

# Summer Homework

## Incoming Grade 8

# Math

Please work during the summer months to complete this math packet. All completed packets are due on the first day of school in September of 2012.

For every day that the assignment is late being submitted to the teacher FIVE POINTS (-5pts) will be deducted from the final grade on this assignment. After five days of being tardy this assignment will automatically result in a grade of a ZERO and will not be accepted after that date.

Thank you for your support and have a blessed summer!



Mrs. D. Vattelana  
Math Teacher  
Grades: 6, 7, 8

Happy Solutions!



## Grade 8 Curriculum Overview

### Number Sense

- Add, subtract, multiply and divide with fractions and decimals.
- Order a set of fractions, percents and decimals from least to greatest.
- Compare numbers using the symbols for greater than, less than or equal to.
- Identify prime numbers.
- Write a number using exponents.
- Compare place value (e.g., how many times larger is the 5 in .051 than the 5 in .625).
- Add and subtract with positive and negative numbers.
- Approximate positive and negative numbers on a number line.
- Round numbers in a range from ten million to ten thousandths.
- Estimate using addition, subtraction, multiplication and division.
- Determine equivalent decimals (e.g.,  $0.8 = 0.80$ ).
- Find a fraction that is closer in value to a given percent.
- Find the equivalent values of a fraction, decimal, percent (e.g.,  $7\% = .07 = 7/100$ ).
- Find the number in a set of fractions, decimals and percents that is not equivalent to the others.
- Use mental math to multiply and divide fractions (e.g.,  $8\frac{1}{2} \times 7/7$ ).
- Use mental math to halve and double numbers.
- Find the square root of a given number.
- Determine the greatest common divisor, least common denominator, least common multiple of a given set of numbers.

### Measurement

- Convert within a system of measurement (e.g., 86 ounces = 5 pounds 6 ounces).
- Determine the amount of elapsed time from one time to another.
- Determine the time after adding hours and minutes.
- Determine time using more than one time zone.
- Determine the fraction and the percent of an hour given the number of minutes.
- Determine the balance in a checking account.
- Determine the price per unit given the total cost and the total number of units.
- Estimate the price of a sale item given the percent discount.
- Determine the percent discount given the original price and the sale price.
- Determine the total price of several items after calculating the sales tax.
- Determine the best buy.
- Determine the total price of a restaurant bill after calculating the tip.
- Determine the percent of a dollar given a set of coins (e.g., 5 quarters = 125% of a dollar).
- Determine averages.

### Geometry

- Identify the radius, diameter and center of a circle.
- Find the circumference of a circle given the diameter.
- Determine the radius of a circle given the area.
- Determine the area of a quadrilateral and a triangle.
- Determine the third angle of a triangle given the other two angles.
- Determine the base of a triangle given the height and the area.
- Determine the perimeter of a quadrilateral given the length of one side and the area.
- Determine the length of the sides of a square given the area.
- Determine the area of a square after increasing the sides.
- Draw a geometric figure given the information of the angles and the sides (e.g., four congruent sides, two acute angles and two obtuse angles).
- Identify angles.
- Find the complement and supplement of given angles.
- Find the volume of a cube.
- Locate points on a grid given the ordered pairs

## and Probability

probability of an event (e.g., your telephone number ending in a 5, today being your non leap-year).  
information from charts and graphs (line, bar, and circle).

### al Prealgebra Lessons

- Recognize and use the math verbs correctly in a math sentence.
- Explore the powers of 10, both positive and negative, by moving the decimal place accordingly.
- Demonstrate an understanding of terminating and non-terminating decimals.
- Evaluate expressions using the rules for the order of operations.
- Use the property of reciprocals to divide fractions.
- Describe rate as a fraction of two numbers with different units.
- Describe ratio as a fraction of two numbers with the same units.
- Demonstrate an understanding of the distributive, commutative and associative properties.
- Use scientific notation to represent large and small numbers.
- Describe a pattern using variables.
- Name and draw points on the xy-coordinates.
- Graph the solution to an equation on the xy-coordinates.
- Show slope as a rate of change.
- Calculate the slope given two points on a line or the equation for a line.
- Calculate the distance between two points.
- Graph linear, quadratic and exponential functions.
- Draw the image of a polygon under a translation or a reflection.
- Identify the legs and the hypotenuse of a right triangle.
- Translate words to algebraic expressions or equations.
- Create and apply an algebraic equation to solve a real life situation.
- Justify responses to problems.
- Find the next term, the constant difference and a rule for an arithmetic sequence.
- Make conclusions from a stem-and-leaf plot.
- Identify the range, mean, median and mode of a data set and explain the effect of an outlier.
- Create a box-and-whisker plot from a data set.
- Recognize that a sample may be biased.
- Solve probability problems that contain "or" and "and."
- Solve algebraic equations.
- Find the third side of a right triangle using the Pythagorean Theorem.
- Demonstrate an understanding of absolute value.
- Demonstrate an understanding of the area formulas.
- Simplify a polynomial.
- Determine the number of terms, the degree, and the constant for a polynomial.
- Solve simple interest problems.

