

**Rising 9<sup>th</sup> Graders taking Accelerated Coordinate Algebra/Analytic Geometry A**  
**Summer 2013 Review**

Welcome to ACA/AGA at Lambert High School! -

We hope you have a great summer. Since it would be in your best interest to review some mathematics this summer in preparation for this challenging and fun class, we're providing you review problems for you to complete this summer. All topics and concepts in the summer packet are prerequisite knowledge for ACA/AGA and were taught in previous math classes. We expect our students to have a strong grasp of linear equations, a solid foundation on geometric concepts, a grasp of basic conversions, recall of perfect squares 1-25 and cubes 1-10, and a basic understanding of radicals and exponents. If you need a refresher on any topics in this review, please look at the resources listed at the end of this packet.

Start your year off on the right track by completing these problems before school starts! This packet will be given to you the first day of school and will be due Monday Aug.12<sup>th</sup>. For all review problems, make sure that you are completing your work in a neat and organized manner:

- 1) Show **all** work on notebook paper.
- 2) Label each section and number each problem.
- 3) Circle your final answers.

We look forward to seeing you in August!

*LHS Math Teachers*

**Vocabulary and Terms**

Define or explain the following terms and provide an example for each.

- |                              |                              |                         |                              |
|------------------------------|------------------------------|-------------------------|------------------------------|
| a. Variable                  | b. Function                  | c. Slope                | d. Rate of change            |
| e. Pythagorean Theorem       | f. Hypotenuse                | g. Parallel lines       | h. Transversal               |
| i. Supplementary angles      | j. Complementary angles      | k. Corresponding angles | l. Alternate interior angles |
| m. Alternate exterior angles | n. Same-side interior angles | o. Vertical angles      |                              |

## Expressions

Evaluate the following expression for the given variable value. No decimal answers!

1.  $n^2 - 25$

a.  $n = -5$

b.  $n = \frac{1}{2}$

c.  $n = 9$

2.  $\frac{-7d+14}{2}$

a.  $d = 2$

b.  $d = \frac{6}{7}$

c.  $d = 4$

*Write an algebraic expression for the situation, define the variable, and solve the expression for the amount given.*

Andrea wants to buy a cook from an online photo printing service. The book costs \$14.98 plus \$0.39 for each photo printed in the book. How much will she pay if she wants 35 photos in the book?

## Integer Operations and Evaluating Expressions

1.  $r + |4 - p| + p$ , where  $p = -3$  and  $r = -6$

2.  $x + z(y - x) - 10$ , where  $x = -7$ ,  $y = -10$ , and  $z = 5$

3.  $\frac{y(z+z+y)}{2}$ , where  $y = 5$  and  $z = -5$

4.  $(m + q)^2 - \frac{q}{-4}$ , where  $m = -9$  and  $q = 8$

## Linear Equations and Inequalities

Find the slope and y-intercept for each equation.

1.  $y = -3x + 4$

2.  $y = \frac{5}{4}x + \frac{6}{11}$

3.  $8x - 4y = 15$

Write an equation in slope-intercept form for the line with the given information

4. Slope of -8 and y-intercept of (0, 12)

5. Slope of  $\frac{6}{11}$  and contains the point (0, -3)

Find the x- and y-intercepts for each given line.

6.  $2x - 5y = 20$

7.  $x + 4y = 8$

Find the slope for each given line.

8. Line through (2, 5) and (-3, 17)

9.  $y = 4$

10. Line through (12, 5) and (12, 65)

Write the equation in slope intercept form for each given line.

11. Line through (2, 1) and (-1, -8)

12. Line through (3, 1) and (3, 19)

13. Slope of  $\frac{-2}{3}$  through (5, -1)

Graph the following equations and give the slope. Label and (if not using graph paper) mark axis.

14.  $x = -4$

15.  $y = 2$

16.  $2x - y = 5$

17.  $y - 1 = -\frac{1}{2}(x + 3)$

Solve the following equations and inequalities showing all work.

18.  $\frac{1}{2}(x - 5) + 1 = 2x + 4$

19.  $3 - x > -3$

20.  $\frac{-3}{4}x = 12$

21.  $-2 = 8 - \frac{x}{2}$

22.  $-1 + \frac{x}{4} = 3 + \frac{2x}{4}$

23.  $4 - (5x - 6) \leq 18 - 3x$

24.  $-6x + 24 = 4x - 15(x - 3)$

25.  $4(x - 3) + 12 = -(x - 3)$

26.  $(= 15x + 2)(-2) = x + 4$

## Solving Systems

Choose the best method, then solve the following systems.

$$27. \begin{cases} y = 2x + 9 \\ 3x + 2y = 4 \end{cases}$$

$$28. \begin{cases} 7x + 3y = 25 \\ 2x - 4y = 12 \end{cases}$$

$$29. \begin{cases} 5x - 2y = 10 \\ 4y + 20 = 10x \end{cases}$$

30. The ages of three siblings total 21 years. -The middle child is one year older than the youngest, and the eldest is three times as old as the youngest. How old is each child? Set up and solve the system.

**Algebra** (You MUST know all the perfect squares from 1-25 and cubes 1-10.)

Write each radical expression in simplest form:

1.  $\sqrt{64}$

2.  $\sqrt{400}$

3.  $\sqrt{196}$

Between what two integers is

4.  $\sqrt{27}$

5.  $\sqrt{150}$

6.  $\sqrt{500}$

Identify the parts of the expression  $5x^4$  as either base coefficient, or exponent.

