

Honors Algebra-1

ELCA Middle School Honors Program



# Summer Review Packet 2011-2012

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Name



## Honors Algebra-1 Prerequisites

The Honors Algebra-1 class is offered to 8<sup>th</sup> grade students that have completed pre-algebra and meet the following prerequisites:

- Students must have demonstrated a very strong interest and ability in mathematics
- Students must be in the top 25 students in math
- Students must have an overall math average of 90-A from a previous honors pre-algebra class
- Students must have an overall math average of 95-A from a previous regular paced pre-algebra class
- Students must have a math department recommendation

In this class the formal operations and manipulations of algebra will receive greater emphasis and the pace of coverage will be accelerated as well. **Use of the TI-84 Plus Silver graphing calculator is a required tool for the course and should be purchased by the student before the 1<sup>st</sup> day of class.**

The size of the Honors Algebra-1 class will be limited. Therefore, only those students who truly desire to grow in their mathematics knowledge and study skills should accept the invitation to be in the course.

**Discipline problems will not be tolerated in this honors class. This course is designed for students who want to excel at mathematics and can focus for the entire class period on this primary goal. Students with continuous discipline issues may be dismissed from the class.**

# **THIS REVIEW PACKET IS DUE ON THE FIRST FULL DAY OF SCHOOL (AUGUST 1, 2011)**

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

Students should **DO ALL PROBLEMS WITHOUT A CALCULATOR**. Show all work that leads you to each solution on separate sheets of notebook paper. You may use your notes from previous mathematics courses to help you. You must do all work without any help from another person.

Additional copies of this packet may be obtained from the ELCA Website [www.elcaonline.org](http://www.elcaonline.org) underneath the schools → middle school → summer assignments option. If you have any questions on the packet please email Mrs. Fairley at [martha.fairley@eagleslanding.org](mailto:martha.fairley@eagleslanding.org).

ALL work should be completed and ready to turn in on the **FIRST FULL DAY** of school (August 1, 2011). This packet will count as part of your first quarter grade. Students will take an assessment during the 1<sup>st</sup> week of school on the information in this packet to ensure a thorough understanding of the concepts. Students receiving below an “A” on the assessment may need extra study time and assistance to ensure a firm foundation for Honors Algebra-1.

**ENJOY YOUR SUMMER!! I AM LOOKING FORWARD TO SEEING YOU IN THE FALL.**

Student Name: \_\_\_\_\_

Date of completion: \_\_\_\_\_

## Honors Algebra-1 Summer Review Packet

All answers should be placed on the answer sheet at the end of this document.

**Students should not use a calculator on any section unless specified.** All work must be shown **neatly** on notebook paper and numbered accordingly. Knowledge of integers, fractions, and decimals is assumed throughout this review.

### I. Order of Operations

*Simplify the following.*

1.  $\frac{3}{4}[13-(2+3)]^2$

2.  $12(6-3.5)^2 - 1.5$

3.  $5 \bullet 6 - 25 \div 5 \bullet 2$

4.  $10[8(15-7) - 3(4+1)]$

5.  $4(3^2 - 10)$

6.  $3(2)^3$

7.  $\frac{5+(3(2+4))}{5-2(4-2)}$

8.  $48 \div 4^2 + \frac{3}{5}$

9.  $27 \div 3^2 \bullet 2 - 3$

10.  $2[(9+3) \div 4]$

### II. Combining Like Terms

*Simplify by combining like terms.*

11.  $3x - 4 - 6x + 2$

12.  $4(n+9) - 3(2n+n)$

13.  $8 + 2(4+3x)$

14.  $(s-3)(-2) + 17s$

15.  $6xy - 11xy + 2xy - 4xy + 7xy - 3$

### III. Solving Equations

*Solve the following equations.*

16.  $-19.4 - 15d + 22 = 4.4$

17.  $-12h + 39 = -4h - 17$

18.  $5.4t + 14.6 - 10.1t = 12.8 - 3.5t - 0.6$

19.  $14 - \frac{1}{5}(j-10) = \frac{2}{5}(25+j)$

20.  $-0.25(4v-8) = .5(4-2v)$

21.  $\frac{3}{2} + \frac{3}{4}a = \frac{1}{4}a - \frac{1}{2}$

22.  $\frac{5}{8}m - \frac{3}{8} = \frac{1}{2}m + \frac{7}{8}$

23.  $n - 10 = \frac{5}{6}n - 7 - \frac{1}{3}n$

24.  $5(1.2k + 6) = 7.1k + 34.4$

25.  $a(2x+3) = 9x+12-x$

#### IV. Solving Inequalities

Solve the following inequalities.

