Dear Geometry Student,

Welcome to Geometry at Marsteller Middle School. Attached you will find your summer Geometry Assignment. This assignment is a review of basic geometry terms from Extended Math, basic and Algebra skills that we will use throughout the year and that you will need to start out the school year. This assignment will be collected and graded on the first day of school in the fall. We will also have a test on the summer work during the first week of school. **If there is work to be shown you must do so!** Completing this summer work will allow us to get all objectives taught before SOL testing at the end of the year.

Below is a list of supplies that you will need for Geometry.

- 3 ring notebook for Geometry only
- Graphing Calculator – Casio CFX-9850GC Plus or TI 83, or 84. I have a class set of the Casio calculators for student use. Students may leave theirs at home.
- Protractor, compass and straight edge, with metric units. Again I will have a class set, but students will need their own for homework.
- Pencils, pens
- Colored pencils

Below is a list of websites that might help you complete the packet.

- http://www.hippocampus.org/Algebra ~ great interactive lessons for all Algebra topics
- http://www.purplemath.com/modules/index.htm ~ more Algebra lessons
- http://library.thinkquest.org/2647/geometry/glossary.htm ~ Geometry vocabulary
- http://www.regentsprep.org/Regents/math/geometry/GPA/vocab.htm ~ more geometry vocabulary
- http://www.mathleague.com/help/fractions/fractions.htm ~ Fraction help!

Have a great summer! I will see you in September.

Ms. Craig
craigcs@pwcs.edu

Define each vocabulary term, then draw and label a picture to help you remember that definition.

Term	Definition	Diagram or Illustration
Acute Angle		
Adjacent Angle		
Angle		
Angle Bisector		
Collinear		
Complementary angles		
Congruent Angles		
Congruent Segments		
Coplanar		
Line		
Midpoint		
Obtuse Angles		

Term	Definition	Diagram or Illustration
Parallel Lines		
Perpendicular bisector		
Plane		
Point		
Ray		
Right angle		
Segment		
Segment Bisector		
Straight angle		
Supplementary Angles		
Vertical Angles		

Algebra Review: These skills will be used throughout Geometry and it is expected that you will be to use and apply them. Students should be proficient in the following skills:

- Rational Number Operations ~ yes this means fractions, which you may not change to decimals!
- Integers (without a calculator)
- Order of Operations
- Solving equations, including quadratic equations
- Graphing linear equations
- Systems of Equations
- Exponents
- Radicals
- Polynomials
- Quadratics

Students should also have memorized the perfect squares and perfect cubes to 400.

Please make sure that you show all work!

Rational Number Operations: Simplify the following expressions:

1. $\frac{3}{5}+-\frac{1}{3}$
2. $\frac{1}{3}-\frac{9}{11}$
3. $-\frac{5}{12}-\frac{5}{6}$
4. $-\frac{4}{15}\bullet\frac{9}{16}$
5. $-\frac{3}{4}\div\frac{1}{10}$
6. $-10\div\frac{-3}{16}$

Order of Operations: Simplify the following expressions:

7. $[8-3(2)]6$
8. $\frac{28}{4(2)-4}$
9. $6-4^3\div 12+8\div 6$

Variable Expressions: Evaluate the following expressions:

10. $1-2x^2$, when $x=-2$
11. $\frac{1}{3}m-m^2$, when $m=\frac{1}{2}$
12. $-6x+2|x-3|$, when $x=-3$

Simplify the following expressions:

13. $3(x+2)+5x$
14. $6+6(x+4)+15y+x$
15. $8a^3+3a^2+5a+7a^3+8a^2+2a$

Solving Equations and Inequalities

Solve the following equations

16. -5 + n + 16 = -3

17. 7y – 4(3y – 5) = 80

18. $5-\frac{9}{2}d=32$

19. 4(2y + 9) = 3y – 14

20. 2a – 6 – (3a + 4) = 10 – 4a

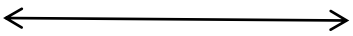
21. $\frac{5}{8}+\frac{3}{4}x=\frac{1}{16}$

Solve graph the solution to the inequality on a number line.

22. -2(r – 3) + 7 ≥ 8

22. 3x + 2 > -4x + 6

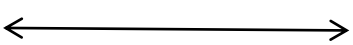
23. $\frac{4}{3}r-3<r+\frac{2}{3}-\frac{1}{3}r$

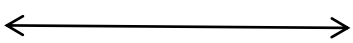


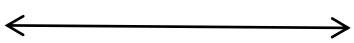
24. 2 < 3n – 4 ≤ 14

25. 3b – 1 < -7 or 4b + 1 > 9

26. 7 > 2 – 5y > -3



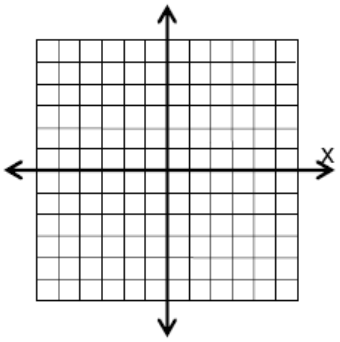




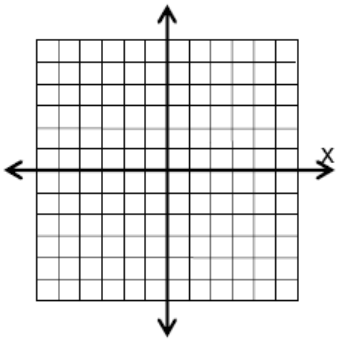
Graphing Linear Equations

Graph the following equations and inequalities.

