Notre Dame High School

220 Jefferson Street

Fairfield, CT 06825

June 2015

Dear Parent(s)/Guardian(s) and Incoming Honors and High Honors Algebra Students,

Mathematics is the gateway to all college and career opportunities. As stated by the National Research Council:

"Students today are growing up in a world permeated by mathematics. The technologies used in homes, schools, and the workplace are all built on mathematical knowledge. Many educational opportunities and good jobs require high levels of mathematical expertise."

In an effort to build a strong foundation for high school math skills and to improve student success in Algebra I, all High Honors and Honors Algebra I students and are required to complete the enclosed Summer2015 Math packet. The problems in this packet will review key math skills from previous math courses, and will better prepare students for the new concepts of Algebra I .

Summer Packet Guidelines:

No calculators are to be used to solve problems.

- All work must be done in pencil and shown under each problem.
- Summer packets for High Honors and Honors Algebra I and High Honors Geometry are due Wednesday, September 2, 2015.
- After reviewing packets, the teachers of these classes will know which preliminary skills need to be reviewed with the students.

The teachers of the Mathematics Department are available after school for extra help. I encourage all students to take advantage of working with their own teacher so the teacher can fully assess their knowledge of mathematics.

Please feel free to email me with any concerns or questions over the summer. I will be doing day trips during the summer but will get back to you within a few days of your email. You may reach me at: zembrzuski@notredame.org In the subject area indicate that it is an Algebra question.

Sherrie Zembrzuski

Math Department Chairperson

SUMMER MATH PACKET

NOTRE DAME HIGH SCHOOL

ALGEBRA I

HH/H

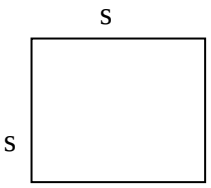
The examples on the following pages are to be completed and handed into your teacher on Wednesday, September 2, 2015. This will aid the teachers of these classes to give focus to mathematical concepts that will be necessary for this class.

Name_____

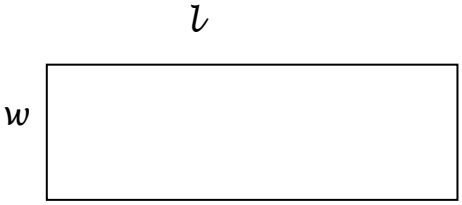
Summer Math Packet
Notre Dame High School
HH and H Algebra I

This packet should help prepare you for Algebra I at Notre Dame. Please complete these problems.

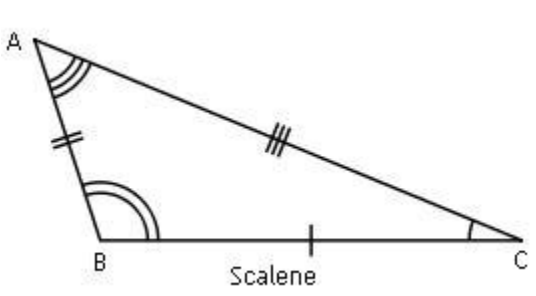
A square is a four sided figure where all the sides are the same length.

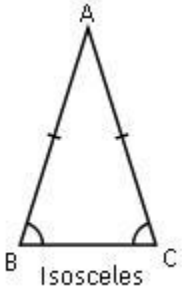


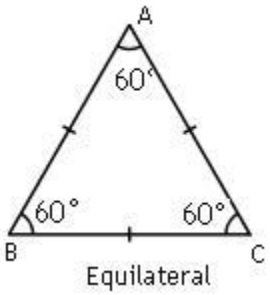
A rectangle is also a four sided figure where two pairs of parallel sides meet in right angles. The longer side is the length and the shorter side is the width



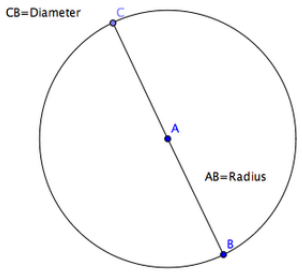
Triangles are three sided figures. Scalene triangles all the sides are different lengths. Isosceles triangles have two sides of equal length and the third side is a different length and an equilateral triangle has all three sides have the same length.







A circle has a center point and each point on the outside of the circle is the same distance from the center. The radius is the distance from the center of the circle to any point on the circle. The diameter of the circle goes from one point on the circle to another point on the circle and must pass through the center..



The perimeter of a figure is the distance around the figure. The perimeter of a circle is called its circumference. To find the perimeter of any figure, add the lengths of the sides.

