Name:_____ Date:_____ Period:_____

Algebra 2

Summer work 2017

Show all work (when appropriate) on a separate sheet of paper. Simplification is implied for all problems. Leave answers in fractional form when appropriate (improper fractions are preferred to mixed numbers). Problems are to be returned on the first full day of classes (which is NOT the first day of school). A test reviewing the prerequisite skills (reviewed in this packet) will be conducted at the end of the first full week of classes. . Please send questions to kbowen@tcprep.org

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NO CALCULATORS ALLOWED

1. Be able to complete a multiplication table similar to the one shown below in 2 minutes 30 seconds or less

	1	6	9	5	2	7	4	3	8
2									
4									
1									
6									
3									
8									
5									
7									
9									

Time taken: _____

Evaluate:

2. $2^3 \cdot 5 \cdot 8^0 =$
3. $(-1)^{52}$
4. -1^{52}
5. 3^4
6. $24 \div 3 \cdot 2 - 5 \cdot 7$
7. $\frac{9}{2} \div \left(2\frac{3}{8}\right)$
8. Divide: $322 \div 14$

Simplify:

9. $20 \div 4 \times 5$
10. $3(1-8)-6+7$
11. $\frac{12}{54}$
12. $1\frac{2}{3}+4\frac{1}{5}-3\frac{5}{6}$
13. $\frac{4}{5} \div \frac{2}{15}$
14. $3\frac{2}{3}-2\frac{1}{2}$
15. $\frac{3x^2y^3}{9xy^5}$
16. $\frac{2xy^4}{5xy^2} \cdot \frac{-30xy}{2x^2y}$
17. $\frac{3x}{6x^2+3x}$
18. $\frac{x^2-2x-8}{x^2-16}$
19. $\sqrt{17}+5\sqrt{17}$

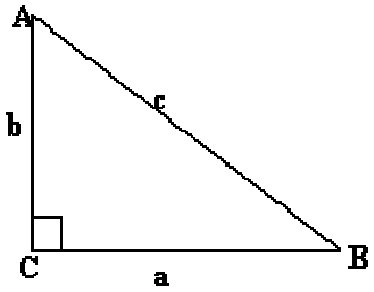
20. $\sqrt{2}\left(3\sqrt{2}+5\right)$
21. $3\sqrt{8}-3\sqrt{32}$
22. $(10z)\left(11^0\right)$
23. $\sqrt{5}\cdot\sqrt{15}$
24. $\dfrac{2}{\sqrt{12}}$
25. $\sqrt{72}$
26. $(8+x)(8-x)=$
27. $(1+7y)^2=$

28. What number is 25% of 80?
29. 7 is 30% of what number?
30. Write the first 4 prime numbers.
31. Find the slope of the line $y=4x-2$
32. Graph $y=-2x+2$
33. Graph $y>x-4$
34. Graph $y=x^2$

35. Factor x^2-4x
36. Factor a^2-16
37. Factor x^2-4x+4
38. Factor s^2+5s+4
39. Factor $x^2-9x-10$
40. Factor $x^2-10x-24$
41. Factor $x^2-10x+24$
42. Factor $x^2-10x-25$
43. Factor $2x^2-3x-9$
44. Factor $4x^2+12x+9$
45. Factor $8x^2-14x+5$
46. Factor $2y^2+10y-12$
47. Factor x^2+64
48. Factor x^2-81
49. Factor $3x^3-6x^2-4x+8$

50. Given the triangle at the right, find:

a. $\sin A=$
b. $\cos B=$
c. $\tan A=$
d. $\sec A=$
e. $\cot B=$



51. Find the slope of the line passing through the points $(-4,5)(-3,8)$
52. Find the slope and y-intercept of the line $y=\dfrac{5}{6}x-1$
53. Graph $-3\le x<4$
54. Graph the equation $x=-2$
55. Write the equation of the line in slope-intercept form of the line that contains the point $(8,-6)$ and has slope of $\dfrac{-3}{4}$
56. Which is larger, 2^5 or 5^2