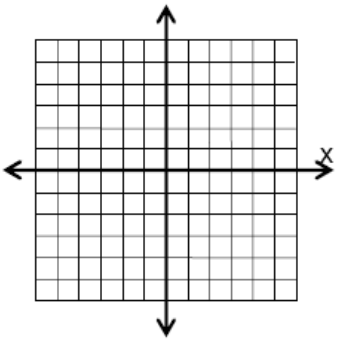
27. $y = -3x + 4$



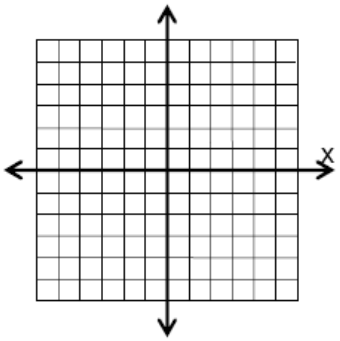
28. $y = \frac{3}{5}x - 3$



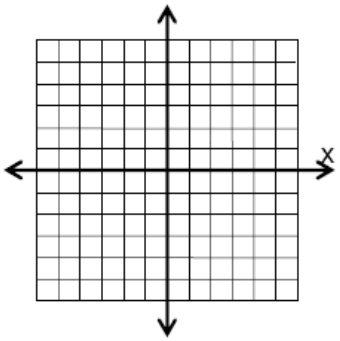
29. $5x - 6y = -30$



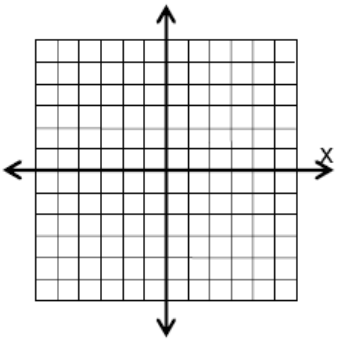
30. $-4x + 8y = 24$



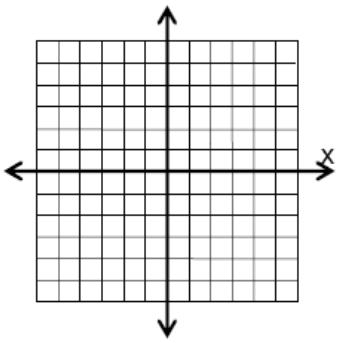
31. $y - 2 = -\frac{1}{2}(x - 3)$



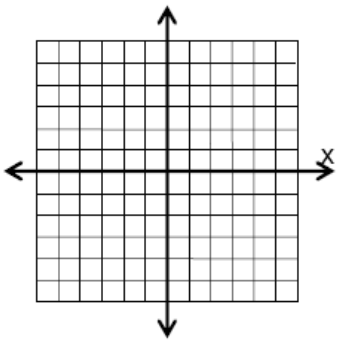
32. $x = -3$



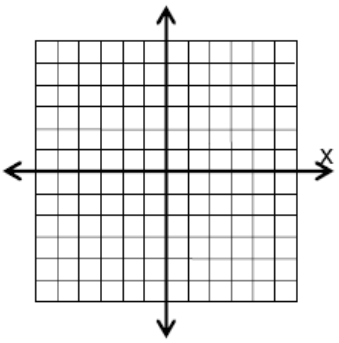
33. $y < 5$



33. $y \geq 4x - 5$



34. $2x - 3y > 12$



Writing Linear Equations.

35. Write the equation of the following lines in slope intercept form.

a. m = 2, (3, 1)

b. m = -3 , (4, 2)

c. (2, -4), m = ½

d. (6, -3), m = $\frac{1}{3}$

e. (-5, 7) and (2, -7)

f. (2, 0) and (-2, 6)

Systems of equations:

Solve the following systems by any method:

36. $\begin{cases} 4x+3y=31 \\ y=2x+7 \end{cases}$

37. $\begin{cases} y=x-3 \\ 4x+y=32 \end{cases}$

38. $\begin{cases} x+7y=12 \\ 3x-5=10 \end{cases}$

39. $\begin{cases} 5u+6v=14 \\ 3u+5v=7 \end{cases}$

Exponents

Simplify each expression using only positive exponents, assume no denominator equals zero.