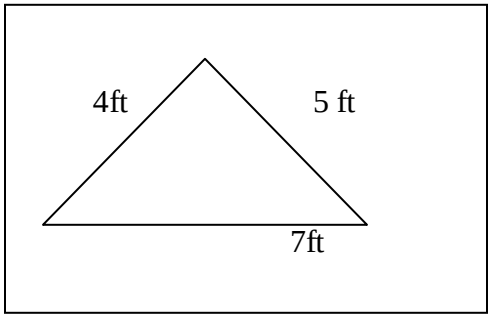
The area of a a figure is the number of square units needed to cover the figure.

FIGURE	PERIMETER	AREA
Square	P = 4s	$A = s^2$
Rectangle	$P = 2l + 2w$	$A = lw$
Scalene triangle	P = a + b + c	A = ½bh
Isosceles triangle	P = 2a + b	A = ½bh
Equilateral triangle	P = 3a	A = ½bh
Circle	$C = 2\pi r$	$A = \pi r^2$

1). Find the perimeter of a rectangle whose length is 8 m and width is 4 m. P = _____

2). What is the area of the above rectangle? A = _____

3). Find the perimeter of the figure below? P = _____



4). Find the circumference of a circle whose radius is 6 meters. C = _____

5). Find the perimeter and area of a square whose side is 10 ft. P = _____ A = _____

6). Find the area of a circle whose diameter is 16 cm. Keep π in your answer. A = _____

Round each number to the given place value:

7). 3849 to the nearest ten. _____-

8). 30,567 to the nearest thousand _____

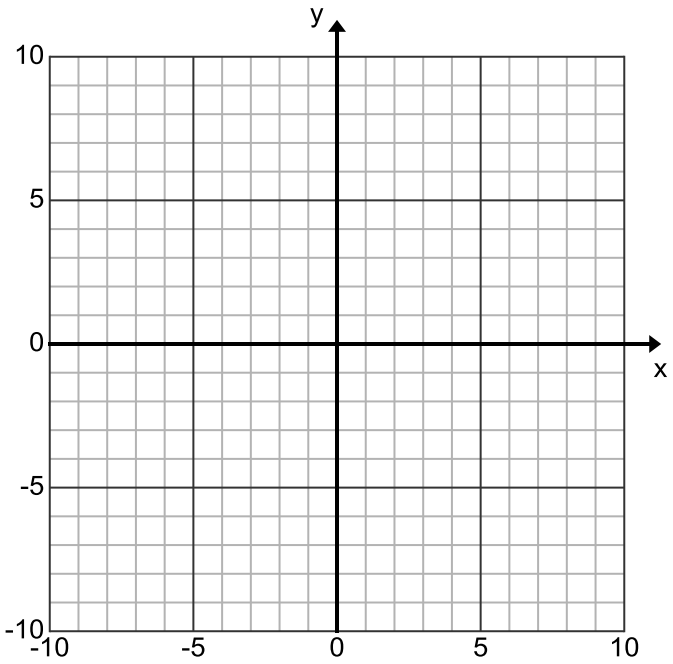
9). 16¾ to the nearest whole number. _____

10). 0.439 to the nearest tenth. _____

Graph each on the following points on the coordinate plane.

11). A (4, -2) 12). B(0,0) 13). C(5,0) 14). D(-4, -4)

15). E(-3, 5) 16). F(-3,-2) 17). G(-4, 1) 18) H(0.3)



Complete the following. Do not use a calculator:

19). 14.2 + 16.9 = _____ 20). 15.486 + 6.37 = _____

21). 24.912 – 22.98 = _____ 22). 20.11 + 8.284 = _____

23). 178 – 1.493 = _____ 24). 5.785 + 0.215 = _____

25). (2.3)(1.8) = _____ 26). $\frac{0.1}{0.8}$ = _____

27). 0.67 x 0.43 = _____ 28). 51.98 ÷ 11.3 = _____

29). 173.68 x 0.08 = _____ 30). 42.66 ÷ 7.9 = _____

A prime number is a number that is divisible by 1 and itself. So if you are asked to give the prime factorization of 48 it would be $2^4 \cdot 3$

Give the prime factorization of the following:

31). 80 _____ 32). 225 _____

33). 600 _____ 34). 504 _____

The greatest common factor (GCF) of two or more numbers is the greatest(largest) number that is a factor of the numbers involved. For example the GCF of 45 and 81 is 9 even though 1 and 3 are also factors. The GCF should be the largest number that divides into the numbers.

Find the GCF of each of the following"

35). 64 and 20 GCF = _____ 36). 12, 18 and 60 GCF = _____

37). 100 and 125 GCF = _____ 38). 18, 27 and 78 GCF = _____

The least common multiple (LCM) is the least (smallest) whole number that is a multiple of the number. For example the LCM of 8 and 12 is 24. 24 is the smallest number that both 8 and 12 will divide evenly into.

