Algebra 2 Summer Review Packet

In the following packet you will find problems designed to ensure your readiness to enter Pre-AP Algebra 2 this next year. Each of the nine topics covered are things you should have mastered in Geometry and Algebra 1 courses. It is our expectation that you will work the following problems on your own with no assistance from others and it is strongly recommended that you **DO NOT** use a calculator to complete the assignment as this is designed to prepare you for the coursework in Pre-AP Algebra 2.

If, during the summer you misplace this packet, it will be available on the Dobie website at www.jfrankdobie.org.

Please use your own paper to complete the problems and then put your answers on the answer sheet and following graphs. It is an expectation that your packet will be completed before the first day of school and it will be turned in for a major grade. Your work and your answers will be graded so please show all your work for your answers on separate paper.

Thank you we look forward to seeing you in the fall!

Pre-AP Algebra 2 Teachers

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Name:_____

Please place all answers on the answer sheet. Please <u>do not</u> use a calculator to complete this packet.

1. Order of Operations

Evaluate each expression. Write your answer in simplest form.

1. $4^2 \bullet 2 + \left[7 - (3^2 - 5)\right]$
2. $\left[15(10) - 12(10)\right] \div 10$
3. $(8-4) \bullet (12-3) \bullet \frac{1}{2}(2 + 1 \times 2)$
4. $4\left[(3 + 2 \times 3) - 5\right] + 7$
5. $80 \div 4 \times 2 - 2 \times 2$
6. $3^2 + 7 \times 2 - 8 \times 2$

2. Fractions

Evaluate each expression. Write your answer in simplest form. Where applicable, leave answers as improper fractions. (Reduce, reduce, reduce!)

7. $\frac{1}{3}\left(\frac{5}{6} - \frac{3}{4} + \frac{2}{3}\right)$
8. $\dfrac{\frac{3}{9} - \frac{8}{12}}{\frac{3}{8} \bullet 2}$
9. $-\frac{4}{9} \bullet \frac{3}{2} - \frac{5}{6} + 3$
10. $\left(4 - \frac{5}{6} + 3 \times 2\right) \div \frac{5}{6}$
11. $\dfrac{\frac{2}{3} + 4}{\frac{5}{6}}$
12. $\dfrac{\frac{3}{2} + \frac{3}{4} + \frac{3}{8}}{21}$

3. Exponents

Simplify each expression. Write your answer in simplest form. Where applicable, leave answers as improper fractions. The simplified expression should have no negative exponents.

13. $\dfrac{4x^8}{6x^{-5}}$
14. $(6xy^2)(-8x + 9y)$
15. $\left(3x \bullet x^3\right)^{-2}$
16. $\dfrac{x^2 y}{3y^3 x^3} \bullet \dfrac{18x^4 y^2}{xy^6}$
17. $(12xy)^0 (x^2 y^4)^5$
18. $\dfrac{2x^{-2} y}{3y^{-3} x^2} \bullet \dfrac{3x^4}{8y^{-2}}$

4. Radicals

Evaluate each expression. Rationalize the denominator where necessary.

20. $\sqrt{45}$

21. $\sqrt{a^5b^{10}}$

22. $\sqrt{24}\cdot\sqrt{54}$

24. $\sqrt{\dfrac{ab^2}{c}}$

5. Simplifying Expressions

Simplify each expression. Write your answer in simplest form.

25. $(2y^3-9y+16)-(5y^3+3y-3)$

26. $-7x+8(-2x+5)$

27. $4y(2-y)+3y^2$

28. $5(x+y)-4(3x-2y+1)$

29. $\dfrac{30x^2+20x-10}{-5}$

6. Solving Equations

Solve each of the following equations for x.

31. $3-2(x-1)=2+4x$

32. $8x-4+3(x+7)=6x-3(x-3)$

33. $16x-3(4x+7)=6x-(2x+21)$

34. $(x-3)-5(x+7)=10(x+3)-(7x+5)$

35. $-6x^2=-216$

36. $\dfrac{2}{3}=\dfrac{x+7}{3x}$

37. $\dfrac{x+6}{4}=\dfrac{-4x}{16}$

38. $16x+24=7(x+6)$

Solve each equation for the indicated variable.

