



# Incoming Algebra Honors Math Summer

## Assignment

*Sebastian Middle School*

*Summer 2016*

2955 Lewis Speedway, St Augustine, FL 32084



Congratulations on making it through 7<sup>th</sup> grade. We are so excited to have you as a Sebastian Eagle for one more year. At Sebastian, we believe it is important to practice our math skills over the summer so that we are ready for the next school year. Student mastery of the basic math skills is as important to success in future mathematical procedures and reasoning as learning the alphabet is to reading and writing. The packet (with work must be completed and ready to turn in the first week of school). This work will be graded. All skills and concepts included were taught in the middle school.

If there is a topic or concept that you find confusing as you progress through the packet, please research the topic on the internet. See suggested websites below:

- [www.purplemath.com](http://www.purplemath.com)
- [www.khanacademy.org](http://www.khanacademy.org)
- [www.helpingwithmath.com](http://www.helpingwithmath.com)

You can practice any math skill on your IXL account this summer; your account information will expire in August 2016. We challenge you to try to complete as many skills as you can with a 75% smart score or higher!

If you need another copy of the math assignment you can go on Sebastian's website at <http://www-sms.stjohns.k12.fl.us/curriculum/sebastian-summer-learning/> and print another copy. If you have any questions about the course or the packet, please email Mrs. Johnson at [chassity.johnson@stjohns.k12.fl.us](mailto:chassity.johnson@stjohns.k12.fl.us).

Thank you,

Sebastian Math Department



*Read and follow the directions for each section carefully. Show all work in order to get full credit for this assignment.*

Add or subtract the integers without a calculator.

1.  $5 + (-3)$

3.  $-4 + (-6)$

5.  $-1 + 2$

2.  $-7 - (-8)$

4.  $9 - (-12)$

Multiply or divide the integers without a calculator.

6.  $-3 (-5)$

8.  $\frac{-36}{6}$

9.  $\frac{-20}{-10}$

7.  $4 \times -11$

10.  $60 \div -5$

11. Compare and contrast the procedures of adding/subtracting fractions with multiplying/dividing fractions. Explain using complete sentences.

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Add or subtract the following numbers without a calculator. Leave your answer as a simplified, improper fraction if possible.

12.  $\frac{4}{12} + \frac{2}{3}$

14.  $\frac{5}{6} - 1.5$

13.  $\frac{1}{5} - \frac{1}{2}$

Multiply or divide the following numbers without a calculator. Leave your answer as a simplified, improper fraction if possible.

15.  $\frac{3}{4} \times \frac{4}{5}$

17.  $\frac{7}{2} \times \frac{3}{8}$

16.  $(-\frac{7}{25}) \times (-\frac{5}{14})$

18.  $1 \div (-\frac{2}{3})$

$$19. \quad \frac{\frac{9}{20}}{(3)}$$

$$23. \quad \frac{\frac{21}{24}}{\frac{1}{3}}$$

$$20. \quad \frac{\frac{(-3)}{4}}{\frac{-9}{10}}$$

$$24. \quad \frac{9}{18} \div 6$$

$$21. \quad \frac{3}{4} \div \frac{4}{5}$$

$$25. \quad \frac{-2}{5} \times \frac{-8}{16}$$

$$22. \quad \frac{\frac{1}{2}}{(-\frac{4}{3})}$$

$$26. \quad 4 \div \frac{3}{5}$$

Express each percent or decimal as a fraction. Write all answers as a simplified, improper fraction if possible.

27. 0.5

29. -1.25

31. -0.4

28. 14%

30. 90%

32. 5%

33. Jake got 14 out of 18 questions right on his quiz. What percentage did he get correct?

34. On a 50 point test, Ally earned 48.5 points. What percentage did Ally get correct?

35. Alex just got back his math test which was worth 46 points. He noticed the teacher took off 1 point for incorrectly solving an equation, 1 point for not finding the common denominator of a fraction before adding, and half a point for a small addition error. What percentage did Alex earn on his test?

