For students entering

Algebra 2

Unity Christian School
Summer Assignment

Name: _____

These problems should be completed over the summer and ready to turn in on the first day of school! Late packets will NOT be accepted for full credit.

You MUST show all of your work to get full credit for a problem. Please put a box/circle around your answers and write neatly.

The skills in this packet were taught in last two year's math courses. These problems are reflective of the knowledge that is prerequisite to the Algebra 2 course.

A few good resources for your use in review would be:
www.khanacademy.org
www.patrickjmt.com
www.youtube.com

This assignment will be counted as your first test grade.

Operations with Fractions – Calculator skills – you may use your calculator

Add or subtract. Fractions should have a simplified fraction answer.

_____1. $-\frac{19}{12}-\frac{4}{12}$ (leave answer as an improper fraction.)

_____2. $-\frac{3}{10}-\left(-\frac{3}{5}\right)$

_____3. $-\frac{1}{5}+\frac{3}{4}-\frac{3}{10}$

Multiply or divide. Simplify fractions. Fractions should have a simplified fraction answer.
Calculator Skills

_____4. $-\frac{2}{3}\cdot\left(-\frac{2}{3}\right)\cdot\left(-\frac{2}{3}\right)$

_____5. $(-17.22) \div (-0.14)$

_____6. $\frac{4}{7} \div \left(-\frac{12}{21}\right)$

Evaluating Expressions

Evaluate each expression.

_____7. $3s - 6t$ for $s = 10$ and $t = 6$

_____8. $|s| - |t|$ for $s = 23$ and $t = -17$

_____9. $|s - t|$ for $s = 23$ and $t = -17$

Polynomials

Simplify completely and combine like terms.

_____10. $13t - 3 - 2(7 - 4t)$

_____11. $2(4x-5y)-3(7x+3y)$

Determine whether or not the indicated number is a solution of the equation.

_____12. $2x-6=-16;\ -2$

Solving Equations

Solve.

_____13. $\frac{2}{7}x=14$

_____14. $2m+5-7m=50$

_____15. $18.2+3.8x=7.4-1.6x$

_____16. $\frac{3x-10}{8}=\frac{-x}{4}$

_____17. $8=3+5(y-2)$

_____18. $4(2a-8)=\frac{1}{6}(36a+18)$

Solve.

_____19. Phil's average is 0.250. This is about $\frac{5}{6}$ as much as Joe's average. What is Joe's average? (Write answer in decimal form – do not round)

_____20. One phone company charges 65% of its normal long-distance rate after 5 p.m. A day-rate long-distance call from Houston to Chicago costs 20 cents per minute. How much is an 11-minute call between these two cities after 5 p.m.?

Exponents

Simplify completely.

_____21. $4^3 \cdot 4^2$

_____22. $(4a^5b^4)(-3a^4b^3)$

_____23. $\frac{a^8}{a^3}$

_____24. $(-2x^3y^4)^4$

Radical Expressions

Simplify completely. Assume variables are nonnegative. Leave answers in simplified radical form.

_____25. $-\sqrt{20}$

_____26. $\sqrt{48x^3y^4}$

_____27. $\sqrt{(x+3)^2}$

_____28. $\sqrt{3ab^2cd^4} \bullet \sqrt{30a^3b^5c^2d}$

_____29. $\sqrt{6}\left(\sqrt{10}+\sqrt{15}\right)$

_____30. $\left(2-2\sqrt{5}\right)^2$

Rationalize the denominator and simplify.

_____31. $\sqrt{\frac{5}{10}}$

_____32. $\sqrt{\frac{x^2}{24}}$

Add or subtract each expression. Leave answers in simplified radical form.

_____33. $2\sqrt{a} - 3\sqrt{a}$

_____34. $\sqrt{196x} + \sqrt{625x}$

_____35. $3\sqrt{15} + \sqrt{60} - 3\sqrt{45}$

System of Equations

_____36. **Use substitution to solve the system of equations. Answer should be written as an *ordered pair*.**

$-4x + y = 6$
$-5x - y = 21$

_____37. **Use elimination to solve the system of equations. Answer should be written as an *ordered pair*.**

$7x + 2y = 24$
$8x + 2y = 30$

Write a system of equations and then solve using substitution or elimination.

38. A 25-cm piece of wood is cut into two pieces. One piece is 7 cm longer than the other. How long are the pieces?

Equation #1: _____

Equation #2: _____

Solution: _____

Multi-Step Linear Equation Word Problems

39. Write an equation then solve to find the integer. Two less than eight times a number is the same as nine less than seven times the number. What is the number?

Equation: _____

Solution: _____

40. Write an equation then solve to find the integers. Find three consecutive even integers with the sum of 42.

Equation: _____

Solutions: _____

Literal Equations (Solving for a specific variable)

Solve for the specific variable.

_____41. $A = \frac{1}{3}bh$ for b

_____42. $Q = 4\pi r + 2h$ for r

Linear Inequalities

Determine whether the specified number is a solution of the inequality. Answer yes or no.

_____43. $4y - 8y > 6; -2$

Solve the following inequalities. Answer in <u>interval notation</u>.

_____44. $x - 9 \geq 3$

_____45. $-.7x \geq 2.1$

_____46. $2p + 5 < 17$

Solve. Graph the solution set on the number line below.

47. $t+5>9$



48. $-2a-6\geq -5$



Linear Equations

Find the equation of the line containing the following pairs of points or the given point with the indicated slope. (Write in SLOPE-INTERCEPT form.)

