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Name: _____

**Algebra II
Summer Math Study Guide**

After you have practiced the skills on Khan Academy (list available on bdcs.org/read), complete the following study guide. Be sure to show all work and describe your reasoning, as this study guide should be a resource for you at the beginning of the school year. If you have any questions, be sure to contact me at gpinkerton@bdcs.org. I will reply within 48 hours Monday-Friday.

Equivalent Expressions

Are the two expressions equivalent? Answer *yes* or *no* and give reasoning.

1. $2(b + 3c)$ **and** $(b + 3c) + b + 3c$

2. $j + j + 2k$ **and** $2(j + j + k)$

Combining Like Terms with Negative Coefficients & Distribution

Simplify to create an equivalent expression.

3. $19 - 6(-k + 4)$

4. $-4(-11 + 4n) - 3(-2n + 9)$

Equations with Variables on Both Sides: Decimals & Fractions

Solve.

5. $2d + 4 = 10 + \frac{5}{2}d$

6. $4a + 5 = 2 + 3.25a$

Equations with Parentheses: Decimals & Fractions

Solve.

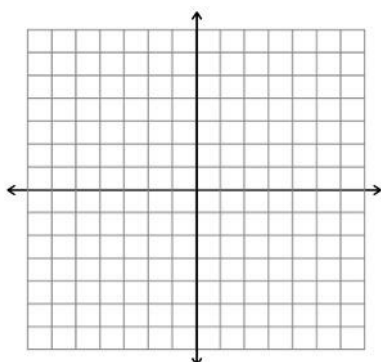
7. $0.75(8 + e) = 2 - 1.25e$

8. $3h = 7\left(\frac{2}{7} - \frac{3}{7}h\right) - 10$

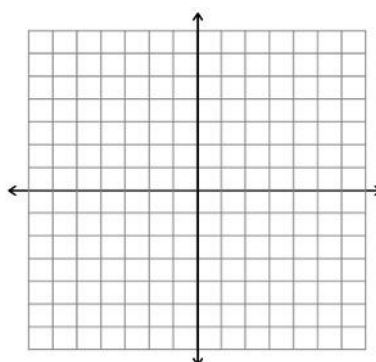
Graph from Slope-Intercept Form

Graph the linear functions below. Show at least two points.

9. $y = 3x - 2$



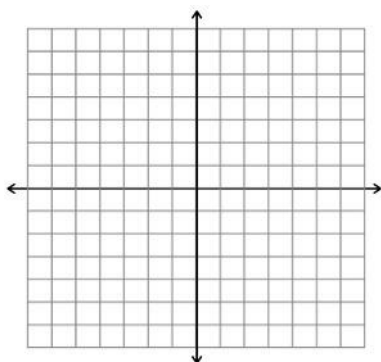
10. $y = -\frac{5}{2}x + 7$



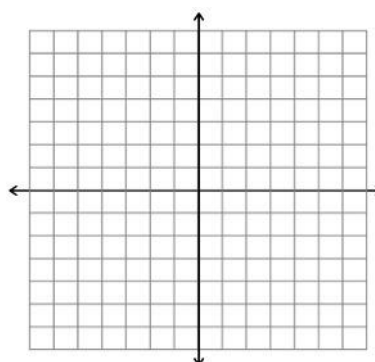
Graph from Linear Standard Form

Graph the linear functions below. Show at least two points.

11. $5x - 3y = 15$



12. $-9x + 6y = 18$



Slope-Intercept from Two Points

Write a linear equation in slope-intercept form.

13. $(2,1)$ and $(5,-8)$

14. $(-10,3)$ and $(-8,-8)$

Intercepts from Equation

Solve for the x - and y -intercepts in each linear function. Label your answers and write them as coordinates in their most reduced form.

15. $5x - 9 = -8y - 3$

16. $y - 4 = 7(x - 6)$

Factoring Quadratics Intro

Factor as the product of two binomials.

17. $x^2 + 9x - 36$

18. $x^2 - 11x + 18$

Simplify Square Roots

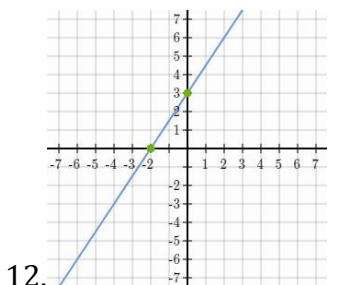
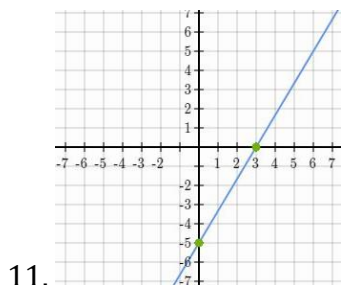
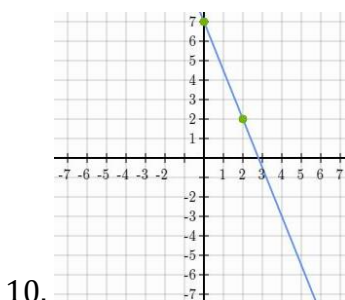
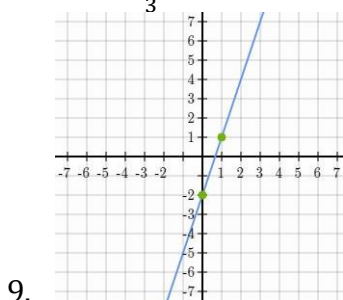
Simplify.

19. $\sqrt{75}$

20. $\sqrt{72}$

Answer Key

1. Yes, they are equivalent. By distributing to both terms in the first we get $2b + 6c$, and by adding like terms on the second we get the same expression.
2. No, they are not equivalent. By distributing to both terms in the first we get $2j + 2k$ and by adding like terms then distributing to both terms in the second we get $4j + 2k$.
3. $6k - 5$
4. $-10n + 17$
5. $d = -12$
6. $a = -4$
7. $e = -2$
8. $h = -\frac{4}{3}$



13. $y = -3x + 7$
14. $y = -\frac{11}{2}x - 52$
15. $x: \left(\frac{6}{5}, 0\right)$ $y: \left(0, \frac{3}{4}\right)$
16. $x: \left(\frac{38}{7}, 0\right)$ $y: (0, -38)$
17. $(x - 3)(x + 12)$
18. $(x - 2)(x + 9)$
19. $5\sqrt{3}$
20. $6\sqrt{2}$