36. Sarah earned an 80% on her science quiz. If there were a total of 15 questions worth one point a piece, how many questions did she get right? How many more questions would she have needed to get right in order to earn an A? Explain using complete sentences.

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Evaluate the following expressions given that  $a = 4$  and  $b = 5$ .

37.  $-3ab + 2b$

40.  $a - b$

38.  $a^2 + b^2$

41.  $4a + 5(a - b)$

39.  $a^2 - b^2$

Evaluate the following expressions given that  $x = \frac{1}{3}$  and  $y = 8$ . Leave all answers as a simplified, improper fraction if possible.

42.  $-6xy$

45.  $\frac{3}{4}x - 4y$

43.  $9x - 4y$

46.  $-\frac{1}{2}y - 5x$

44.  $3y^2$

Use the graph on the right to answer the following questions.

47. Write the ordered pair of point C.

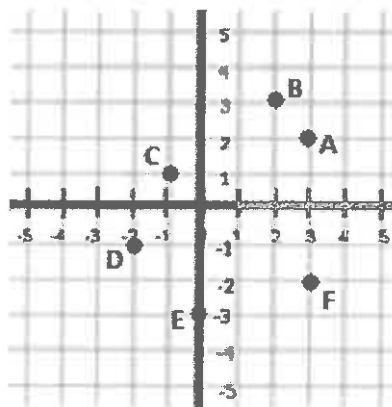
48. Which point falls on the coordinate  $(2, 3)$ ?

49. Point F is in which quadrant?

50. Point E falls on which axis?

51. List the point(s) that are in quadrant I.

52. List the point(s) that are in quadrant III.



Graph the following inequalities. Label a minimum of 3 numbers on each number line.

53.  $x \leq 2$



54.  $x < -5$



55.  $x \leq 0$



56.  $x > 7$



Solve for the variable in the equations below. Simplify all improper fractions if possible.

57.  $3x - 4 = 17$

58.  $-5.5a = 15.5$

59.  $2(c - 4) = 18$

62.  $\frac{9}{2} = w - \frac{11}{2}$

60.  $6 - 12n = -2$

63.  $-x + 1 = -4$

61.  $13 = 4(z - 12) + 1$

64.  $5 - 10x = 15$

65. Jim evaluated the expression  $5^2 \cdot 8 \div 4 + 3$ . In his first step, he divided 8 by 4. Then, he added that to three. For his last step, he multiplied that value by  $5^2$ , which is 25. Did Jim follow the correct procedure to simplify? If so, what would his final answer be? If not, explain what mistake he made and what he should have done. Write your answer in complete sentences.

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In complete sentences, describe the pattern for each input and output.

66. 

Input, x	Output, y
-1	2
1	0
3	-2
5	-4
7	-6

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67. 

Input, x	5	8	11	14	17
Output, y	-1	-2	-3	-4	-5

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Evaluate the following expressions. Show all of your work for each problem.

68.  $3 + 4^2 \times 9 - 14$

70.  $(3 + 4) \times 5 - 6$

69.  $3 + 4 \times 5 - 6$

71.  $(3 + 4) \times (5 - 6)$

72.  $18 \div 3^2 - 4 \times \frac{1}{2}$

74.  $6 + 2\left(\frac{1}{2} - 3\right) - 2^3$

73.  $5^2 \times \frac{1}{5} - 10 + 2 \times 8$

75.  $24 - 3\left(\frac{3}{2} + \frac{6}{12}\right)^2 + 11 \times 2$

Simplify the following expressions. Show all of your work for each problem.

76.  $2x - 6 + 5x$

78.  $-7a + 1 + 5a - 3a - 3$

77.  $4n + 3 - n - 7$

79.  $-6(2a - 4) + a - 3^2$

Find the greatest common factor of the numbers below.

80. *72 and 96*

81. *36 and 3*

82. Explain step-by-step how you would graph  $y = 2x - 3$ . Describe what the graph would look like. Write your answer in complete sentences.

