FELLOWSHIP
CHRISTIAN SCHOOL
COLOSSIANS 1: 9-12
EST. 1986

Entering

Algebra 2

&

Honors Algebra 2

Summer Math Packet

Summer 2020

Students,

As we have completed a unique semester we have decided summer packets are more important than ever, given we had to do half of the spring semester remotely.

Therefore, this packet is to be completed by the first day of school and will be graded for completion this year. We will not have an assessment over the topics in this packet as we have in years past. However, we want you to use this packet as a way to get prepared for the next course.

It is a mistake to do this entire packet at the beginning of the summer. We want these techniques to be relatively fresh in your mind in the fall. If you work a couple of problems a day, the whole packet will be completed in no time. Please show all steps when working through the packet.

As a math department, we hope you take this seriously, as we sincerely wish for you to be successful throughout this next year. Your preparation over the summer will be rewarded in unexpected ways during the year.

Here are some helpful websites to use, if needed:

- www.khanacademy.org
- www.patrickjmt.com
- www.youtube.com to find specific math related topics with accompanying videos

Sincerely,

Fellowship Math Department

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

Add or subtract. Fractions should have a <u>simplified</u> <u>fraction</u> 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 <u>simplified fraction</u> 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 <u>substitution</u> to solve the system of equations**. **Answer should be written as an *ordered pair*.**

$-4x + y = 6$

$-5x - y = 21$

_____37. **Use <u>elimination</u> 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. $x - 9 \geq -3$

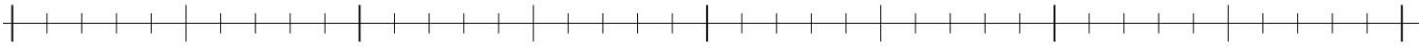
_____45. $-.7x \geq 2.1$

_____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 <u>equation</u> 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) <u>AND</u> y-intercept (b) of each line.

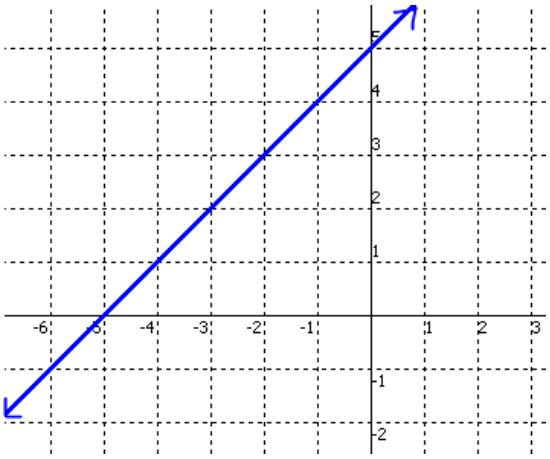
m: _____ b: _____ 51. $y = -3x + 6$

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

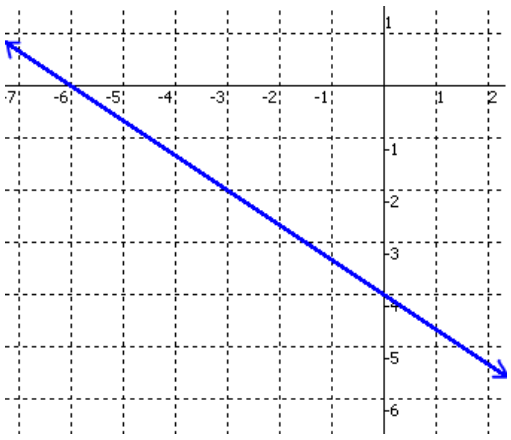
m: _____ b: _____ 53. $8x + 2y - 12 = 0$

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

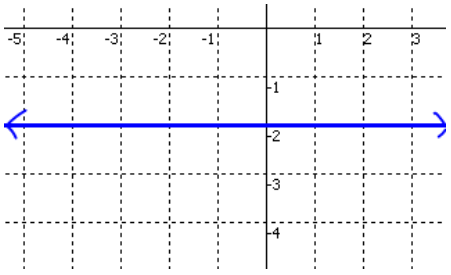
54. Equation: _____



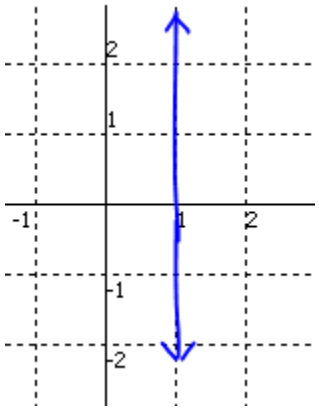
55. Equation: _____



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

<u>Solve</u> each quadratic equation.

To solve either:

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

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

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

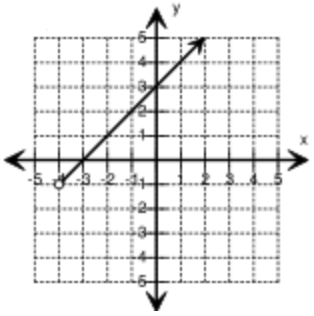
_____65. $w^2 - 144 = 0$

_____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?

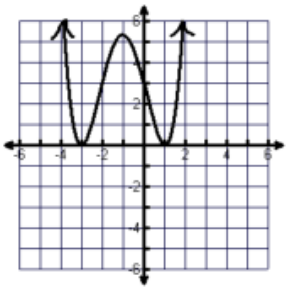
68.



Domain:_____

Range: _____

69.

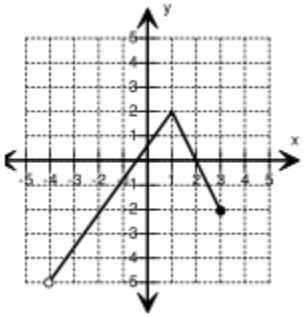


Domain:_____

Range: _____

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

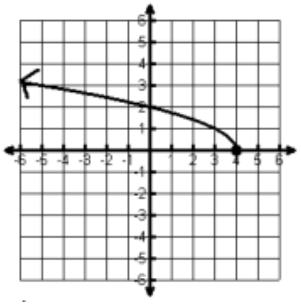
70.



Increasing:_____

Decreasing: _____

71.



Increasing:_____

Decreasing: _____

Describe the end behavior:

72. $x \to$ _____ $f(x) \to$ _____
$x \to$ _____ $f(x) \to$ _____