Name_____ Ms. Perry Algebra 1

Algebra 1 Prerequisite Enrichment Packet

The problems in this packet are designed to help you review topics from previous math courses that are important to your success in Algebra 1.

It is important that you take time during summer break to review the math concepts you have learned in previous school years. The specific math concepts are listed below. To prepare for this course, you are encouraged to complete this summer math packet and be knowledgeable with each skill.

Please note, this summer math packet is for enrichment purposes and will be graded as extra credit. To measure your knowledge of the prerequisite skills there will be a pre-assessment at the beginning of the school year.

Concepts To Be Assessed

Students should be able to:

- Perform Operations and Solve Verbal Problems with Integers.
- Perform Operations and Solve Verbal Problems with Fractions.
- Perform Operations and Solve Verbal Problems with Ratios, Proportions, and Percents.
- Solve multi-step equations
- Solve one and two-step inequalities.
- Graph linear equations.
- Plot points on a coordinate plane.
- Substitute values into an equation.
- Recognize and continue patterns.
- Write expressions and equations given real-life examples.

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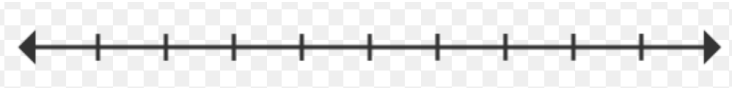
Perform Operations and Solve Verbal Problems with Integers

Graph the following integers on the number line.

1. -14 

2. 50 

3. Write the integer that represents a stock market loss of 12 points. _____

Write the following integers from least to greatest.

4. –10, 8, -11, -7, 9 _____

5. 0, 5, 7, -3, -1 _____

6. Determine the opposite of the following integer: 7

Determine the following.

7. $|-17|$ _____

8. $|85|$ _____

9. $-|-4|$ _____

Simplify The Following

10. $-8+(-4)$ _____

11. $-17+25$ _____

12. $7-9$ _____

12. $7-9$ _____

13. $-6-(-10)$ _____

14. $-4-(-11)+(-16)$ _____

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15. $-7(-7)$

16. -5×4

17. $(-1)(9)(-3)$

18. $0 \div 17$

19. $25 \div 5$

20. $-10 + 4^2 - (-8)$

21. $(-1)^3 - (6 - 9)$

22. $|-12 + 9|$

23. $|-5| - |-15|$

24. $\dfrac{-|4+8|}{|2-(-4)|}$

25. $-|-15| \cdot |-2|$

26. The hourly weather report says that it will be -5°C at 2 A.M., 0°C at 5 A.M., 14°C at 10 A.M., and -8°C at 3 P.M. When will the temperature be the highest? When will the temperature be the lowest?

27. On Tuesday the stock market went up 3 points, and on Wednesday the market went down 17 points. What was the net change in the stock market?

Perform Operations and Solve Verbal Problems with Fractions

Add, subtract, multiply, or divide the following, and write the answer in lowest terms.

1. $\dfrac{7}{12} + \dfrac{1}{12}$

2. $\dfrac{7}{8} - \dfrac{1}{8}$

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3. $\frac{1}{4} + \frac{3}{5}$

4. $\frac{9}{25} - \frac{3}{10}$

5. $5\frac{1}{4} + 6\frac{1}{3}$

6. $14 + 4\frac{1}{6}$

7. $7\frac{2}{3} - 3\frac{1}{2}$

8. $11 - 8\frac{4}{7}$

9. $6 \times \frac{3}{4}$

10. $\frac{5}{6} \times \frac{2}{3}$

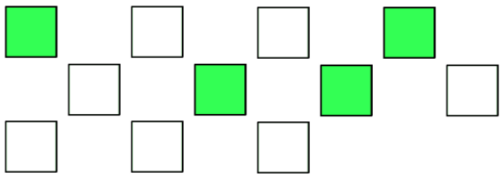
11. $2\frac{1}{10} \times \frac{1}{4}$

12. $4\frac{8}{9} \times 3\frac{1}{3}$

13. $\frac{1}{12} \div \frac{1}{6}$

Perform Operations and Solve Verbal Problems with Ratios, Proportions, and Percents

Using the picture below, write a ratio for each of the following comparisons. Write each ratio in 3 different ways.



1. shaded to unshaded

2. unshaded to total

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Find 2 different ratios that are equal to each of the following ratios.

3. 7 to 4

4. 6 : 18

5. Is $\frac{9}{15}$ equal to $\frac{3}{5}$? Explain.

Find the unit rate or unit price for each of the following.

