

St. George's Independent School Collierville

Algebra II Summer Work Packet

Covering Prerequisite Concepts for Incoming Algebra II Students

This math packet contains 59 problems designed to ensure the student's readiness for Algebra II and Algebra II Honors. The ten topics covered in this packet are concepts that should be mastered before entering Algebra II. If any of these topics have not been mastered, the accompanying Algebra II Summer Work Packet Review and Study Guide which includes explanations, examples and extra problems can be viewed or printed to help you complete your summer packet. **DO NOT USE A CALCULATOR WHILE COMPLETING THIS PACKET.**

The answer sheet for this packet can be found at the end of this document. Please print the answer sheet and be prepared to hand it in on Tuesday, August 18th.

Topics Covered in this Packet:

1. Integers
2. Fractions
3. Exponents
4. Radicals
5. Numbers vs. Variables
6. Order of Operations
7. Simplifying Algebraic Expressions
8. Solving Equations
9. Polynomials
10. Graphing

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

1. Integers

Simplify each of the following.

1. $-(-4) - 3 + 7$

2. $5 - 8 - (3) + 4$

3. $\frac{(-2)(-9)}{(-6)}$

4. $-(-4)(-3)(-7)$

5. $(-1)(1) - 3 + 6$

2. Fractions

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

6. $\frac{1}{3}\left(\frac{5}{6} - \frac{3}{4} + \frac{2}{3}\right)$

7. $\frac{4}{9} \times \frac{3}{2} - \frac{5}{6} + 3$

8. $\left(4 - \frac{5}{6} + 3 \times 2\right) \div \frac{5}{6}$

9. $\frac{\frac{2}{3} + 4}{\frac{5}{6}}$

10. $\frac{\frac{3}{2} + \frac{3}{4} + \frac{3}{8}}{21}$

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.

11. $\frac{4x^8}{6x^{-5}}$

12. $(6xy^2)(-8x + 9y)$

13. $(12xy)^0(x^2y^4)^5$

14. $(3y^4)^{-2}$

15. $\left(\frac{1}{2}\right)^{-1}$

4. Radicals

Evaluate each expression. Leave your answers in reduced radical form (no decimals).

16. $36^{\frac{1}{2}}$

17. $\sqrt{45}$

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

19. $\frac{\sqrt{18}}{\sqrt{2}}$

20. $\sqrt{9x^4}$

5. Numbers vs. Variables

Simplify.

21. $5 + 6 + x + y + 2x$

22. $(3)(y)(7)(x)$

23. $\frac{32x}{8}$

24. $(-5x)(-2y) + (16)(2)$

25. $4xy - xy - z$

6. Order of Operations

Evaluate each expression. Write your answer in simplest form.

26. $4^2 \times 2 + [7 - (3^2 - 5)]$

27. $[15(10) - 12(10)] \div 10$

28. $4[(3 + 2 \times 3) - 5] + 7$

29. $80 \div 4 \times 2 - 2 \times 2$

30. $3^2 + 7 \times 2 - 8 \times 2$

7. Simplifying Algebraic Expressions

Simplify each expression. Write your answer in simplest form.

31. $(2y^2 - 9y + 16) - (5y^2 + 3y - 3)$

32. $-7x + 8(-2x + 5)$

33. $4y(2 - y) + 3y^2$

34. $5(x + y) - 4(3x - 2y + 1)$

35. $\frac{30x^2 + 20x - 5}{-5}$

8. Solving Equations

Solve each of the following equations for x .

36. $8x - 4 + 3(x + 7) = 6x - 3(x - 3)$

37. $-6x^2 = -216$

38. $\frac{x + 6}{4} = \frac{-4x}{16}$

Solve each equation for the indicated variable.

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

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

41. You can estimate the time, t , in hours that it takes to fly a distance, d , in miles by using the formula $t = \frac{d}{500} + \frac{1}{2}$. Use the formula to estimate the time that it takes to fly 1300 miles. (Do not use a calculator - you don't need one.)

9. Polynomials

Use the FOIL method to find each product.

42. $(3x - 2)(x - 1)$

43. $(2x - 9)(3x - 8)$

44. $(3x - 5)^2$

45. $(1 - x)(3 - 2x)$

10. Linear Graphs

46. Given two points M & N on the coordinate plane, find the slope of \overline{MN} .
M(9, 6); N(1, 4)

47. Given two points M & N on the coordinate plane, find the slope of the line perpendicular to the line passing through the following points.

$$M(-2, 2); N(4, -4)$$

48. Find the x-intercept and y-intercept of the given line.

$$3y = 9x + 15$$

Find the slope (m) **and** y-intercept (b) of each of the following lines.

49. $y - 2x = 7$

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

51. State the equation of the x-axis.

52. State the equation of the y-axis.

53. State the quadratic equation.

54. Yes or no. The graph of a linear equation is always a straight line.

55. Yes or no. The factors of $3x^2 - 12x$ are $(3x)$ and $(x - 4)$.

Using the given grids on the answer sheet, graph each of the following lines. Be sure to graph completely by including (and labeling) the x-and y-axes as well as labeling the scale on the axes. (Use a ruler.)

56. $y = 4$

57. $y = -3x + 1$

58. $x = -2$

59. $y = x$

Name: _____

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Algebra II Summer Packet - Answer Sheet

Please place all answers on this answer sheet. Problems that require graphs should be done on the included grids that appear on the next page. Please print these two sheets, staple them together, write your name and be prepared to hand it in on Tuesday, Aug. 18.

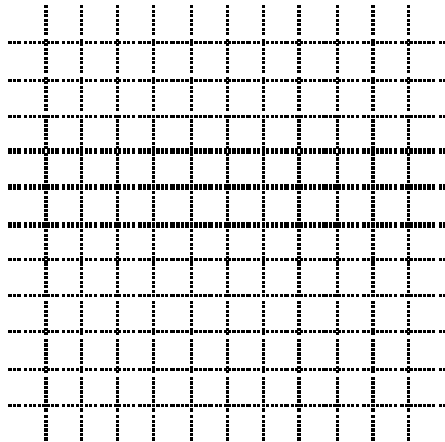
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8.	22.	36.	50.
9.	23.	37.	51.
10.	24.	38.	52.
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12.	26.	40.	54.
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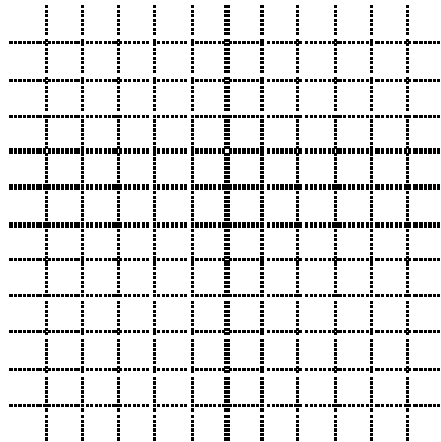
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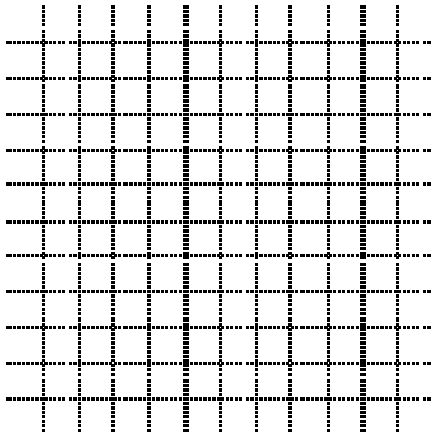
56.



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