39. $ax + r = 7$, for x

40. $y = 3x + 3b$, for b

41. $y = mx + 6$, for m

42. You can estimate the time, t, in hours that it takes to fly a distance, d, in miles by using the formula $t = \frac{d}{500} + \frac{1}{2}$.

a) Use the formula to estimate the time that it takes to fly 1300 miles.
b) Solve the formula for d.
c) Use the rewritten formula from **b** to find how many miles you can fly in 4 hours.

7. Solving Inequalities

Solve each of the following inequalities for x.

43. $4x + 7 - x \leq 31$

44. $4x + 5 \geq x + 26$

45. $2(x - 3) + 8x \leq 11$

Solve each of the following compound inequalities for x.

46. $-7 \leq 3x + 2 \leq 8$

47. $-2 \leq 4x + 6 \leq 22$

48. $8 < 3x - 1 \leq 11$

8. Linear Graphs

Given two points M & N on the coordinate plane, find the slope of $\overleftrightarrow{MN}$ and state the slope of the line perpendicular to $\overleftrightarrow{MN}$.

49. M(9, 6), N(1, 4)

50. M(-2, 2), N(4, -4)

51. M(-9,16), N(-11,16)

Find the x-intercept and y-intercept of the given line. Using the intercepts, graph the line.

52. $y = x - 5$

53. $6x + 2y = -12$

54. $3y = 9x + 15$

55. $y = -2x + 1$

56. $y - 10 = 2(x - 4)$

57. $6x - 5 = 2y + 3$

Find the slope and y-intercept of the graph of the equation. Using slope-intercept form, graph the line.

58. $y - 2x = 7$

59. $y = \frac{2x + 7}{14}$

60. $3x + 6y = 12$

9. Multiplying, Factoring and Solving Polynomial Expressions and Equations

Use the FOIL method to find each product.

61. $(3x-2)(x-1)$ 62. $(2x-9)(3x-8)$ 63. $(3x-5)^2$

Find the greatest common factor and factor it out of the expression.

64. $-4x^3-20x^2+16x$ 65. $3x^5y^2-21x^2y^7$ 66. $15x^5-10x^4+5x^2$

Factor each expression completely.

67. x^2-25 68. x^2+2x-8 69. $x^2-2x-24$

70. $9x^2-81$ 71. $9x^2+24x+16$ 72. $2x^2+x-6$

Using the Zero Product Property, solve the following quadratic equations for x.

76. $x^2=25$ 77. $3x^2=48$ 78. $x^2-9x-36=0$

79. $2x^2-3x+1=0$ 80. $x^2+7x+12=0$ 81. $x^2-10x+9=0$

Using the Quadratic Formula, solve the following quadratic equations.

82. $x^2-2x+9=0$ 83. $4x^2-5x-4=0$ 84. $6x^2-7x-3=0$

Algebra II Summer Work Packet - Answer Sheet

Please place all answers on this answer sheet. Problems that require graphs should be done on the included grids on the next pages.

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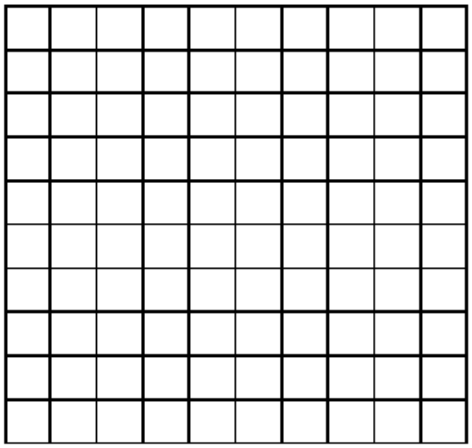

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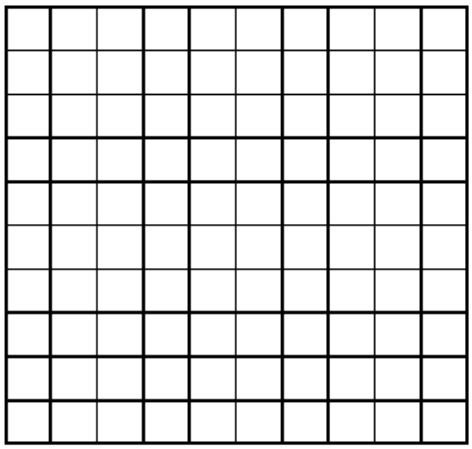