6. 825 miles in 11 hours = _____ miles per hour

7. 18 feet in 12 minutes = _____ feet per minute

8. 4 water bottles for $3 = _____ dollars per water bottle

9. Determine which of the following items is a better buy: 2 gallons of milk for $2.49, or ½ gallon of milk for $1.49?

Determine whether each of the following pairs of ratios forms a proportion.

10. $\frac{15}{40}$ and $\frac{2}{5}$

11. $\frac{8.2}{6}$ and $\frac{20.5}{15}$

12. $\frac{130 \text{ miles}}{5 \text{ gallons}}$ and $\frac{78 \text{ miles}}{3 \text{ gallons}}$

13. $\frac{\$19}{2 \text{ hours}}$ and $\frac{28 \text{ hours}}{\$4}$

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Solve each of the following proportions.

14. $\frac{x}{9} = \frac{8}{12}$

15. $\frac{6}{0.5} = \frac{x}{4}$

16. Elizabeth takes 3 vitamins every 2 days. If she continues at this rate, how many vitamins will she take in 30 days?

Write each fraction or mixed number as a percent.

17. $1\frac{1}{10}$

18. $\frac{2}{3}$

Write each percent as a decimal.

19. 82%

20. 269%

Write each decimal as a percent.

21. 0.004

22. 0.5

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Order of Operations

Use order of operations to determine each answer. Complete these problems WITHOUT using a calculator.

1. $4 \cdot 16 + 8 - 0 \div 5 =$ _____

2. $8(3+4) - 2 \cdot 8 \div (5-3) =$ _____

3. $\left(8^2 + (13-4)^2\right) \div 5 =$ _____

Insert parentheses to make the following equation true.

4. $8 + 12 \div 4 \cdot 5 = 1$

Distributive Property and Combining Like Terms

Simplify each expression by using the distributive property and/or combining like terms.

5. $4n + 7n =$ _____

6. $-8a + 7b + 2a + 4b - 5b =$ _____

7. $2(x+3) =$ _____

8. $-(4-x) =$ _____

9. $\frac{2}{3}(3x+9) =$ _____

10. $5(2x-4) + (x-7) =$ _____

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One Step Equations

Use inverse operations to solve each equation.

11. $x+22=10$	12. $15-x=45$	13. $3x=48$
14. $\frac{x}{3}=27$	15. $\frac{2}{7}x=4$	16. $\frac{x}{24}=\frac{5}{12}$

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Two Step Equations

Solve each equation.

17. $2x+7=15$	18. $\frac{x}{5}-4=2$	19. $-8-5x=2$

Multi Step Equations

Solve each equation.

20. $9x+8=3x-10$	21. $\frac{5x+9}{2}=12$

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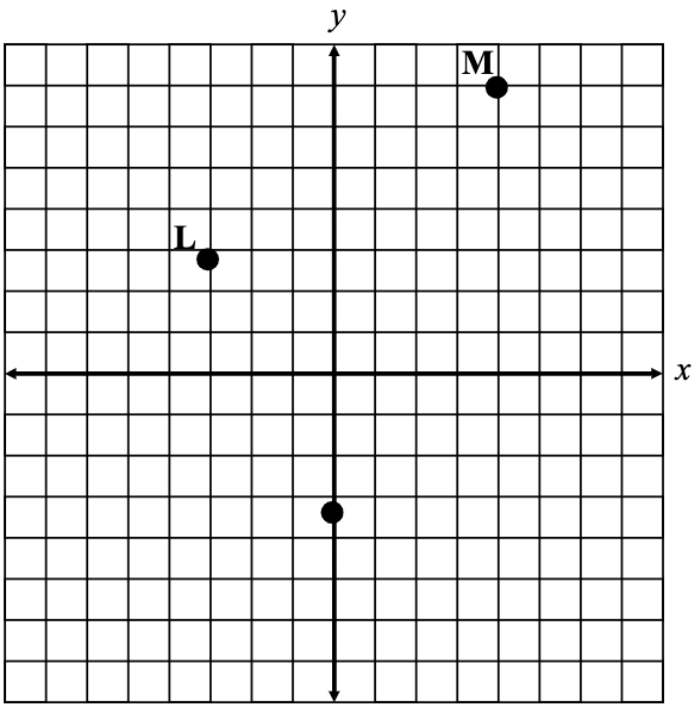
Evaluating Expressions

Evaluate each expression given that $x=2$, $y=3$ and $z=4$.

22. $x+6=$	23. $y^2=$	24. $5z-3=$

Graphing on the Coordinate Plane



Plot each of the following points on the grid to the left. Use the letter to label each point.

25. A $(3,0)$

26. B $(-1,5)$

27. C $(-6,-2)$

Write the coordinates of the each point shown on the graph to the left.