Find the LCM of each of the following:

39). 4 and 20 LCM = _____ 40). 15 and 25 LCM = _____

41). 60 and 80 LCM = _____ 42). 9, 15 and 75 LCM = _____

Equivalent fractions are fractions that represent the same quantities. For example $\frac{3}{6} = \frac{12}{24} = \frac{1}{2}$ are equivalent because they represent the same quantity.

For each of the following, write two equivalent fractions.

43). $\frac{3}{5}$ _____ and _____ 44). $\frac{20}{30}$ _____ and _____

45). $\frac{14}{20}$ _____ and _____ 46). $\frac{10}{16}$ _____ and _____

Reduce each of the following to simplest form:

47). $\frac{30}{40}$ _____ 48) $\frac{16}{20}$ _____

49). $\frac{24}{28}$ = _____ 50). $\frac{63}{72}$ = _____

Write each of the following fractions as decimals:

51). $\frac{5}{8}$ = _____ 52). $\frac{6}{25}$ = _____

53). $\frac{7}{9}$ = _____ 54). $\frac{5}{11}$ = _____

Write each of the following decimals as fractions:

55). 0.8 = _____ 56). 0.125 = _____

57). $0.\overline{3}$ = _____ 58). $0.\overline{27}$ = _____

Write each percent as a decimal.

59). 73% = _____ 60). 4% = _____

61). 6.25% = _____ 62). 225% = _____

Write each decimal as a percent

63). 1.92 = _____ 64). 0.08 = _____

65). 0.86 _____ 66). 1.43 = _____

Complete the following additions, subtractions, multiplications or divisions. Write your answers in lowest form.

67). $\frac{3}{8} + \frac{1}{4} =$ _____ 68). $\frac{11}{12} + \frac{5}{8} =$ _____

69). $\frac{9}{10} + \frac{5}{6} =$ _____ 70). $\frac{1}{7} + \frac{3}{8} =$ _____

71). $\frac{13}{17} - \frac{2}{3} =$ _____ 72). $\frac{8}{9} - \frac{4}{5} =$ _____

73). $\frac{3}{8} - \frac{5}{24} =$ _____ 74). $\frac{13}{14} - \frac{5}{6} =$ _____

75). $\frac{1}{5} \times \frac{3}{5} =$ _____ 76). $\frac{4}{9} \times \frac{3}{16} =$ _____

77). $\frac{3}{8} \times \frac{3}{6} =$ _____ 78). $\frac{6}{16} \times \frac{5}{12} =$ _____

79). $\frac{8}{9} \div \frac{5}{9} =$ _____ 80). $\frac{9}{10} \div 3 =$ _____

81). $\frac{4}{17} \div \frac{2}{3} =$ _____ 82). $\frac{11}{18} \div \frac{1}{3} =$ _____

EVALUATE EACH OF THE FOLLOWING:

83). $(3x + 1)x$ when $x = 3$ 84) $x \div (2y + 1)$ when $x = 21$ and $y = 1$ 84). $3x + (x - 4)$ when $x = 6$

WRITE EACH OF THE FOLLOWING AS A MATHEMATICAL EXPRESSION:

85). Nine more than twice n _____

86). Two less than x divided by 3 _____

SIMPLIFY EACH OF THE FOLLOWING:

87). $34 + (-21) =$ _____

88). Evaluate $x + (-9)$ for $x = 35 =$ _____

89). $-5 - (-8) =$ _____

90). Evaluate $x - (-10)$ for $x = 12 =$ _____

91). $-8 \bullet 9 =$ _____

92). Evaluate $-5u$ for $u = -4 =$ _____

93). $-48 \div 8 =$ _____

94). Evaluate $k \div (-11)$ for $k = -33 =$ _____

95). $6\frac{2}{7} \div \frac{3}{4} =$ _____

96). $0 \div 5.928 =$ _____

97). $9^3 =$ _____

98). $(-4)^2 =$ _____

99). $(\frac{5}{6})^2 =$ _____

100). $\sqrt{196} =$ _____

SIMPLIFY EACH OF THE FOLLOWING:

