Name:_____

Financial Literacy Summer Packet

The problems in this packet are designed to help you review topics from previous math classes that are important to your success in financial literacy. Please try to do each problem. Show your work.

Enjoy your summer! I look forward to seeing you in August!

I. Order of Operations (PEMDAS)

Use the order of operations to determine each answer:

1. $8 + 7 \cdot 9$

2. $12 + 4^2$

3. $35 - (17 - 2) \div 5$

4. $24 - 9 \cdot 2 + 6 \div 3$

5. $\dfrac{2^3 - 22}{4(28 - 11)}$

6. $\dfrac{45}{9} + 3$

7. $12(2 + 7) - 24 \div 12$

8. $4(9 - 3) \div (8 - 2)$

9. $26 - [(25 - 11) - 2^3]$

10. $(8^2 - 2^5) \div (24 \div 6) + 3^2$

II. Evaluate Algebraic Expressions

Evaluate each expression: $x = 8,\ y = 6,\ m = 3,\ p = \frac{1}{2},\ n = \frac{3}{4}$

11. $4x - 2m$

12. $5y + 8p$

13. $nxy \div m$

14. $2(3x + 6) \div (10m)$

15. $2ny + x$

16. $(x + y) \div p$

17. $6p + 8n$

18. $my - 2x$

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III. Computations with integers
   a. Adding integers
   b. Subtracting integers
   c. Multiplying and dividing integers

Solve the following problems.

19. -7 - (-3) =
20. -21 + -19 =
21. 6 + (-8) =
22. -9 - (6) =
23. 7 - (-3) + (-2) - 4 =
24. 11 + (-2) =
25. -3(-4) =
26. 45 - (-27) =
27. -5 + (4) =
28. 24 ÷ (-6) =
29. 19(-4) =
30. 81 ÷ (-9) =
31. 14 - (-7) + (-2) =
32. -8 • (-4) ÷ (-2) =
33. 8(7) =
34. 56 ÷ (-14) =
35. 12 + (-7) - (-28) =

IV. Distribution

Simplify.

36. 2(x+ 7)
37. -3(x+ 4)
38. 6(x-5) + -2(x+4)

V. Computations with Fractions
   a. Addition and subtraction
   b. Multiplication
   c. Division

Simplify each expression completely.

39. $\frac{3}{8}+\frac{2}{8}$
40. $\frac{7}{9}-\frac{1}{9}$
41. $\frac{7}{12}+\frac{9}{36}$
42. $\frac{5}{8}+\frac{1}{2}$
43. $\frac{33}{80}-\frac{4}{20}$
44. $\frac{5}{6}+\frac{9}{7}$
45. $\frac{3}{8}\cdot\frac{7}{5}$
46. $\frac{7}{12}\cdot\frac{4}{5}$
47. $\frac{9}{10}\cdot 5\frac{3}{4}$

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Simplify each expression completely.

48. $\div \frac{3}{14}$

49. $\frac{5}{7} \div 2\frac{3}{5}$

50. $3\frac{5}{9} \div 2\frac{11}{12}$

VI. Percentages, decimals, and fractions

Convert Decimal to Percent

51. 0.239=

52. 0.45=

53. 2.586=

Convert Percent to Decimal

54. 140%=

55. 57.9%=

56. 16%=

Convert Decimal to Fraction

57. 0.15=

58. 3.25=

59. 0.462=

Convert Fraction to Decimal

60. $\frac{2}{7}$=

61. $\frac{16}{20}$=

62. $\frac{32}{5}$=

Convert Fraction to Percent

63. $\frac{9}{20}$=

64. $\frac{3}{10}$=

65. $\frac{15}{2}$=

Convert Percent to Fraction

66. 23.17%=

67. 12%=

68. 13.7%=

VII. Solving Equations

69. n + 4 = 90

70. x - 12 = 14

71. c + 5 = -8

72. $\frac{3}{4}x = 12$

73. $\frac{x}{3} = -18$

74. 3r = 27

75. 45n + 45 = 90

76. $\frac{k}{7} + 11 = 11$

77. 36 = 6u + 30

78. $10 = \frac{t}{66} + 9$

79. 15 = 2m - 7

80. $216 = \frac{r}{2} + 214$

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VIII. Percent proportion

$$\frac{\text{part}}{\text{whole}} = \frac{\%}{100}$$

$$\frac{\text{is}}{\text{of}} = \frac{\%}{100}$$

81. What is 23% of 80?

82. What is 3% of 534?

82. What is 15% of 250?

83) A Shirt usually selling for $140 is on sale at 25% off. What is the sale price of the coat?