Simplify each expression

7.  $((4)^2b)(2x^3y)^0$

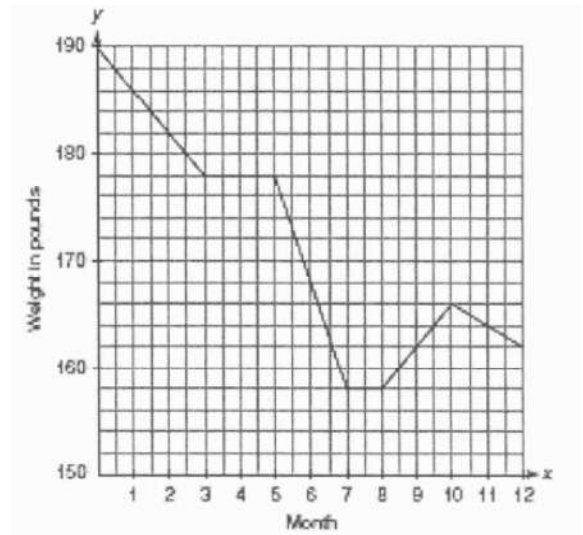
8.  $(2x)^{-3}$

9.  $a^{-3}b^2$

10.  $\frac{1}{2x^{-5}}$

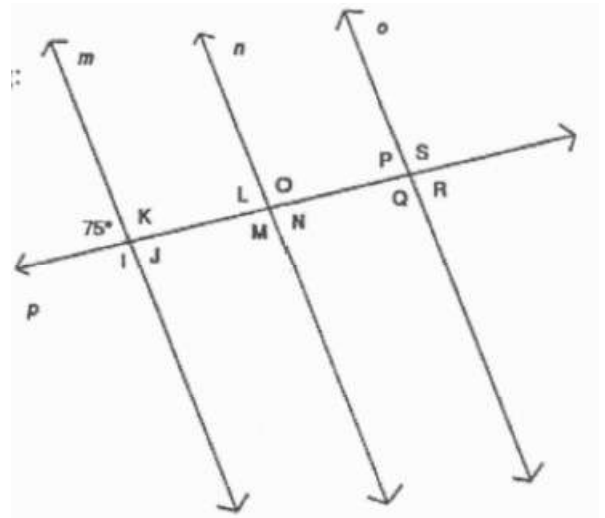
## Describing Relations

- Answer the questions about the graph to the right that represents a dieter's weight loss over a year's period.
  - Describe what happens between months 3 and 5.
  - Sketch a copy of the graph, circle where the graph increases and interpret the meaning.
  - During which months did the dieter loose the weight the fastest? Explain how you know.



## Geometry

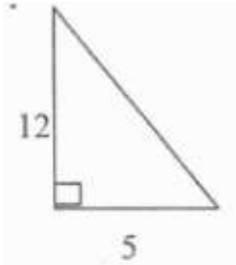
- If  $m \parallel n \parallel o$  and  $p$  is a transversal, find the following:
  - State a pair of corresponding angles
  - State a pair of alternate interior angles
  - State a pair of alternate exterior angles
  - State a pair of same-side interior angles
  - State a pair of vertical angles
  - State a pair of supplementary angles.
- What is the measure of angle L?
- What is the measure of angle M?
- What is the measure of angle S?
- If the measure of angle J is  $2x$ , what is  $x$ ?
- If the measure of angle K is  $4y - 7$ , what is  $y$ ?



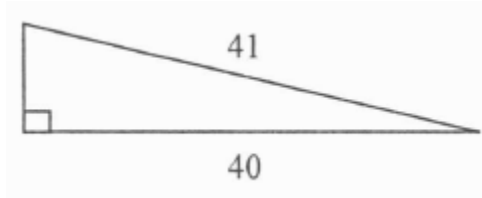
## Pythagorean Theorem

Find the missing side.

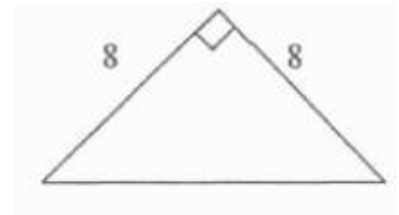
1.



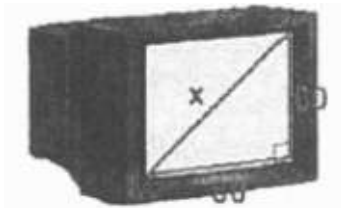
2.



3.



- How far up a wall will an 11 meter ladder reach if the foot of the ladder must be 4 meters from the base of the wall? Draw a picture and solve.
- What is the diagonal length of a TV screen whose dimensions are  $80 \times 60$  cm? -



## Resources

If you need a refresher on any of these topics, we suggest visiting [www.khanacademy.org](http://www.khanacademy.org) . You will find instructional videos on many mathematical topics and concepts there. Additional sites are listed below:

Systems:

<http://cstl.syr.edu/fipse/algebra/unit5/subst.htm>

<http://www.brightstorm.com/math/algebra/solving-systems-of-equations/solving-systems-of-equations-using-elimination/#>

Solving equations:

<http://regentsprep.org/Regents/math/ALGEBRA/AE2/LSolvEq.htm>

Functions:

<http://regentsprep.org/Regents/math/ALGEBRA/AP3/LFunction.htm>

Radicals:

<http://regentsprep.org/Regents/math/ALGEBRA/AO1/Laddsubt.htm>

Exponents:

<http://www.coolmath.com/algebra/01-exponents/06-exponent-rules-putting-rules-1-4-together-01.htm>

Linear equations:

<http://www.coolmath.com/algebra/08-lines/06-finding-slope-line-given-two-points-01.htm>

Parallel Lines and Transversals:

<http://www.studyzone.org/mtestprep/math8/g/8parallelanglepairs1.cfm>

Pythagorean Theorem:

<http://www.mathsisfun.com/pythagoras.html>