101). $8 + 3[3 - (1)^6] =$

102). $3^4 + 12 \div 3 - (1 - 9) =$

103). Evaluate $2 + x - 2 \bullet 8$ for $x = 9$

104). Evaluate $1 + x^2 \bullet 6$ for $x = 4$

105). Simplify: $\frac{2 + 4^2}{2} + |1 - 6|$

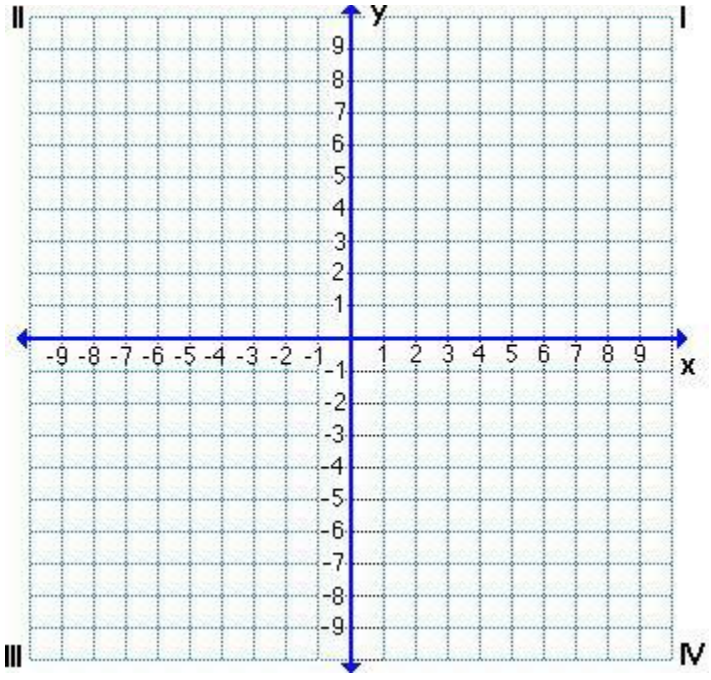
106). SIMPLIFY BY COMBINING LIKE TERMS: $3x^3 + 9z + 2x^3 + 5z + 6x^2$

NAME THE QUADRANT WHERE EACH OF THE FOLLOWING POINTS MAY BE FOUND

107). (-3, 2) _____ 108). (1,4) _____

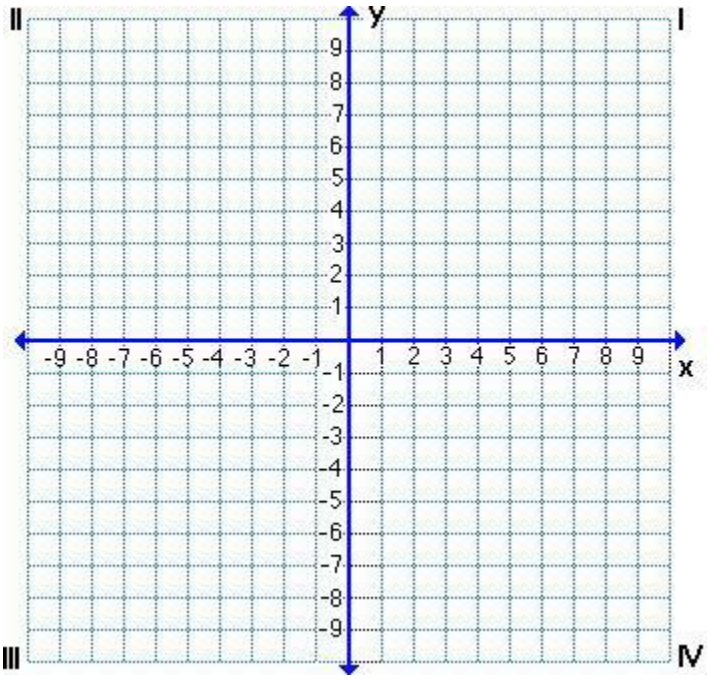
109). CREATE A TABLE OF ORDERED PAIRS FOR THE FUNCTION $y = 2x^2 - 2$ USING THE VALUES x = -2, - 1, 0, 1, AND 2. GRAPH THE ORDERED PAIRS ON THE GRAPH THAT HAS BEEN PROVIDED.

x	$y = 2x^2 - 2$	(x,y)
- 2		
-1		
0		
1		
2		



110). CREATE A TABLE OF ORDERED PAIRS FOR THE FUNCTION $y = -3x + 4$ USING THE VALUES $x = -2, -1, 0, 1,$ AND 2. GRAPH THE ORDERED PAIRS ON THE GRAPH THAT HAS BEEN PROVIDED

x	y = -3x + 4	(x,y)
-2		
-1		
0		
1		
2		



SOLVE EACH OF THE FOLLOWING BY USING A PROPORTION. SHOW ALL WORK:

111). In two hours a student earns $6.30. How much will be earned in 5 hours?

112). Two slices of mushroom pizza cost $2.45, how much will 8 slices cost?

SOLVE THE FOLLOWING PROPORTIONS. SHOW ALL WORK.

113). $\frac{40}{15X} = \frac{10}{12}$

114). $\frac{a+2}{6} = \frac{a}{-3}$

114). $\frac{4a+5}{6} = \frac{2a-3}{-7}$

115). What percent of 125 is 50?

116). What is 25% of 60?

117). Forty-five percent of what number is 50.