84) Joey purchased 5 CD's for $12.00 each. What is the total cost for the CD's including a 6% sales tax?

Multiplying Polynomials

FOIL: To multiply two binomials, find the sum of the products of the:	**Double-Distribution**: Distribute both of the terms in the first parenthesis to the terms in the second parenthesis.
F – first terms O – outer terms I – inner terms L – last terms $(x-2)(x+4)$ $(x)(x)+(x)(4)+(2)(x)+(-2)(4)$ F O I L $x^2+4x-2x-8$ x^2+2x-8	$(x-2)(x+4)$ $x(x+4)-2(x+4)$ $x^2+4x-2x-8$ x^2+2x-8

Find each product.

1. $(n+8)(n+2)$

2. $(y+4)(y-3)$

3. $(x-3)(x+3)$

4. $(k+12)(3k-2)$

5. $(4h+5)(h+7)$

6. $(5m-6)(5m-6)$

Factoring

Factoring is used to represent quadratic equations in the **factored form** of $a(x - p)(x - q) = 0$, and solve this equation.

Factoring GCF

In a quadratic equation you may factor out the Greatest Common Factor.

Ex 1: $16x^2 + 8x = 0$. GCF = 8x

$8x(2x + 1) = 0$ Zero Product Rule

$8x = 0$ or $2x + 1 = 0$

$x = 0$ or $x = -1/2$

$$ax^2 + bx + c$$

Factoring where a = 1

Ex 2: $x^2 + 9x + 20 = 0$ To Factor we want to find two numbers that multiply to 20 and add to 9.

$(x + 5)(x + 4) = 0$ $5 + 4 = 9$ and $5 * 4 = 20$

$(x + 5) = 0$ *or* $(x + 4) = 0$ Zero Product Rule

$x = -5$ *or* $x = -4$

Solve each equation .

1. $20x^2 + 15x = 0$

2. $6x^5 + 18x^4 = 0$

3. $x^2 - 16x + 64 = 0$

4. $x^2 - 11x + 30 = 0$

5. $x^2 - 4x - 21 = 0$

6. $x^2 - 6x - 16 = 0$

Exponents

Rules of Exponents

- $a^m \cdot a^n = a^{m+n}$
- $(ab)^m = a^m b^m$
- $a^0 = 1$
- $(a^m)^n = a^{mn}$
- $\frac{a^m}{a^n} = a^{m-n}$
- $a^{-m} = \frac{1}{a^m}$

Ex. 1 $\left(a^{\frac{1}{2}}\right)^2 = a^{\frac{1}{2}\cdot 2} = a^1 = a$

Ex. 2 $x^3 x^8 = x^{11}$

Ex. 3 $\left(\frac{x^2}{y}\right)^{-3} = \left(\frac{y}{x^2}\right)^3 = \frac{y^3}{x^6}$

Simplify the following. Remember there should be no negative exponents.

1. $-4x^5y^{-2}$

2. $\frac{3^5}{3^3}$

3. $\frac{a^{-2}b^3}{c^{-4}d^{-1}}$

4. $\left(7a^3b^{-1}\right)^0$

5. $\left(6x^3\right)^2$

6. $\frac{1}{2^{-4}}$

7. $\left(\frac{2x}{3y^2}\right)^3$

8. $\frac{52x^6}{13x^{-7}}$

Section 0.7: Ordered Pairs

Important Notes:

- Points in the coordinate plane are known as **ordered pairs**.
- Ordered pairs are written in the form (x, y).
- The x-axis and y-axis divide the coordinate plane into four quadrants.
- The point of intersection of the axes is the **origin**.
- The origin is located at $(0,0)$.