26.  $\frac{3}{4}(8n-4) < -3(1-2n)$

28.  $9.5j-6+5.5j \geq 3(5j-2)$

30.  $5(b+9) \leq 5b+45$

32.  $8-\frac{4}{5}f > -14-2f$

34.  $-0.6(x-5) \leq 15$

27.  $2.2h+0.4 \leq 2(1.1h-0.1)$

29.  $3p-5 > 2p+p-7$

31.  $\frac{1}{5}(4m+10) < \frac{4}{5}m+2$

33.  $9q-12 \geq 3(3q-4)$

35.  $-\frac{2}{3}d-2 < \frac{1}{3}d+8$

#### V. Properties of Exponents

*Simplify. Your answer should only contain positive exponents.*

36.  $\frac{2y^3 \cdot 3xy^3}{3x^2y^4}$

37.  $\frac{2x^2y^4 \cdot 4x^2y^4 \cdot 3x}{3x^{-3}y^2}$

38.  $\frac{x^3y^3 \cdot x^3}{4x^2}$

39.  $\frac{3x^2y^2}{2x^{-1} \cdot 4yx^2}$

40.  $\frac{x}{(2x^0)^2}$

41.  $\frac{2m^{-4}}{(2m^{-4})^3}$

#### VI. GCF & LCM

*Factor and find the GCF and LCM.*

42. 390 & 250

GCF \_\_\_\_\_

LCM \_\_\_\_\_

43.  $c^9d^3e^7f$  &  $ab^3d^2e^4f^{10}$

GCF \_\_\_\_\_

LCM \_\_\_\_\_

44.  $50ab^2c^6$  &  $60ab^4c^3$

GCF \_\_\_\_\_

LCM \_\_\_\_\_

45.  $864a^3b^2c$  &  $1296ab^2c^3$

GCF \_\_\_\_\_

LCM \_\_\_\_\_

## VII. ALGEBRAIC FRACTIONS

*Simplify the algebraic fractions.*

46.  $\frac{2b}{7b^2}$

47.  $\frac{3x^3}{12x^4}$

48.  $\frac{7a^6b^3}{14a^5b^4}$

49.  $\frac{3ab}{15a^2b^3}$

50.  $\frac{12a^4m^3}{16a^3m^8}$

51.  $\frac{-13p^4q^3}{26p^5q^7}$

## VIII. Proportion & Percent

*Solve the following proportions.*

52.  $\frac{18}{5a} = \frac{3}{-5}$

53.  $\frac{6}{-7} = \frac{3z}{42}$

54.  $\frac{10}{17} = \frac{k}{2k-3}$

55.  $\frac{h-1}{3} = \frac{2h+1}{9}$

*Use the percent proportion equation to answer the following questions.*

56. What number is 30% of 55?

57. What percent of 124 is 93?

58. What number is 15% of 64?

59. 90 is what percent of 250?

60. 79.8 is what percent of 95?

61. 117 is 78% of what number?

## IX. Word Problems

*Solve the following word problems. Show all work.*

62. In the first year of production a play sells 1572 tickets, in its second year it sells 1753 tickets, in its third year it sells 152 less than in its second year. How many tickets are sold in 3 years?

63. If 5 times the first number plus three times the second number equals 47, and 10 times the first number minus 4 times the second number equals 54, what are the numbers?

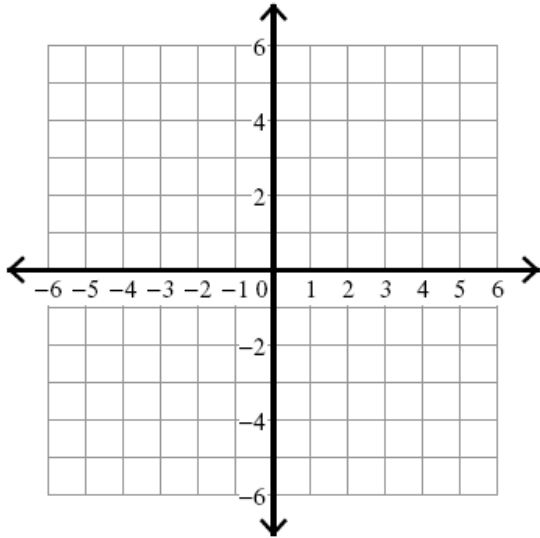
64. A drug store parking lot has space for 1000 cars.  $\frac{2}{5}$  of the spaces are for compact cars. On Tuesday, there were 200 compact cars and some standard size cars in the parking lot. The parking lot was  $\frac{3}{4}$  full. How many standard size cars were in the parking lot?

65. The gas tank on your mom's car holds about 15 gallons. If gas cost \$.99 a gallon, about how much does it cost to fill the tank if empty?

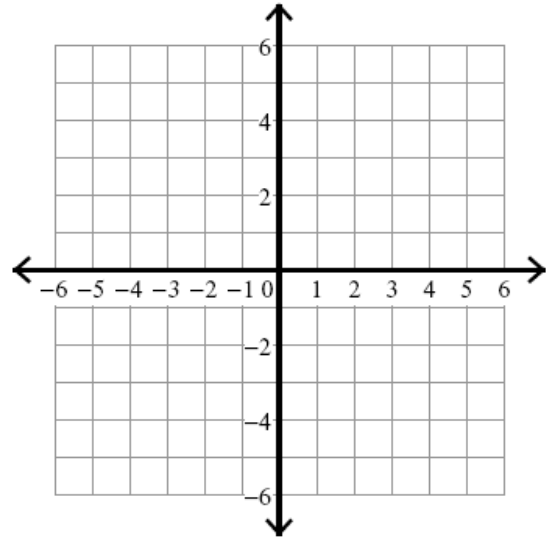
## X. Graphing Equations

Graph the following equations on this page. Use a ruler to construct straight lines.