## PREALGEBRA

### *The student will*

- compare and order real numbers. (rational and irrational)
- demonstrate an understanding of place value.
- name the base and exponent when given a number raised to a power.
- recognize the math verbs and be able to use them correctly in a math sentence. ( $>$ ,  $<$ ,  $\geq$ ,  $\leq$ , and  $=$ )
- demonstrate an understanding of terminating and non terminating decimals.
- find decimal and percent equivalents to simple fractions.
- find different representations for the same fraction.
- explore the powers of 10, both positive and negative, by moving the decimal place accordingly.
- evaluate expressions using the rules for order of operations.
- use the property of reciprocals to divide fractions.
- describe rate as a fraction of two numbers with different units.
- describe ratio as a fraction of two numbers with the same units.
- write proportions and solve them using means-extremes.
- demonstrate an understanding of the distributive property.
- demonstrate an understanding of an opposite as an additive inverse.
- demonstrate an understanding of the commutative and associative properties for addition and multiplication.
- demonstrate an understanding of rounding and estimating.
- convert length, mass, and capacity within the U.S. system and within the metric system.
- select the appropriate unit of measure for a given situation.
- measure and draw angles using a protractor.
- use scientific notation to represent large and small numbers.
- find the least common multiple and the greatest common factor for a set of numbers.
- demonstrate an understanding that variables stand for numbers.
- describe a pattern using variables.
- demonstrate an understanding of function notation.
- graph positive and negative rational and irrational numbers on a number line.
- classify angles as acute, obtuse, right, and straight.
- construct the perpendicular bisector of a line segment.
- graph the solution to an inequality on a number line.
- find the measure of the third angle of a triangle given the other two.
- name and draw points on the  $xy$ -coordinates.
- graph the solution to an equation on the  $xy$ -coordinates.
- demonstrate an understanding of slope as a rate of change.
- calculate the slope given two points on a line or the equation for a line.



graph linear, quadratic, and cubic functions.

draw the image of a polygon under a translation or a reflection.

draw a net for a prism or a pyramid.

solve problems involving supplementary and complementary angles.

demonstrate an understanding of the properties of quadrilaterals.

identify the legs and the hypotenuse of a right triangle.

accurately draw triangles using the SSS, SAS, or ASA conditions.

solve problems using percents.

determine the correct unit of measure to use in a real-life application.

translate words to algebraic expressions or equations.

create and apply an algebraic equation to solve a real life situation.

justify responses to problems.

find the next term, the constant difference, and a rule for an arithmetic sequence.

generalize a solution to solve a new problem.

demonstrate an understanding of size change and its affect on the perimeter and the area of a  
geometric figure.

make conclusions from a stem-and-leaf plot.

make conclusions from a histogram.

identify the range, mean, median, and mode of a data set.

create a box-and-whisker plot from a data set.

demonstrate an understanding of simple probability.

make conclusions from a Venn diagram.

fit a line to data.

explore and recognize various key sequences on the scientific calculator.

use a graphics calculator to visualize an equation.

find the appropriate window on a graphics calculator to visualize an equation.

explore some functions and editing features on a graphics calculator.

use the perimeter, area, surface area, and volume formulas to evaluate problems involving various  
geometric figures.

use the circumference and area formulas to evaluate problems involving circles.

solve algebraic equations.

find the third side of a right triangle using the Pythagorean Theorem.

demonstrate an understanding of absolute value.

multiply, divide, and simplify rational numbers using the power rules.

graph lines using the  $x$ - and  $y$ - intercepts.

graph quadratic equations.

graph a system involving an inequality on the  $xy$ -coordinates.

graph a system of equations on the  $xy$ -coordinates and find the solution set.

write and solve proportions.

select and use formulas to solve problems.

demonstrate an understanding of and use the associative, commutative, and distributive properties

to simplify expressions and to solve equations.

use the concepts of equations and graphs to solve real life equations.

solve problems involving percent.

use equations and graphs to represent exponential growth and decay.

use quadratic equations to explore projectiles.

create and solve an equation created from a data set.

apply algebraic techniques to solve rate, work, and percent mixture problems.

find the next term, the constant difference, and a rule for an arithmetic sequence.

find the next term, the constant rate of change, and a rule for a geometric sequence.

identify the elements, the domain, the measures of central tendency, and the range of a data set.

calculate probabilities for simple events.

demonstrate an understanding of factorials.

calculate the probability for a geometric region.

use a graphics calculator to graph an equation.

find the appropriate window on a graphics calculator in order to visualize an entire graph.

use various features found on a graphics calculator to answer questions about a graph.

explore various functions and editing features on a graphics calculator.

find an equation for a line given two points or a point and the slope.

solve a system of simultaneous equations using graphing or using algebraic solutions. (substitution

and addition methods)

determine the slope-intercept or standard form of an equation.

solve equations involving exponents or square roots.

find the solutions to a quadratic equation using factoring, the Quadratic Formula, graphing, and completing the square.

find the number of real solutions to a quadratic equation using the discriminant.

find the vertex of a parabola and demonstrate an understanding of minimum and maximum.

demonstrate an understanding of the Pythagorean Theorem.