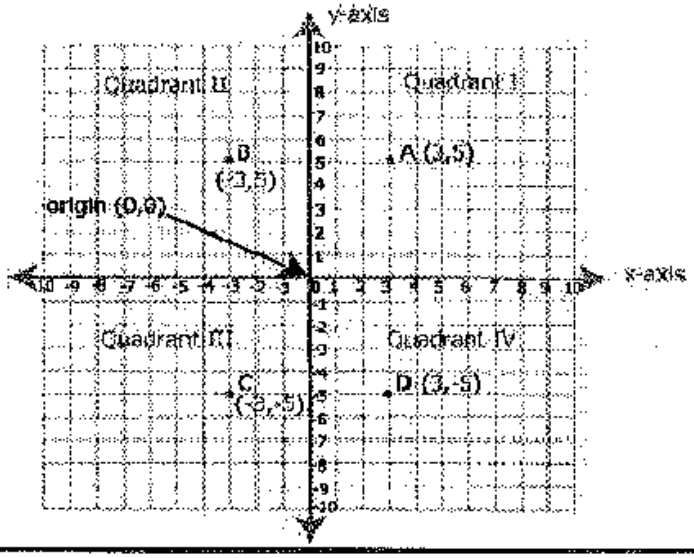
Example:

$A\,(3,5)$ - Quadrant I

$B(-3,6)$ - Quadrant II

$C(-3,-5)$ - Quadrant III

$D(3,-5)$ - Quadrant IV



Write the ordered pair for each point shown in the coordinate plane. Name the quadrant that the point is located in.

1. B = (,)

Quadrant = _____

2. C = (,)

Quadrant = _____

3. E = (,)

Quadrant = _____

4. A = (,)

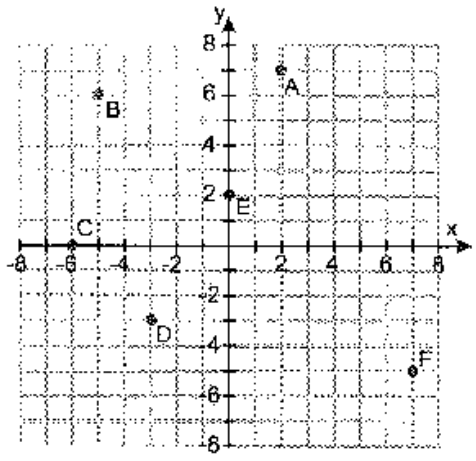
Quadrant = _____

5. D = (,)

Quadrant = _____

6. F = (,)

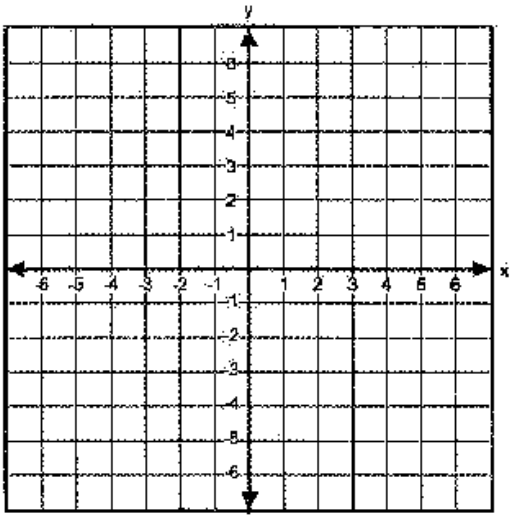
Quadrant = _____



Make a table of values and graph 5 points that satisfy each equation.

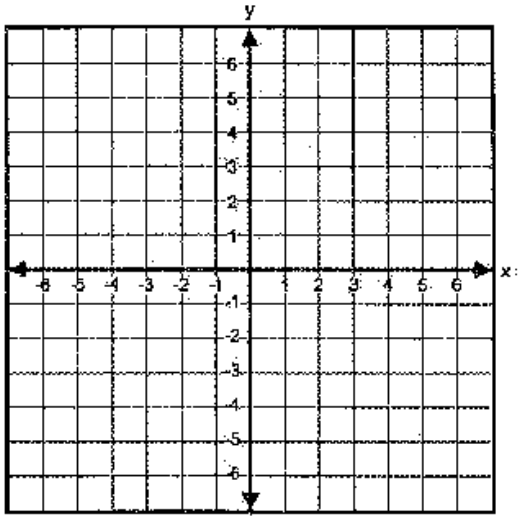
7. $y = 2x$

x	y



8. $y = 4 - x$

x	y

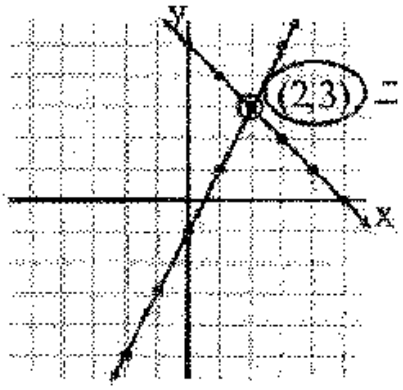


Section 0.8: Systems of Linear Equations

Solving Systems by Graphing

Example: Solve the system of equations by graphing.

