Dear Future Thoreau Algebra student,

We hope that you enjoy your summer vacation to the fullest. We look forward to working with you next year. As you enter your new math class, you will be expected to have mastered certain skills. Some of these topics might need refreshing. So that you may be better prepared to begin your new math class this fall, the math department has prepared this review packet for you. Please use these problems as an indicator of weak areas and spend some time this summer reviewing at your own pace.

We suggest completing a few problems each day, instead of waiting until the end of the summer to complete the problems. We recommend completing the packet by the middle of August. **Be sure to bring your completed packet with you on the first day of school.** Your math teacher will expect you to be able to solve problems like these when school begins.

Show all your work when answering these questions. Attach any additional work.

WORDS TO SYMBOLS

There are several “key words” to represent our four main operations. List some “key words” that can represent each operation.

Addition **Example: plus, sum**	**Subtraction** **Example: minus, difference**
Multiplication **Example: times, product**	**Division** **Example: divided by, quotient**

Directions: Translate the following verbal sentences into symbols and numbers. You may use any letter to represent the “number” unless otherwise indicated.

1. Five more than a number.

2. The product of six and a number.

3. The difference between a number and seventeen.

4. The quotient of a number and ten.

5. Four times the sum of a number and eight.

6. The sum of some number x and five divided by the difference of some number y and three

ORDER OF OPERATIONS

Directions: Evaluate the expressions using order of operations

7. $10^2 \div (16 + 9) \bullet 6$

8. $\sqrt{25} + 30 \div 6 \bullet 4$

9. $\frac{2}{3}(26 - 7^2 \div 7 \bullet 2)$

10. $(2^3 + 2^2) \bullet (6 - 3)$

11. $\sqrt{16}(4 + 5) \div 3(7 - 10)$

12. $\frac{1}{2^5}(5^2 - \sqrt{81})$

13. $8(4^2 - 21) + 9 \div 3$

EVALUATING EXPRESSIONS WITH SUBSTITUTION

14. Evaluate 7b + 2a when a = 9 and b = -3

15. Evaluate a^3bc^5 when a = 2, b = 4, c = -1

16. Evaluate $|4x^2 - 2y|$ when x = 2 and y = 3

17. Evaluate $2x^2 + 8$ when x = -3

18. Evaluate $\frac{1}{2}a - \frac{2}{3}b + 1$ when a = 6 and b = 3

19. Evaluate $m - \frac{n^2}{5}$ when m = $\frac{3}{7}$ and n = 2

PROPORTIONAL REASONING

Solve the following problems using proportions.

20. I purchased new school supplies totaling $78. Tax is 6%. How much did I pay in all?

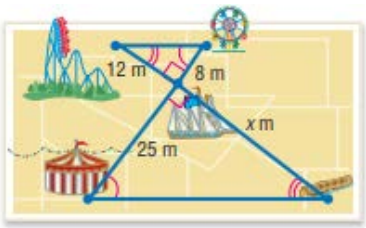
21. Kelsey takes out a loan for $6000 to start a business after college to be repaid in 5 years. The bank charges her 8% interest for the loan. After 5 years how much interest will be added on to the loan? How much will she have to repay in all?

22. Shehan buys comic books for $15 each then marks them up by 30% to resell. What is the selling price after markup?

23. The Jones family went out to lunch and decided to leave a 22% tip on the food they ordered before tax was added. They left a tip of $12? What was the Jones' family bill before tax.

24. On a sunny day, a tree casts a shadow that is 146 feet long. At the same time, a person who is 5.6 feet tall standing beside the tree casts a shadow that is 11.2 feet long. How tall is the tree?

25. How far is it from the log ride to the pirate ship?



26. Mr. Lloyd wants to build a doll house that is proportional to his house. The living room of his house is 12 ft by 16 ft. What will be the dimensions of the living room in the doll house if every foot of the actual house is equal to $\frac{1}{2}$ inch in the doll house?

EXPONENTS AND SQUARE ROOTS

Exponents indicate how many times the base is used as a factor. A square root indicates the base that is used twice to result in the number under the radicand.

Simplify each exponential expression or square root.

27. 9^3

28. $(-6)^2$

29. -17^2

30. $4^3 + (-5)^3$

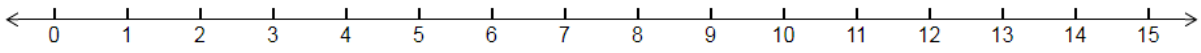
31. $\sqrt{36}$

32. $-\sqrt{121}$

33. $3 + \sqrt{361}$

34. Between what 2 numbers will you find $\sqrt{156}$ on a number line?

35. Place $\sqrt{64}$, $\sqrt{41}$, and $\sqrt{119}$ on the number line



SIMPLIFY EXPRESSIONS

Simplify the following expressions.

36. -3(3m + 6)

37. 8x + 4(x – 1)

38. 5(m + 2) - 2(m+ 2)

39. -7(5g -4) – 10 + 42g

40. -5m + 3(6 + 7m)

41. 5(-2k + 4) + 2 (k +3)

42. $\frac{1}{3}$ (9x – 30 y) + $\frac{2}{5}$ (20x – 15y)

SOLVE EQUATIONS

Solve each equation for the variable.

43. 3m -4 = 11

44. -5 – 5x = 30

45. $\frac{k}{3} - 5 = -11$

46. $\frac{3x-4}{2} = -8$

47. -2y +9 = 7

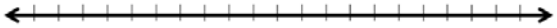
48. $-\frac{1}{5}x - 3 = 17$

SOLVE INEQUALITIES

Solve each inequality then graph the solution on the number line.

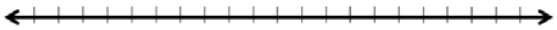
49. $-7x + 33 \geq 5$

51. 24 > 7x - 4



50. $\frac{x}{2} - 7 \leq -9$

52. 7(x + 5) < 42



SLOPE AS A RATE OF CHANGE

Determine the slope of a line passing through the given points and write an equation of the line that represents the proportional relationship.

53.

x	1	2	3	4
y	15	30	45	60

Equation: _____

53.

x	2	3	5	10
y	-5	-7.5	-12.5	-25

Equation: _____

54. Graph the following points, then write the equation of the line that passes through the points.

x	-2	0	2	4	6
y	6	4	2	0	-2

Equation: _____