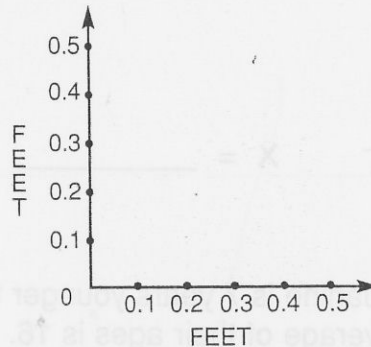
demonstrate an understanding of the Triangle Inequality Postulate.

explain whether a conclusion is made using deduction or induction.

1. a. Change 60% to a fraction. \_\_\_\_\_

b. Change  $\frac{9}{20}$  to a percent. \_\_\_\_\_

2. Find the area of this shaded rectangle:  
\_\_\_\_\_



3. Find the average of these numbers: 17, 13, 10, 16, 14  
\_\_\_\_\_

4. Hershel had 100 baseball cards that he labeled from 1-100. He started with number one and marked every 5th card with an X, every 7th card with an O and every 10th card with a  $\checkmark$ . What number card will be the first to have all 3 marks (XO $\checkmark$ )?  
\_\_\_\_\_

5. How many games are played in a 4 team round robin tournament? (Each team plays every other team only once.)  
\_\_\_\_\_

6. Find the value of n:  $2,000 - n = -2,000$        $n =$  \_\_\_\_\_

7. What percent of a yard is:

a. 12 inches? \_\_\_\_\_

b. 18 inches? \_\_\_\_\_

c. 9 inches? \_\_\_\_\_

d. 3 inches? \_\_\_\_\_

8.  $x + \frac{4}{5} = 1\frac{1}{4}$       $x =$  \_\_\_\_\_

9. Problem solving: Janine is 7 years younger than Lucy and 4 years older than Samantha. The average of their ages is 16. How old is:

a. Janine? \_\_\_\_\_

b. Samantha? \_\_\_\_\_

c. Lucy? \_\_\_\_\_

10. a.  $\frac{3}{2} + \frac{5}{3} =$  \_\_\_\_\_

b.  $(-14) - (-3) =$  \_\_\_\_\_

11. Calculator skill:  $240^2 + 10.9^2 - .9^2 =$  \_\_\_\_\_

Turn your answer upside down to find out what you pay at the end of the month.

\_\_\_\_\_

12. Susan drove 4 hours. Her average speed was 60 mph. Finish the chart below to give her an average speed of 60 mph.

Hour	Speed
1st	65
2nd	70
3rd	
4th	55



1. Arrange these numerals from least to greatest:

0.3

0.03

-0.03

-0.003

\_\_\_\_\_

2.  $.77 \times .07 =$  \_\_\_\_\_

3. Circle which of the following is closest to  $\frac{1}{4}$  :

a.  $\frac{259}{1000}$

b. 26%

c. .24999

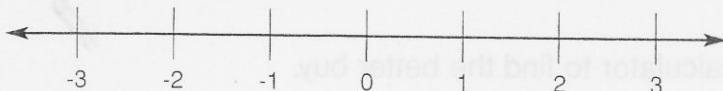
4. Write these numbers on the number line below in their approximate places.

0.1

2.75

1.9

-1.5



5. Mental math:  $6\frac{4}{8} + 8\frac{2}{4} =$  \_\_\_\_\_

6.  $\frac{\square}{48} = \frac{15}{\square} = \frac{18}{72} = \frac{\square}{96} = \frac{21}{\square}$

7.  $\frac{x}{6} = \frac{200}{4}$       $x =$  \_\_\_\_\_

8. Mrs. Fernandez has placed dogs on stands for a dog show. There are 7 rows with 12 stands in each row. Row 1 is filled with dogs except for the last stand. Row 2 is half empty. Rows 3 and 4 are  $.66\overline{6}$  full. Row 5 has 2 empty stands. Row 6 is 75% full. Row 7 is  $\frac{1}{6}$  empty. How many dogs are there in total? Draw a diagram to help you find the answer.
- \_\_\_\_\_

9. Change this percent to a decimal:  $10\frac{1}{2}\% =$  \_\_\_\_\_

10. Mental math:  $400 - 25 + 30 - 5 - 100 =$  \_\_\_\_\_

11. Calculator skill: Use a calculator to find the better buy.

a. 36 ounces of seeds for \$3.50

b. 48 ounces of seeds for \$4.90     \_\_\_\_\_

12. 4,576.1093

a. What number is in the thousands place? \_\_\_\_\_

b. What number is in the thousandths place? \_\_\_\_\_