Summer Work
Accelerated Algebra I / Geometry A

Welcome to Accelerated Algebra I and Geometry A at Starr's Mill 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 with a few review problems over material covering critical prerequisite topics. You should have attained mastery of the skills required to solve these problems in order to be successful next year. If you need a refresher on any topics, we recommend visiting www.khanacademy.org and work through the modules relating to the topic. You will find helpful instructional videos on many mathematical topics on this site also. (A copy of this assignment is posted on the SMHS website under the AAG page.)

Start your year off on the right track by completing these problems before school starts! This packet is **due on the first day of school**!

I. Operations with Fractions
Perform the following operations. Leave answers as simplified fractions (no mixed numbers).

1. $\frac{5}{9} + \frac{3}{7}$
2. $\frac{3}{8} - \frac{5}{16}$
3. $\frac{9}{17} \cdot \frac{15}{3}$
4. $\frac{13}{14} \div \frac{26}{14}$
5. $\frac{5}{\frac{1}{5}}$

II. Order of Operations
Simplify the following expressions.

6. $6(5-3)^2 + 3$
7. $\frac{1}{3}(9 \cdot 3) + 18$
8. $\frac{1}{2} \cdot 26 - 3^2$
9. $2 \cdot 5^2$
10. $16 \div 8 \cdot 2^2$
11. $2 \cdot 3^2 \div 7$
12. $3(2 \cdot 3^3) + 8$
13. -2^4

III. Solve Equations & Inequalities
Solve the following equations and inequalities.

14. $-8 = -(x+4)$
15. $-18 - 6x = 6(1+3x)$
16. $x + 5 = -5x + 5$
17. $8x - 2 = -9 + 7x$
18. $2(4x-3) - 8 = 4 + 2x$
19. $x - 4 = -9 + x$

20. $-4x \geq 28$

21. $-2x - 2 < 3x + 8$

IV. Write the Equation of a Line

22. Write the equation of the line with a slope of -2 that passes through the point (3,7) in **slope-intercept form.** $y = mx + b$

23. Write the equation of the line that passes through the points (-2,5) and (-3,8) in **point-slope form.** $y - y_1 = m(x - x_1)$

24. Write the equation of the line that has a slope of -1/3 and a y-intercept of 2 in **standard form.** $Ax + By = C$ *Hint: Write the equation in one of the other 2 forms first, then re-write in standard form.

25. Write the equation of the vertical line that passes through the point (7,15).

26. Write the equation of the line that passes through the point (-1,3) and is <u>parallel</u> to a line with a slope of 7 in **slope-intercept form.**

27. Write the equation of the line that passes through the point (3, -5) and is <u>perpendicular</u> to a line with a slope of -1/2 in **point-slope form.**

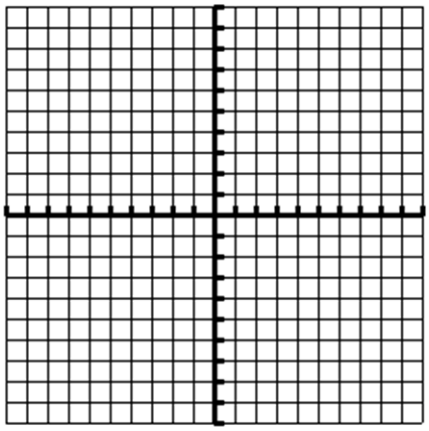
28. Write the equation of the line that is parallel to the x-axis and goes through the point (-3,6).

29. Write the equation of the line that passes through the points (-1, -1) and (2,8) in any form.

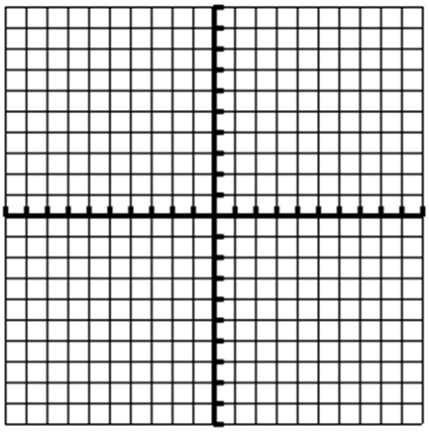
V. Graph Linear Equations and Inequalities

Graph each of the following equations and inequalities.