$$y = 2x - 1$$
$$x + y = 5$$



Step 1: Graph each line. The second equation here needs to be changed to $y = mx + b$.

$$\begin{array}{l} x + y = 5 \\ -x \quad\quad -x \\ y = -x + 5 \end{array}$$

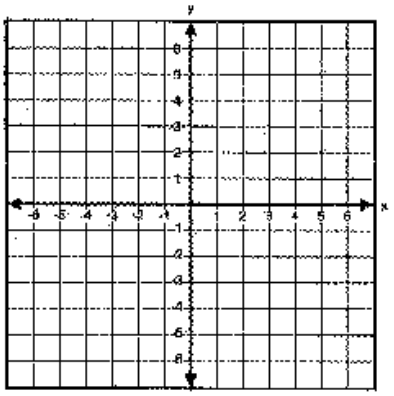
Step 2: Find the point of intersection.
If the lines overlap – infinitely many solutions
If lines are parallel – no solution

Solution: (2,3)

Solve by graphing.

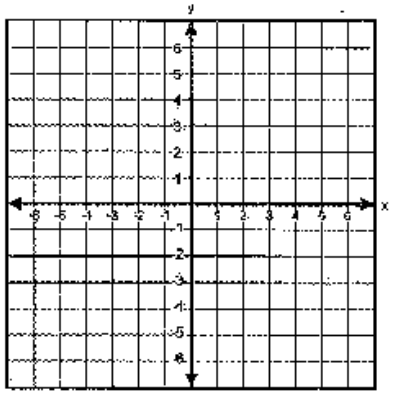
1. $y = -x + 2$

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



2. $y - 2x = 1$

   $2y - 4x = 1$



Solving Systems by Substitution

Example: Solve the system of equations by substitution.

$y - 3x = -3$
$-2x - 4y = 26$

Step 1: Solve for a variable for either equation. (It is ideal to pick the variable with a coefficient of 1)
$y - 3x = -3$
$+3x \quad +3x$
$y = 3x - 3$

Step 2: Plug the expression $3x - 3$ in for y of the OTHER equation.
$-2x - 4y = 26$
$-2x - 4(3x - 3) = 26$

Step 3: Solve for x.
$-2x - 4(3x - 3) = 26$
$-2x - 12x + 12 = 26$
$-14x + 12 = 26$
$-14x = 14$
$x = -1$

Step 4: Plug in x for either equation to solve for y.
$y = 3x - 3$
$y = 3(-1) - 3$
$y = -6$

Final Solution: $(-1, -6)$

Solve by substitution.

3. $-5x + 3y = 12$
$x + 2y = 8$

4. $x - 4y = 22$
$2x + 5y = -21$

Solving Systems by Elimination

Example: Solve the system of equations by elimination.

$4x - 3y = 25$
$-3x + 8y = 10$

Step 1: Decide which variable you want to eliminate and find the LCM of the two coefficients for that variable.

Eliminate x → 4 and -3 have an LCM of 12

Step 2: Multiply each equation by the number that will make the x-terms have a coefficient of 12. One must be negative and the other must be positive.

$3(4x - 3y = 25)$ → $12x - 9y = 75$
$4(-3x + 8y = 10)$ $\quad -12x + 32y = 40$

Step 3: Add the columns of like terms.

$$\begin{array}{r} 12x - 9y = 75 \\ \underline{-12x + 32y = 40} \\ 23y = 115 \\ y = 5 \end{array}$$

Step 4: Plug in y for either equation to solve for x.

$4x - 3y = 25$
$4x - 3(5) = 25$
$x = 10$

Final Solution: $(10, 5)$

Solve by elimination.

5. $-3x + y = 7$
   $3x + 2y = 2$

6. $-4x + 5y = -11$
   $2x + 3y = 11$