57. Solve the equation for x: $\left(7^3\right)^5 = 7^x$

58. Rewrite the expression using positive exponents. $(-2x)^{-3}$

Let $f(x) = 2x + 3$ and $g(x) = x^2$

59. Evaluate $g(-3)$

60. Evaluate $f(1)$

61. Evaluate $f(g(10))$

62. Solve $3x + 2 = 14$

63. Solve $4 - 2(y + 6) = 11 - 3y$

64. Solve $\frac{x}{2} + 4 = 3x$

65. Solve $|x + 1| = 5$

66. Solve $x^2 = 16$

67. Solve $\frac{1}{3} + \frac{1}{x} = \frac{1}{2}$

68. Solve $\begin{aligned} x + y &= 6 \\ 3x - y &= 30 \end{aligned}$

69. Solve $\frac{5}{y+2} = \frac{6}{y-7}$

70. Solve $\frac{x}{4x-8} = \frac{2}{x}$

71. Solve $\sqrt{x} + 5 = 3$

72. Solve $2 = \sqrt{3x+1} - 3$

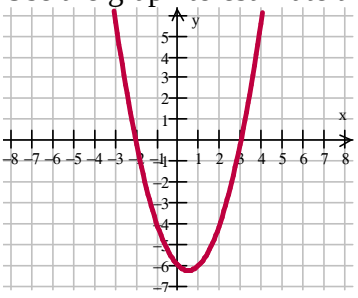
73. Solve by completing the square: $x^2 + 10x = 6$

74. Solve $x^2 - 6x + 4 = 20$

75. Solve $\frac{10}{x-2} + 3 = \frac{5x}{x-2}$

76. Solve the equation by finding square roots $8x^2 = 800$

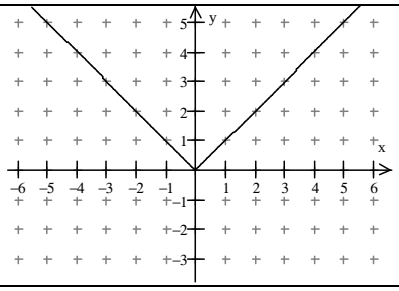
77. Use the graph to estimate the roots of the equation.



78. Use the quadratic formula to solve the equation $0 = x^2 - 2x - 5$

79. Find the x-intercepts of the graph of the equation. $y = x^2 - 5x + 6$

FORMULAS TO MEMORIZE

	Page number in text for reference		
1.		Area of a circle	$A = \pi r^2$
2.		Area of a trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$
3.	p.835	Sides on a 45, 45, 90 triangle	$s,\ s,\ s\sqrt{2}$
4.	p.835	Sides on a 30, 60, 90 triangle	$s,\ s\sqrt{3},\ 2s$
5.	p.383	$x^a x^b =$	x^{a+b}
6.	p.383	$\frac{x^a}{x^b} =$	x^{a-b}
7.	p.383	$\left(x^a\right)^b =$	x^{ab}
8.		$x^{-m} =$	$\frac{1}{x^m},\ x \neq 0$
9.		$\frac{a^x}{b^x} =$	$\left(\frac{a}{b}\right)^x$
10.		$a^x b^x =$	$(ab)^x$
11.		$\frac{a-b}{b-a} =$	-1
12.	p.76	Slope-intercept form of a line	$y = mx + b$
13.	p.81	Point-slope form of a line	$y - y_1 = m(x - x_1)$
14.		Midpoint formula	$\left(\frac{(x_1 + x_2)}{2}, \frac{(y_1 + y_2)}{2}\right)$
15.		Distance formula	$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
16.		Volume of a Cube	s^3
17.		Volume of a cone or pyramid	$\frac{1}{3}bh$
18.		Volume of a sphere	$\frac{4}{3}\pi r^3$
19.	p.107	$\lvert x \rvert$ (graph)	
20.	p.241	Quadratic formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

21.	p.219	$(a+b)^2 =$	$a^2+2ab+b^2$
22.	p.219	$(a-b)^2 =$	$a^2-2ab+b^2$
23.	p.220	$(a+b)(a-b) =$	a^2-b^2
24.	p.220	$a^2-b^2 =$	$(a+b)(a-b)$