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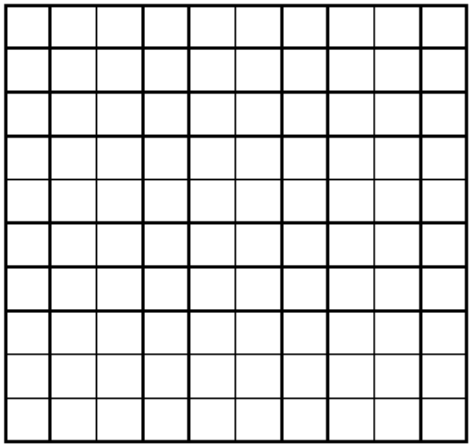

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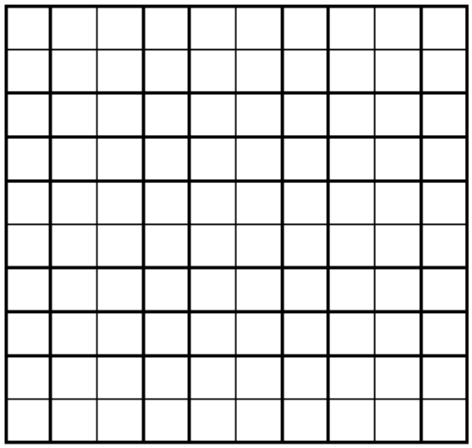

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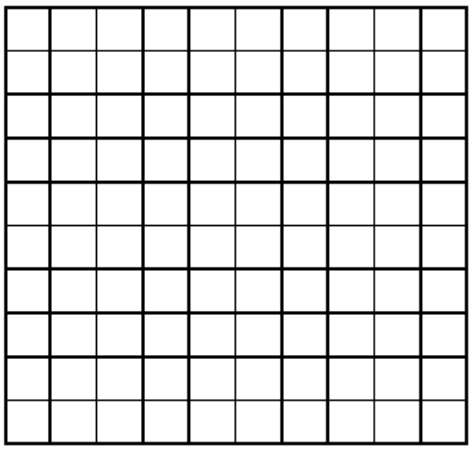

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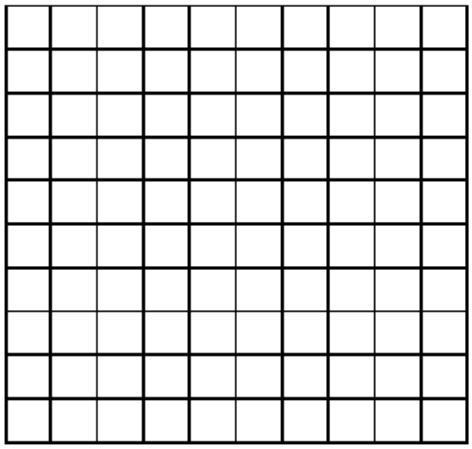

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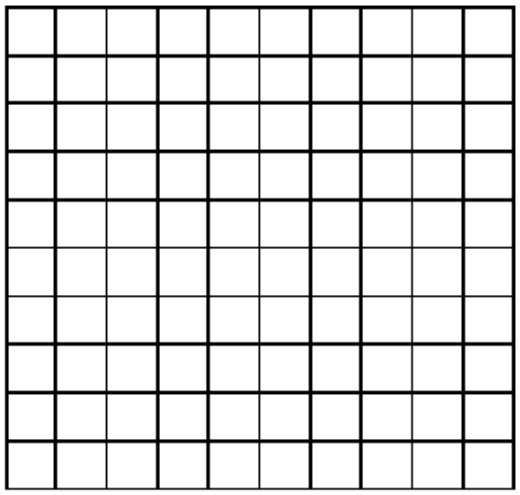

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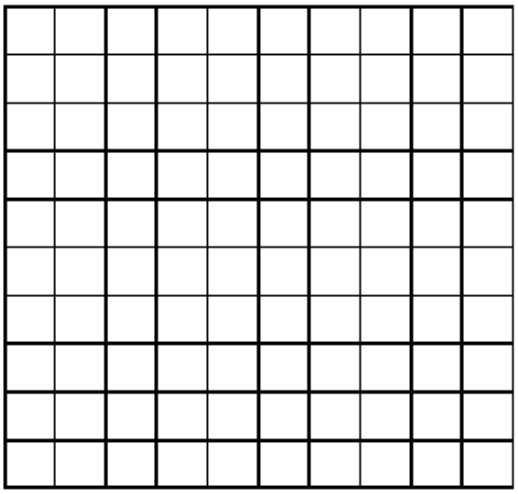

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