 \end{array}$$

$$x \leq 2$$



$$43. \quad 13 > -6p - 7p$$

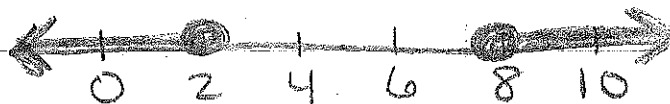
$$\frac{13}{-13} > \frac{-13p}{-13}$$

$$-1 < p$$



$$44. \quad \frac{16x}{16} \leq \frac{32}{16} \text{ or } \frac{-5x}{-5} \leq \frac{-40}{-5}$$

$$x \leq 2 \text{ OR } x \geq 8$$



$$45. \quad -7(5g - 2) + 2 \geq -5g - 7(g + 1)$$

$$-35g + 14 + 2 \geq -5g - 7g - 7$$

$$-35g + 16 \geq -12g - 7$$

$$\begin{array}{r} +35g \qquad \qquad +35g \\ \hline \end{array}$$

$$16 \geq 23g - 7$$

$$\begin{array}{r} +7 \qquad \qquad +7 \\ \hline \end{array}$$

$$\frac{23}{23} \geq \frac{23g}{23}$$

$$1 \geq g$$



$$46. \quad -12x - 9y > 27$$

$$\begin{array}{r} +12x \qquad \qquad +12x \\ \hline \end{array}$$

$$-9y > 12x + 27$$

$$\begin{array}{r} -9 \qquad \qquad -9 \qquad -9 \\ \hline \end{array}$$

$$\boxed{y < \frac{-4x - 3}{3}}$$

PART E:

47.

Chestnut		$x+12$
Bay		x
Gray		$2x$

$$x+12 + x + 2x = 52$$

$$4x + 12 = 52$$

$$\begin{array}{r} -12 \quad -12 \\ \hline \end{array}$$

$$\frac{4x}{4} = \frac{40}{4}$$

$$x = 10$$

10 horses are bay

48.

width		$2x+2$
length		x

$$2(\text{length}) + 2(\text{width}) = \text{perimeter}$$

$$2(x) + 2(2x+2) = 208$$

$$2x + 4x + 4 = 208$$

$$6x + 4 = 208$$

$$\begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$\frac{6x}{6} = \frac{204}{6}$$

$$x = 34$$

The pool is

34 ft x 70 ft

$$49. \quad (A) \quad .85x + 3500 \geq 20,000$$
$$\quad \quad \quad - 3500 \quad \quad - 3500$$

$$\quad \quad \quad \underline{.85x} \geq \underline{16500}$$

$$\quad \quad \quad .85 \quad \quad .85$$

$$\quad \quad \quad \boxed{x \geq 19411.76}$$

$$(B) \quad \frac{19411.76}{800} = \boxed{\$24.27}$$

$$50. \quad 2x + 3x + 4x = 36$$

$$\quad \quad \underline{9x} = \underline{36}$$

$$\quad \quad 9 \quad \quad 9$$

$$\quad \quad \quad x = 4$$

$\boxed{\text{Sides are } 8\text{in} : 12\text{in} : 16\text{in}}$

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PART 6:

51. Set-up a proportion!

$$\frac{1.5 \text{ cups of flour}}{24 \text{ pancakes}} = \frac{x}{8 \text{ pancakes}}$$

$$\frac{24x}{24} = \frac{12}{24}$$

$$x = \frac{1}{2} \text{ cup of flour}$$

52. 1 Tablespoon = 3 teaspoons = 180 cal
X teaspoons = 75 cal

setup a proportion $\frac{3}{180} = \frac{x}{75}$

$$\frac{180x}{180} = \frac{225}{180}$$

$$x = 1.25 \text{ teaspoons}$$

53. $\frac{3}{8} + \frac{1}{2}$

$$\frac{3}{8} + \frac{4}{8} = \frac{7}{8}$$

54. $\frac{2}{5} + \frac{3}{10} - \frac{1}{2}$

$$\frac{4}{10} + \frac{3}{10} - \frac{5}{10} = \frac{2}{10} = \frac{1}{5}$$

$$55. \frac{11}{12} - \frac{7}{8}$$

$$\frac{22}{24} - \frac{21}{24} = \boxed{\frac{1}{24}}$$

$$56. \frac{1}{2} \cdot \frac{2}{5} + \frac{3}{4} \cdot \frac{2}{3}$$

$$\frac{2}{10} + \frac{6}{12}$$

$$\frac{12}{60} + \frac{30}{60} = \frac{42}{60} = \boxed{\frac{7}{10}}$$

$$57. 2\frac{2}{7} - \frac{1}{2}$$

$$\frac{16}{7} - \frac{1}{2}$$

$$\frac{32}{14} - \frac{7}{14}$$

$$\boxed{\frac{25}{14}}$$

$$58. -\frac{2}{3} + \frac{5}{11}$$

$$\frac{-22}{33} + \frac{15}{33} = \boxed{\frac{-7}{33}}$$

$$59. \frac{2}{3} \cdot \frac{1}{9} = \boxed{\frac{2}{27}}$$

$$60. \frac{1}{2} \cdot \frac{2}{7} \cdot \frac{-1}{5} = \frac{-2}{70} = \boxed{\frac{-1}{35}}$$

$$61. 1\frac{11}{13} \cdot \frac{2}{3}$$

$$\frac{24}{13} \cdot \frac{2}{3} = \frac{48}{39} = \boxed{\frac{16}{13}}$$

$$62. \frac{3}{4} \div \frac{1}{7}$$

$$\frac{3}{4} \cdot \frac{7}{1} = \boxed{\frac{21}{4}}$$

$$63. \frac{8}{9} \div 2$$

$$\frac{8}{9} \cdot \frac{1}{2} = \frac{8}{18} = \boxed{\frac{4}{9}}$$

$$64. 3 \div \frac{2}{5}$$

$$\frac{3 \cdot 5}{1 \cdot 2} = \boxed{\frac{15}{2}}$$

PART H:

$$65. \frac{y_2 - y_1}{x_2 - x_1} = \frac{13 - 7}{-3 - 9} = \frac{6}{-12} = \boxed{-\frac{1}{2}}$$

$$66. \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 5}{14 - (-4)} = \frac{0}{18} = 0$$

$$67. \boxed{-1 = \text{slope}}$$

$$68. \frac{-8y}{-8} = \frac{9 - 5x}{-8}$$

$$69. \frac{7x}{+4} = \frac{y - 4}{+4}$$

$$y = \frac{-9}{8} + \frac{5x}{8}$$

$$\boxed{7x + 4 = y}$$

$$\boxed{\text{slope} = 7}$$

$$70. x = 3$$

$\boxed{\text{slope} = \text{undefined}}$

$$\boxed{\frac{5}{8} = \text{slope}}$$

$$71. \text{x-intercept} = (2, 0)$$

$$\text{y-intercept} = (0, -3)$$

$$72. \text{x-intercept} = (1, 0)$$

$$\text{y-intercept} = (0, 5)$$

73. parallel lines have the SAME SLOPE

$$\boxed{\text{Slope} = -\frac{1}{2}}$$

74. perpendicular lines have opposite reciprocal slope.

$$\boxed{\text{slope}_{\perp} = \frac{1}{9}}$$

75. Graph $y = -\frac{1}{5}x - 2$

$$\text{slope} = -\frac{1}{5}$$

y-intercept $(0, -2)$

76. Horizontal Line through -9