28. L _____

29. M _____

30. N _____

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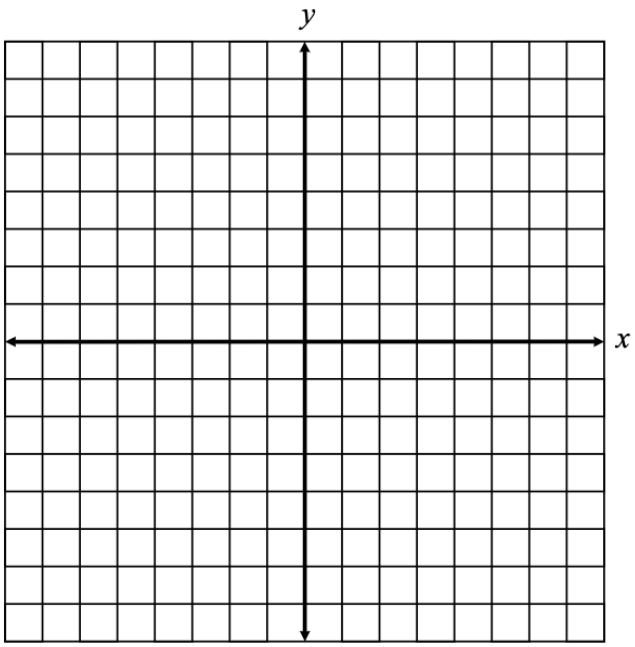
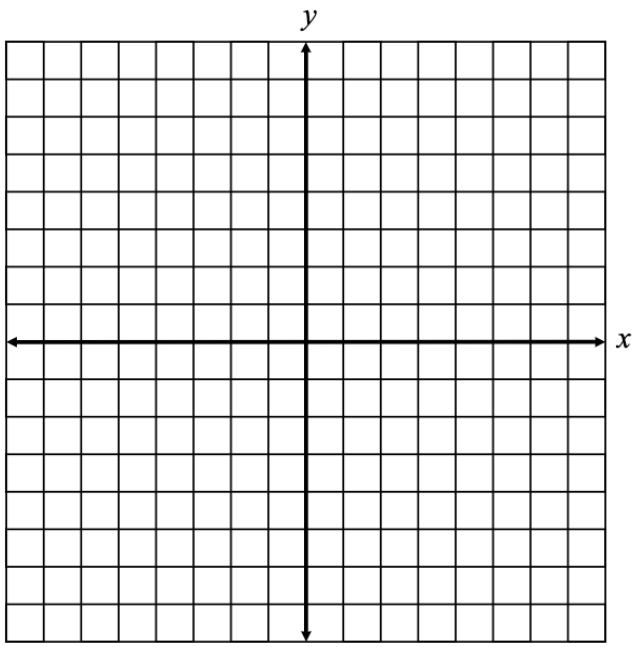
Graphing Equations

Graph each equation.

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



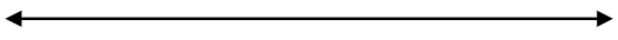
32. $y = -4x + 5$



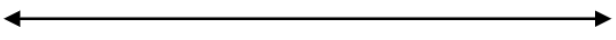
Inequalities

Solve and graph each inequality.

33. $\frac{x}{3} > 4$



34. $-2x \geq 6$



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Patterns and Tables of Values

Write the next three terms in each pattern.

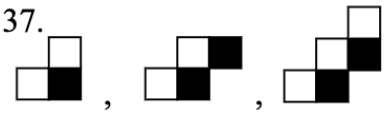
35. 5, 12, 19, 26 , …

_____ , _____ , _____

36 $3x + 4,\ 3x + 1,\ 3x - 2, \ldots$

_____ , _____ , _____

37.

 , _____ , _____ , _____

Complete each table of values.

38.

x	y
0	180
2	174
4	168
6	
8	
10	
12	

39.

x	y
1	10
2	
3	32
4	
5	54
6	
7	76

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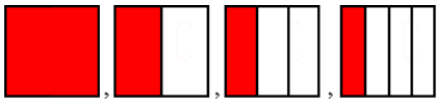
Find the next three numbers or figures in each of the following patterns.

1. 3, 10, 17, 24, _____ , _____ , _____

2. 5, 15, 45, 135, _____ , _____ , _____

3. 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, _____ , _____ , _____

4. 18.2, 16.9, 15.6, 14.3, _____ , _____ , _____

5.  _____ , _____ , _____

6. What number is missing from the following sequence?

   -25, 50, -100, _____ , -400, 800, -1600

Write each of the following sentences as an equation and solve.

7. The sum of q and 9 is 17.

8. When 7 is subtracted from 3 times a number, the result is 20.

9. Five times a number is less than or equal to 40