_____49. $(-5,2); m=3$

_____50. (9,3)and (19,- 17)

Find the slope (m) AND y-intercept (b) of each line.

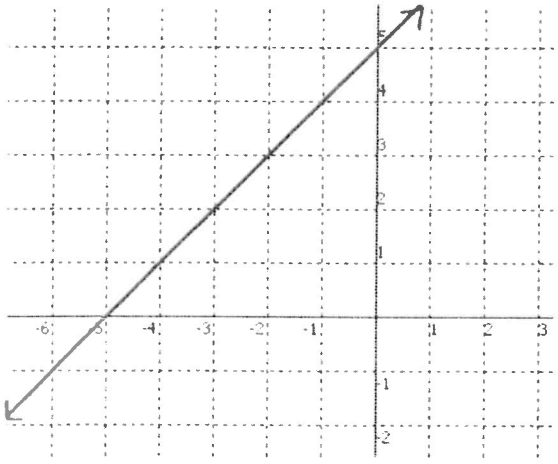
m: _____ b: _____ 51. $y = -3x + 6$

m: _____ b: _____ 52. $3y = -15x + 18$

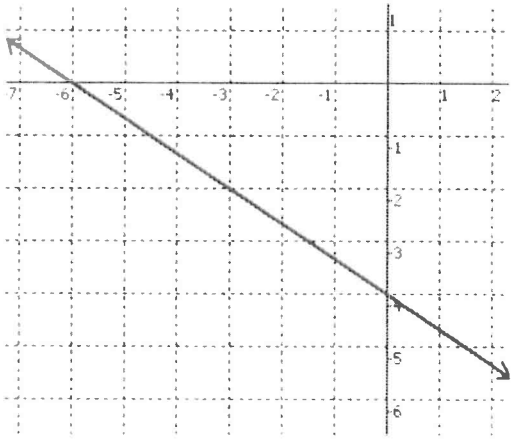
m: _____ b: _____ 53. $8x + 2y - 12 = 0$

Write the equation in slope-intercept form of the line shown.

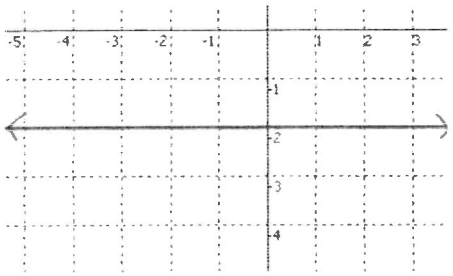
54. Equation: _____



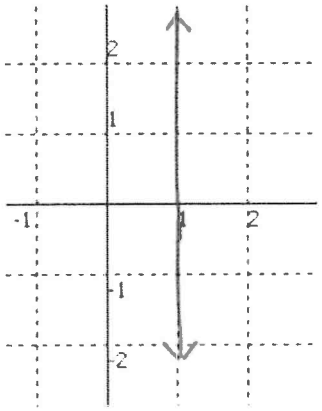
55. Equation: _____



56. Equation: _____



57. Equation: _____



Factoring Polynomials

Methods of Factoring:

- Greatest Common Factor (GCF)
- Difference of Two Squares (DOTS)
- Trinomial with a=1
- Perfect Square Trinomial
- Grouping

Factor completely by using GCF method.

_____58. $2prh + 4pr$

_____59. $6x - 24y - 12$

Factor completely.

_____60. $y^2 - 6y + 9$

_____61. $x^2 - 9$

_____62. $2x^2 - 2y^2$

_____63. $3y^3 + 9y^2 - 2y - 6$

Quadratic Equations

Solve each quadratic equation.

To solve either:

- **Factor**
- **use square root**
- **quadratic formula**

then solve. (HINT: There should be TWO answers.)

_____64. $s^2 + 5s = 0$

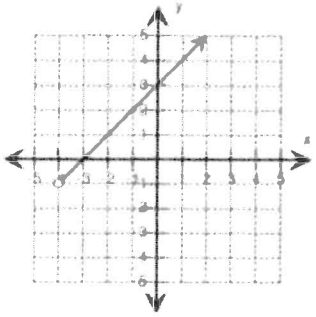
_____65. $w^2 - 144 = 0$

_____66. $x^2 - 2x - 15 = 0$

_____67. $6x^2 + 11x + 4 = 0$

What is the domain and range for the following graphs in interval notation?

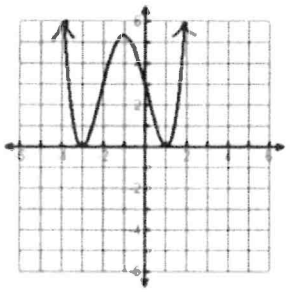
68.



Domain:_____

Range: _____

69.

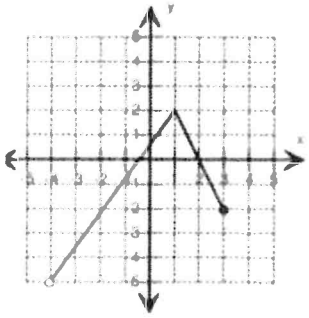


Domain:_____

Range: _____

Tell when the graph is increasing and decreasing in interval notation.

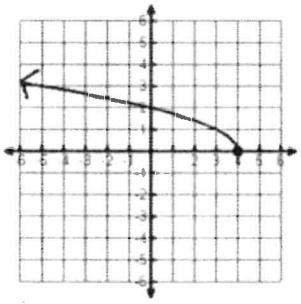
70.



Increasing:_____

Decreasing: _____

71.



Increasing:_____

Decreasing: _____