40. $b^2 \bullet b^7$

41. $(a^2)^3 \bullet a^5$

43. $w^3(3w)^4$

44. $\dfrac{x^2y^0 3^2}{x^3y^{-4}}$

45. $\dfrac{(2p)^{-2}pq}{(p^2q)^4p^0}$

46. $\left(\dfrac{w^{-2}}{z^4}\right)^{-3}$

Radicals

Simplify the following expressions (no decimals).

47. $\sqrt{18}$

48. $\sqrt{80}$

49. $\sqrt{180}$

Simplify the following expressions (no decimals).

50. $\sqrt{8} \bullet \sqrt{20}$

51. $12\sqrt{3} \bullet 5\sqrt{15}$

52. $\sqrt{\dfrac{20}{81}}$

53. $\sqrt{\dfrac{54}{24}}$

54. $\sqrt{8} + \sqrt{50}$

55. $3\sqrt{20} + 8\sqrt{45}$

Polynomials

Perform the indicated operation.

56. $(x^2 + 3x - 1) + (4x^2 + 2)$

57. $(5x^3 + 2x - 4) - (4x^3 + 2x^2 - 5x)$

58. $(x - 14)^2$

59. $(5x - 4)(5x + 4)$

60. $(x + 2)(3x + 5)$

61. $(2x - 1)(13x + 5)$

Factor the following expressions.

62. $12x^2 - 4x + 16$

63. $36x^2 - 25$

64. $x^2 - 12x + 36$

65. $x^2 + 3x - 70$

66. $x^2 - 2x - 15$

67. $x^2 - 64$

68. $4x^2 - 32x + 60$

69. $7k^2 - 13k - 2$

70. $5x^2 - 9x + 12$

Quadratics

Solve the following equations by either factoring, using the quadratic formula or completing the square.

71. $7p(11p - 2)(11p + 2) = 0$

72. $x^2 + 7x + 12 = 0$

73. $g^2 - 5g = 24$

74. $3x^2 - 8x - 11 = 0$

75. $5t^2 + 9t - 18 = 0$

76. $4a^2 + 9a = -1$

77. Solve each equation for the given variable.

a. $A = 2(L + W)$ *(W)*

b. $V = LWH$ *(L)*

c. $A = 4pr^2$ *(r^2)*

d. $2x - 3y = 8$ *(y)*

e. $A = \frac{x+y}{2}$ *(y)*

d. $R = \frac{E}{I}$ *(I)*

78. Complete the following charts. This should be memorized.

Perfect Squares			
$1^2 =$		$11^2 =$	
$2^2 =$		$12^2 =$	
$3^2 =$		$13^2 =$	
$4^2 =$		$14^2 =$	
$5^2 =$		$15^2 =$	
$6^2 =$		$16^2 =$	
$7^2 =$		$17^2 =$	
$8^2 =$		$18^2 =$	
$9^2 =$		$19^2 =$	
$10^2 =$		$20^2 =$	

Perfect Cubes	
$1^3 =$	
$2^3 =$	
$3^3 =$	
$4^3 =$	
$5^3 =$	
$6^3 =$	

79. Find the radius of the sphere given the following information.

$C = 2\pi r$

$S.A. = 4\pi r^2$

$V = \frac{4}{3}\pi r^3$

a. A baseball with a circumference of 24 cm.

b. A basketball with a circumference of 75 cm.

c. A tennis ball with a surface area of 28 in^2.

d. A soccer ball with a volume of 5,544.92 cm

80. **Properties** ~ Name the properties illustrated below:

a. (7 + 5) + 3 = (5 + 7) + 3 _____

b. (8 + 6) + 4 = 8 + (6 + 4) _____

c. $2(3+x)=2\cdot3+2\cdot x=6+2x$ _____

d. 1x = x _____

e. 8 + 0 = 0 + 8 _____

f. 2 + 0 = 2 _____

g. $6 \cdot 0 = 0 \cdot 6$ _____

h. $(4+5x)\cdot8=4\cdot8+5x\cdot8=32+40x$ _____

i. 5 + x = 12 $\Rightarrow$ (5 + x) - 5 = 12 – 5 _____

j. $5 \cdot 0 = 0$ _____

k. $6 \cdot (8 \cdot 3) = (6 \cdot 8) \cdot 3$ _____

l. a+ b + c = b + a + c _____

m. n - 8 = 14 $\Rightarrow$ (n - 8) + 8 = 14 + 8 _____

n. $x(6+5x)=x\cdot6+x\cdot5x=6x+5x^2$ _____

o. $9 \cdot 1 = 1 \cdot 9$ _____

p. $\frac{n}{5}=4\Rightarrow5\cdot\frac{n}{5}=4\cdot5$ _____

q. $7x=35\Rightarrow\frac{7x}{7}=\frac{35}{7}$ _____

r. -3(n - 6) = -3n + 18 _____

s. $\frac{3}{5}\cdot\frac{5}{3}=1$ _____