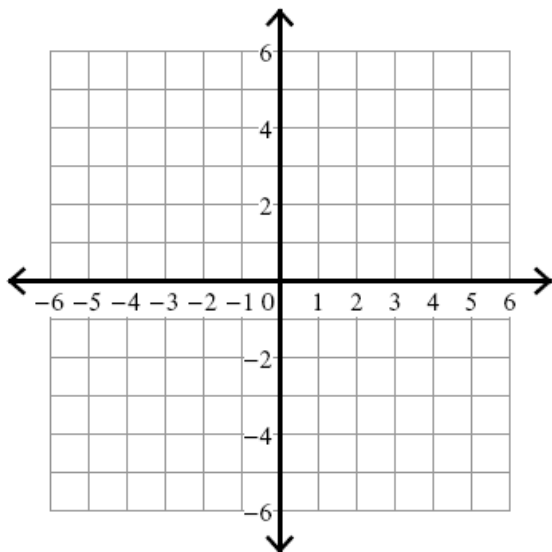
66.  $y = \frac{2}{5}x + 3$



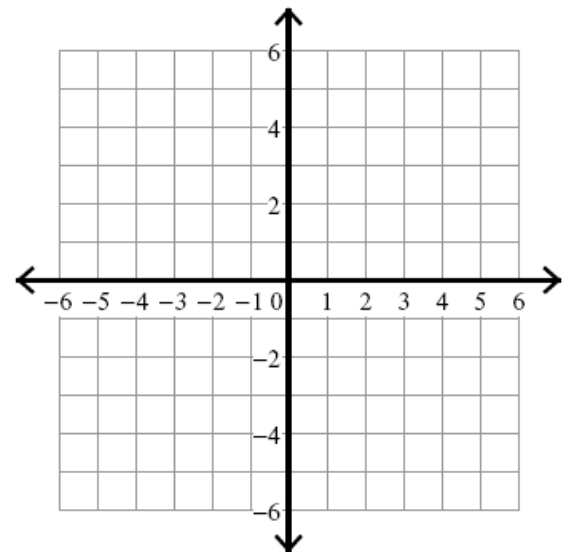
67.  $y = -\frac{9}{4}x + 4$



68.  $y = x$



69.  $y = -\frac{4}{5}x - 5$



# XI. Area

## Formulas

Area of a square:  $A = s^2$

Area of a rectangle:  $A = \ell w$

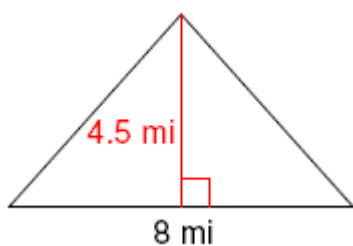
Area of a triangle:  $A = \frac{1}{2}bh$

Area of a trapezoid:  $A = \frac{1}{2}(b_1 + b_2)h$

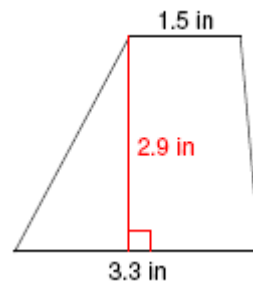
Area of a circle:  $A = \pi r^2$

Find the area of the following:

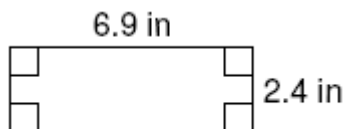
70.



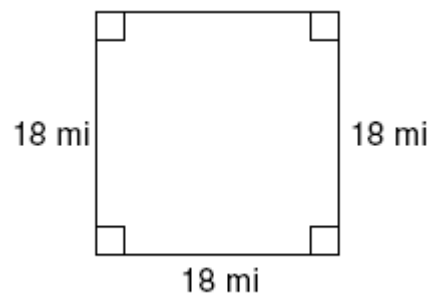
71.



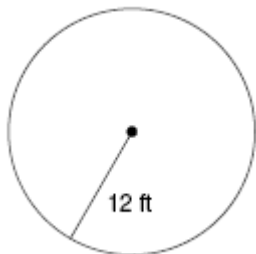
72.



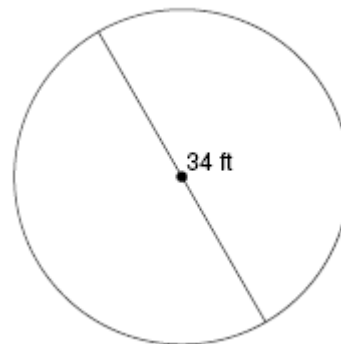
73.



74.



75.



**Honors Algebra-1 Summer Review Packet  
Answer Sheet**

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

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11. \_\_\_\_\_

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