H. Geometry Summer Math Packet
Due by the 1st week of school.

These are all review topics of Algebra 1 and should be known at mastery level.

These topics will be tested the first week of school.

Simplify the following.

1. \(4\sqrt{7} + 3\sqrt{5} + 5\sqrt{7}\)  
   2. \(5\sqrt{10} - 3\sqrt{5} + 4\sqrt{10}\)

3. \(4\sqrt{10} \cdot \sqrt{10}\)  
   4. \(\sqrt{6}(-2\sqrt{2} - \sqrt{3})\)

5. \(\sqrt[3]{48p^2q^3r^4}\)  
   6. \(\sqrt{x^5y} \cdot \sqrt{x^4y^4}\)

7. \(\sqrt{10}(\sqrt{2} + 4)\)  
   8. \(-3\sqrt{6p^3} \cdot 4\sqrt{12p}\)

9. \(5\sqrt{3x}\left(2\sqrt{x} - 3\sqrt{3x^3}\right)\)  
   10. \(\frac{\sqrt{32}}{\sqrt{2}}\)

11. \(\frac{4\sqrt{15}}{4\sqrt{10}}\)  
    12. \(\frac{2\sqrt{2}}{\sqrt{3}}\)
13. \( \frac{-2}{2\sqrt{3}} \)

14. \(-2x \cdot -4x^4y^3\)

15. \(3v^4 \cdot 4u^2\)

16. \(-3yx^3 \cdot -3yx^4 \cdot -3x^4\)

17. \(3u^2 \cdot -2v^3\)

18. \((-2)^2\)

19. \((4^2)^4\)

20. \((2^3)^3\)

21. \((-2)^3\)

22. \((-x)^3\)

23. \((-2n)^2\)

24. \((3b^4)^4\)

25. \((-3y^2)^4\)

26. \((-4xy)^4\)

27. \((-4xy^3)^3\)

28. \((-4y^3)^4\)
Distribute & simplify:

29. \(-8y(5y^2 - 3)\)  
30. \((5a - 2)(-2a + 3)\)

31. \((3x + 2)(2x - 2)\)  
32. \((2x - 2)(3x + 3)(4x - 4)\)

Factor completely (Remember to Factor by Grouping if necessary or find a GCF):

33. \(x^2 + 2x - 63\)  
34. \(y^2 + 15y - 3\)

35. \(12x - 4\)  
36. \(9t^2 + 9t - 10\)

37. \(y^2 + 12y + 36\)  
38. \(r^2 - 4\)

39. \(t^2 - 25\)  
40. \(a^2 + 18a + 80\)

41. \(2x^2 + 7x + 6\)  
42. \(6x^2 - 5x - 1\)
43. $5x^2 + 15x - 20$

44. $25x^2 - 49y^2$

45. $62x^2 + 18x$

46. $3x^2 + 9x - 15$

47. $10p^2 - 55p + 60$

48. Is $(-2, 4)$ a solution to the following system?
   
   
   $2x - 2y = 8$
   
   $x + y = 4$

49. Is $(2, 1)$ a solution to the following system?
   
   $4x + y = 9$
   
   $3x + 14y = 20$

50. Find the equation of the line that is parallel to $y = \frac{1}{2}x + 4$ and passes through $(-2, 8)$.

51. Find the equation of the line that is parallel to $2x + 3y = 6$ and passes through $(4, 1)$. 
For #52-55, determine:

a) if the lines are parallel, perpendicular, intersecting but not perpendicular, or coinciding.

b) how many solutions the system has.

52. \[2x - 3y = -12\]  
\[-6x + 9y = 36\]

53. \[8x - 4y = 12\]  
\[y = 2x - 4\]

54. \[2x - 4y = -16\]  
\[-x + 2y = 8\]

55. \[-6x + 2y = -2\]  
\[y = -4x - 8\]

Solve using substitution.

\[y = x + 6\]  
\[y = -4x - 9\]

56. \[8x + y = 2\]  
\[4x + 4y = 8\]

57.

Solve using elimination.

\[-x + 5y = -13\]  
\[-4x - 5y = -2\]

58. \[3x + 5y = -23\]  
\[-9x - 8y = 20\]
Solve using any method you choose.

60. \[4x - 9y = -5\]
\[8x - 10y = 30\]

61. \[10x - 6y = 12\]
\[5x - 3y = 6\]

62. \[-16x - 2y = -12\]
\[8x + y = 6\]

63. \[5x - 3y = -24\]
\[8x + y = -21\]

Solve the Application Problem

64. Nicole and Micaela are selling cheesecakes for a fundraiser. Customers can buy chocolate cheesecakes and cherry cheesecakes. Nicole sold 7 chocolate and 8 cherry cheesecakes for a total of $122. Micaela sold 7 chocolate and 1 cherry cheesecakes for a total of $52. Find the cost of a chocolate cheesecake and a cherry cheesecake.

SYSTEM OF EQUATIONS:

Chocolate: 

Cherry: