

Name: _____

8th Grade Teacher: _____



HMTCA High School Math Summer Packet



This packet contains topics that you are expected to know prior to entering high school math classes. You have learned these skills over the past few years. These examples focus on both mathematical skills and problem solving. This packet should be completed independently. Upon your completion, your parent/guardian needs to sign the packet.

Just like the new SAT, some sections will require the use of a calculator, while in other sections a calculator is prohibited. In the directions, it will say if you are not allowed to use a calculator. If you are having a difficult time adding, subtracting, and multiplying numbers, we suggest you study this over the summer. For example, flashcards can be used to help you with basic facts. Also, you can do a Google search for more practice problems.

There are links to instructional videos from Khan Academy to help you remember some topics.

Due Date: Tuesday, August 28th. All work can and should be done directly on the packet. You will be turning in the completed packet to your 1st semester math teacher. IF you do not have a math class first semester, hand in your packet to Mrs. Sharp in room H202.

If you have any questions regarding this packet, please email Mrs. Sharp, Math Department Chair, at sharh001@hartfordschools.org

Please show your work in the packet. You will be assessed on this material at the beginning of the school year. Good Luck!

Parent/Guardian Signature: _____ Date: _____

Summer Packet Multiple Choice Questions

Order of Operations: Simplify the following expressions *Without a Calculator*.

Khan Academy Link: <https://www.khanacademy.org/math/pre-algebra/pre-algebra-arithmetic/pre-algebra-order-of-operations/v/introduction-to-order-of-operations>

1. $5 - 3 * 7 + 4 \div 2$

- a. 9
- b. -14
- c. 16
- d. -18

2. $-|-4| + 5$

- a. 9
- b. -1
- c. 1
- d. 20

3. $-5 + 1 - 13$

- a. -17
- b. -7
- c. 7
- d. 9

4. $20 + 12 - 7$

- a. 35
- b. -25
- c. 15
- d. 25

5. $(2)(-4)(-5)(-1)$

- a. 40
- b. -40
- c. -8
- d. -41

6. $|9 - (-5) + 8| - 2$

- a. -20
- b. -24
- c. 20
- d. 22

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

- a. $\frac{7}{9}$
- b. $\frac{3}{5}$
- c. $\frac{31}{20}$
- d. $\frac{4}{3}$

8. $-\frac{3}{4} * \frac{2}{7}$

- a. $\frac{3}{14}$
- b. $-\frac{3}{14}$
- c. $\frac{21}{8}$
- d. $-\frac{21}{8}$

9. $-\frac{1}{3} \div \frac{3}{5}$

- a. $-\frac{1}{5}$
- b. $-\frac{5}{6}$
- c. $-\frac{5}{9}$
- d. -5

Evaluating Expressions: Simplify the following expressions WITHOUT A CALCULATOR.

Khan Academy Link: <https://www.khanacademy.org/math/algebra/one-variable-linear-equations/alg1-intro-equations/v/variables-expressions-and-equations>

10. $x + 13 - 9$ when $x = -4$

- a. 0
- b. -26
- c. -18
- d. 8

13. $\frac{y-3x}{2}$ when $y = -2$ and $x = 6$

- a. -18
- b. -15
- c. -10
- d. -8

11. $2x - 4 - y$ when $x = 5$ and $y = -4$

- a. 2
- b. 10
- c. -17
- d. 6

14. $a + \frac{4b}{2} - 1$ when $a = -4$ and $b = 3$

- a. 1
- b. -6
- c. 9
- d. -9

12. $|10a - 3b|$ when $a = \frac{1}{2}$ and $b = 2$

- a. -21.5
- b. -1
- c. 11
- d. 1

Algebraic Expressions: Simplify the expression WITHOUT A CALCULATOR.

Khan Academy Links:

<https://www.khanacademy.org/math/algebra/introduction-to-algebra/alg1-manipulating-expressions/v/combining-like-terms-and-the-distributive-property>

<https://www.khanacademy.org/math/arithmetric/fraction-arithmetric/arith-review-multiply-fractions/v/multiplying-fractions>

<https://www.khanacademy.org/math/arithmetric/fraction-arithmetric/arith-review-dividing-fractions/v/dividing-fractions-example>

<https://www.khanacademy.org/math/arithmetric-home/negative-numbers/mult-divide-negatives/v/multiplying-and-dividing-negative-numbers>

<https://www.khanacademy.org/math/algebra/introduction-to-algebra/alg1-manipulating-expressions/v/combining-like-terms>

15. $8x - 5y + 7x - 3y$

- a. $x + 2y$
- b. $15x - 8y$
- c. $56x^2 + 15y^2$
- d. $15x^2 - 8y^2$

16. $6(f - 5)$

- a. $6f - 5$
- b. $6f - 1$
- c. $6f + 1$
- d. $6f - 30$

17. $(-3)^2$

- a. -9
- b. 6
- c. 9
- d. -6

18. $\frac{15}{2} \div \frac{5}{4}$

- a. $\frac{10}{3}$
- b. $\frac{3}{2}$
- c. 6
- d. $\frac{75}{8}$

19. $3x(x + 5)$

- a. $3x + 15$
- b. $3x^2 + 5$
- c. $3x^2 + 15x$
- d. $15x^2$

20. $-2k(-6k - 3)$

- a. $12k^2 + 6k$
- b. $-12k^2 - 5k$
- c. $12k^2 - 6k$
- d. $12k^2 - 3$

21. $x^2(3x + 4)$

- a. $7x^2$
- b. $3x^3 + 4$
- c. $3x^3 + 4x^2$
- d. $7x^3$

22. $(8x^2 - 3x + 5)6$

- a. $(8x^2 - 18x + 30)$
- b. $(48x^2 - 18x + 30)$
- c. $(32x^2 - 18x + 30)$
- d. $(14x^2 + 3x + 11)$

23. $-(2y + 3) - 4x - 3$

- a. $-y + 3 - 4x$
- b. $-5y + 3 - 4x$
- c. $-2y - 4x - 3$
- d. $-2y - 4x - 6$

24. $\frac{16x+12}{4}$

- a. $\frac{28x}{4}$
- b. $4x + 3$
- c. $4x + 12$
- d. $16x + 3$

25. $-3(3y - 5) + 8y$

- a. $-9y + 5$
- b. $-y - 5$
- c. $-y + 15$
- d. $-y - 15$

26. $-2(7 - 4x) - 3$

- a. $-14 + 8x$
- b. $8x - 17$
- c. $-17 - 4x$
- d. $8x - 11$

Solving Equations: Solve for the indicated variable WITHOUT A CALCULATOR.

Khan Academy Link: <https://www.khanacademy.org/math/algebra/one-variable-linear-equations/alg1-equations-with-parentheses/v/solving-equations-with-the-distributive-property>

27. $a - 9 = 17$

- a. 8
- b. 26
- c. -26
- d. -8

28. $\frac{x}{5} = -3$

- a. $-\frac{3}{5}$
- b. $\frac{3}{5}$
- c. 15
- d. -15

29. $32 = 8 - 4x$

- a. 6
- b. -6
- c. -10
- d. 10

30. $\frac{4}{5}x - 5 = 15$

- a. 16
- b. 17
- c. 23.75
- d. 25

31. $2(x + 4) + 4x = 32$

- a. 4
- b. $4\frac{2}{3}$
- c. 6
- d. 7

32. $9x - 2 = 4x + 13$

- a. 3
- b. $\frac{11}{5}$
- c. 1
- d. $\frac{13}{15}$

33. $5x = 8x + 75$

- a. $\frac{75}{13}$
- b. 25
- c. -25
- d. $-\frac{75}{13}$

34. $3x + x - 7 = 6x - 5$

- a. -1
- b. $-\frac{2}{3}$
- c. $-\frac{5}{6}$
- d. -4

35. $3(x - 4) = 3x + 13$

- a. 0
- b. 16
- c. No Solution
- d. All real numbers

36. $12x - 12 = 12(x - 1)$

- a. 12
- b. 1
- c. No solution
- d. All Real numbers

Open-Ended Directions: Please show all work and write your answers in the packet.

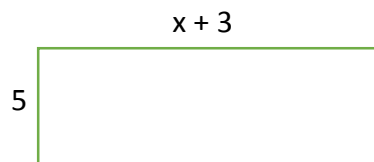
Simplify/Evaluate the following expressions WITHOUT A CALCULATOR.

37. $ -15 - 25 - 5$	38. $\frac{1}{2} - \frac{2}{5}$
39. $-8 + 2 * 3 - 4 \div 2 - 1$	40. $2x^2 - x + 1$ when $x = -3$
41. $5(2x + 4) + 2(7x - 8)$	42. $2^2 - 3^2 + (-4)^2$

Solve the equation without a calculator.

43. $9x - 4 - 7x = 5x + 17$

44. Write and simplify an expression for the perimeter and area of the figure below:



Perimeter: _____

Area: _____

Verbal Expressions: Translate the verbal phrase into an expression or equation.

Khan Academy Link: <https://www.khanacademy.org/math/algebra/introduction-to-algebra/alg1-writing-expressions/v/writing-expressions-1>

45. twice the sum of a number and 4	46. 5 less than a number
47. the product of 16 and x is less than 32.	48. the sum of six and a number
49. a number decreased by nine	50. the quotient of a number x and 2 is greater than 9
51. the square of a number x plus three	52. A number greater than 12 is equal to 17.
53. three more than the difference of five and a number	54. six less than four times a number y
55. A number y decreased by the sum of eight and the square of another number x.	56. seven more than twice the quantity of x plus 2

Word Problems: Write the equation to represent the situation and then solve the following word problems.

57. During the move to his new house, Seth rented a U-Haul truck for \$39.95 plus a mileage charge of \$1.08 per mile. If Seth spent \$97.19 for the rental, how many miles did he drive the truck?

Equation: _____

Answer: _____

58. To take an aerobics class, a health club charges nonmembers \$8 per day plus an additional \$5 for the aerobics class. Members pay a yearly fee of \$200 plus \$3 per day for the aerobics classes. Write and solve an equation(s) to find the number of days you must use the club to justify a yearly membership.

Equation(s): _____ Answer: _____

59. You make \$8.50 per hour babysitting your cousins. If you have \$125 saved, how many hours do you have to work to have \$1000 in your bank account?

Equation: _____ Answer: _____

Mixed Review: Answer the following questions.

60. Write all of the factors of 72 (Hint: Use a factor tree).

61. Find the greatest common factor (GCF) of 24 and 40.

62. Write out the exponent 5^4

63. Write $2 * 2 * 2 * 2 * 2$ as an exponent.

64. Express $\frac{6}{10}$ as a fraction in simplest form, as a decimal, and as a percent.

Fraction: _____ Decimal: _____ Percent: _____

Percents: Solve the following problems.

Khan Academy Link: <https://www.khanacademy.org/math/pre-algebra/pre-algebra-ratios-rates/pre-algebra-percent-word-problems/v/solving-percent-problems>

65. Solve for c. $\frac{c}{35} = \frac{3}{7}$	66. Express $\frac{9}{16}$ as a percent.
67. Write 16% as a fraction in simplest form.	68. What is 60% of 90?
69. 22 is what percent of 80?	70. 14% of 80 is what number?
71. A sweater that costs \$35 is on sale for 20% off. What is the cost of the sweater?	72. Connecticut has a 6.35% sales tax. If your bill is \$52, what is the total price with sales tax included?

Slope: Calculate the slope of the line passing through the given points. $m = \frac{y_2 - y_1}{x_2 - x_1}$

Khan Academy Link: <https://www.khanacademy.org/math/algebra/two-var-linear-equations/slope/v/slope-of-a-line-2>

73. (2, 1) (3, 4)	74. (-2, 1) (1, -3)	75. (-3, 2) (-3, 4)
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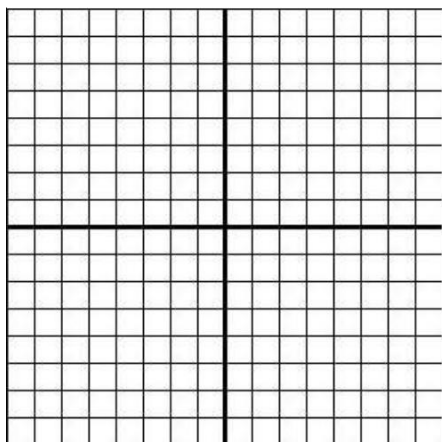
Graphing Equations: Use any method to graph the following equations.

Khan Academy Link: <https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-linear-equations-functions/8th-solutions-to-two-var-linear-equations/v/graphs-of-linear-equations>

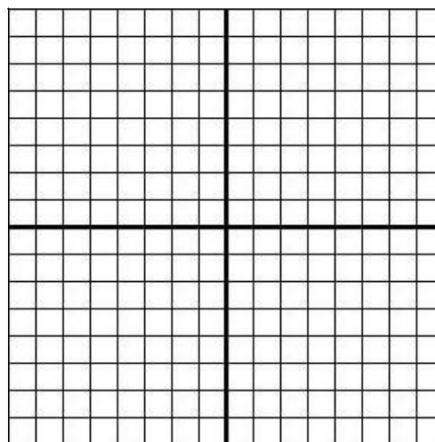
<https://www.khanacademy.org/math/algebra/two-var-linear-equations/standard-form/v/plotting-x-y-relationships>

76. $y = 2x - 3$

77. $y = -\frac{4}{3}x + 5$

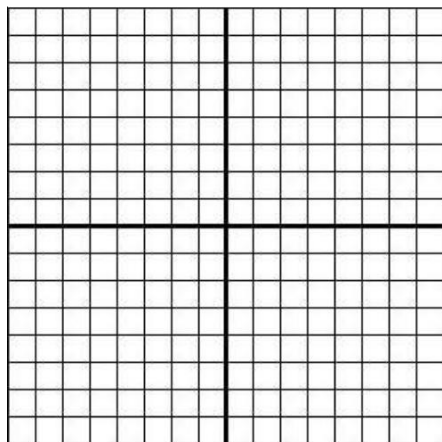


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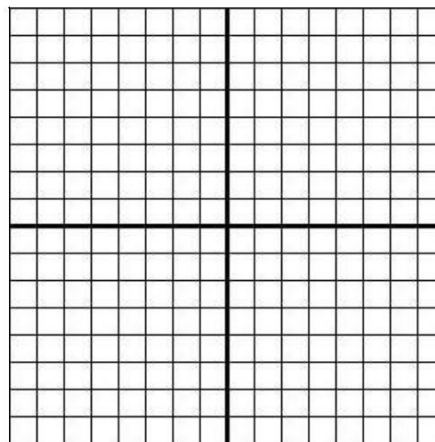


78. $2x - 4y = 8$

79. $x = 3$ and $y = -4$ (Label each line)

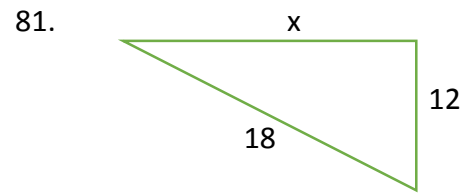
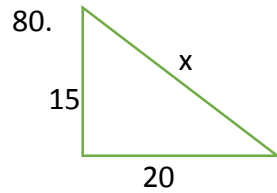


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Pythagorean Theorem: Find the missing length of the triangle. Round to the nearest hundredth, if necessary.

Khan Academy Link: <https://www.khanacademy.org/math/basic-geo/basic-geometry-pythagorean-theorem/geo-pythagorean-theorem/v/the-pythagorean-theorem>



List 3 MATH GOALS you have for the upcoming school year:

1.

2.

3.