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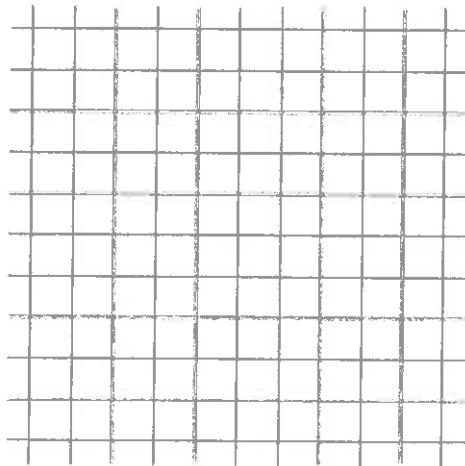


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Graph the equations below on the graph to the right. Graph the axes and label at least three points on each line.

83.  $y = x - 1$

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



Evaluate the expression when  $x = 3$ .

85.  $3x^2 + x - 5$

86.  $-2x^2 - x - 10$

Simplify the square roots below.

87.  $\sqrt{64}$

89.  $\pm\sqrt{9}$

88.  $-\sqrt{81}$

90.  $-\sqrt{121}$

Solve the equations below. Show all of your work. Leave your answer as a simplified, improper fraction if necessary.

91.  $\frac{x}{3} = \frac{5}{9}$

93.  $\frac{4}{x} = 6$

92.  $\frac{3}{2} = \frac{x}{7}$

94.  $4 = \frac{1}{x}$

95. What steps can you take to make sure the solution you found to an equation is correct?

Explain in complete sentences.

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96. John bought a pack of gum at the store for \$0.99 and six packages of notebook paper for \$0.79 each. If the tax was \$2.10, how much change should John get back if he gave the cashier a \$20 bill?

97. Sally bought 3 packages of pencils for \$2.89 each. If Sally has \$10 to pay, would she have enough money to buy a candy bar for \$1? Explain in complete sentences how you got your answer. How many candy bars could she buy in this situation?

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98. Looking back to the problem above, how would the situation change if Sally bought four packages of pencils instead?

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99. Using complete sentences, compare and contrast finding the perimeter of a rectangle and finding the area of a rectangle.

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100. Using complete sentences, compare and contrast in which situations you would find area or volume.

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Using complete sentences, please share your goals for your first year of high school and your plan to achieve those goals. Then, please share your long-term goals for high school and what you will do your first year to help you achieve those long-term goals.

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**Resources:**

<https://www.khanacademy.org/>

[http://www.wtamu.edu/academic/anns/mps/math/mathlab/beg\\_algebra/](http://www.wtamu.edu/academic/anns/mps/math/mathlab/beg_algebra/)

<http://www.analyzemath.com/Algebra1/Tutorials.html>

<http://www.purplemath.com/modules/index.htm>

<http://www.freemathhelp.com/algebra-help.html>

Below list the question numbers of this packet with a summary of what students need to know upon entering Algebra 1 Honors.

- #1-5 Adding and subtracting positive and negative integers without a calculator.
- #6-10 Multiplying and dividing positive and negative integers without a calculator.
- #11-26 Adding, subtracting, multiplying, and dividing fractions with other fractions or whole numbers.
- #27-36 Converting between decimals, percentages, and fractions, including multi-step word problems.
- #37-46 Evaluating expressions, including expressions with exponents and fractions. Order of operations.
- #47-52 Graphing points and identifying parts on a Cartesian coordinate plane.
- #53-56 Graphing inequalities on a number line.
- #57-64 Solving equations.
- #65 Evaluating expressions, error analysis.
- #66-67 Analyzing patterns of functions.
- #68-79 Simplifying expressions, including expressions with exponents and fractions. Order of operations.
- #80-81 Identifying the greatest common factor between two numbers.
- #82-84 Graphing a line in slope-intercept form. Identifying slope and the y-intercept and being able to explain how they are used in graphing.
- #85-86 Evaluating quadratic expressions given a value for x using order of operations.
- #87-90 Simplifying basic square root expressions without a calculator.
- #91-95 Solving equations in the form of a proportion and checking your answer.
- #96-98 Evaluating multi-step word problems.
- #99-100 Articulating similarities and differences between perimeter, area, and volume.