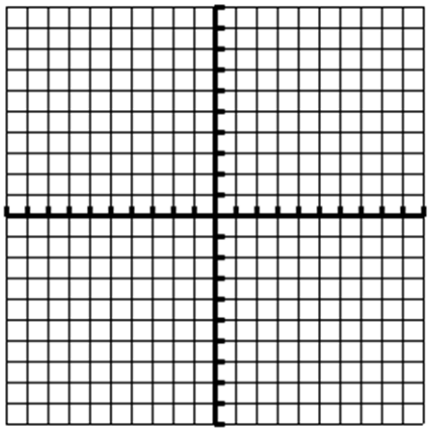
30. $y = -\frac{3}{2}x - 2$



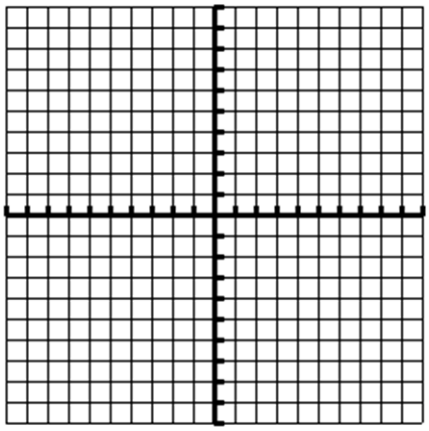
31. $x = 4$



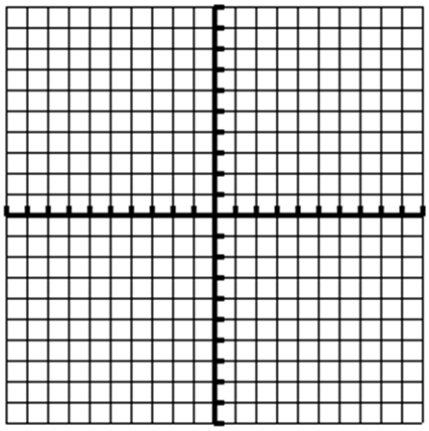
32. $y = \frac{1}{3}x + 3$



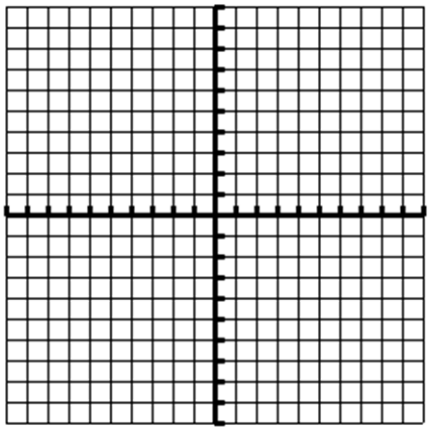
33. $y > -\frac{1}{2}x - 1$



34. $y \leq 3x - 4$



35. $y < -2x + 4$



VI. Properties of Exponents

Evaluate each of the following.

36. $\left(\frac{2x^3y^4}{3xy}\right)^3$

37. $\frac{(r^3)^4}{(r^3)^8}$

38. $\frac{4x^3y^3}{2xy} \cdot \frac{5xy^2}{2y}$

39. $\left(\frac{y^2}{y^3}\right)^{-2}$

40. $\frac{6x^{-2}y^2}{xy^{-3}} \cdot \frac{(4x^2y)^{-2}}{xy^2}$

41. $\frac{(-3x^0y^{-1})^3}{x^3y^{-3}}$

42. $\left(\frac{2xy^{-2}y^4}{3x^{-1}y}\right)^{-2}$

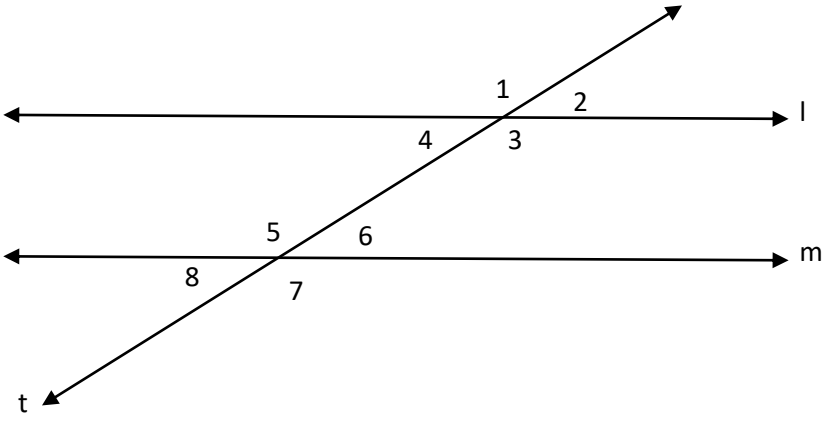
43. $(3x^5y^{-7}z^8)^4$

44. $\frac{16x^3y}{-4xy^3} \cdot -\frac{2xy}{-x^{-1}}$

45. $(8m^3)^2(\frac{1}{2}m^2)^2$

VI. Angle Pair Relationships

Given the following diagram where line 'l' is parallel to line 'm' and both lines are intersected by transversal 't', answer the following questions.



46. List the pairs of corresponding angles.

47. List the pairs of alternate interior angles.

48. Which angles are considered linear pairs?

49. Name all congruent angle pairs.

50. Name all supplementary angle pairs.