Name_____ Date_____

Summer Packet – Entering Algebra 2

Directions—

This summer packet has been designed to help your transition into Algebra 2 and help us assess your strengths and weaknesses. The questions included in the packet are among those that we would consider to be "pre-requisite" for students entering this course, though some of it will be reviewed at the beginning of the year. Because it would be of benefit to you to determine how much your remembered (and how much you forgot) after a number of weeks away from a math course, the Mathematics Department requests that you do not work on this packet until the beginning of August.

While there may be a couple of questions that present a struggle, please feel free to get assistance from a textbook or from an individual that can help, but only after you have attempted the problem on your own to the best of your abilities. Please show all work on the packet and attach any extra scrap paper to the packet.

The packet may be graded or a test or quiz may be given on the material covered in the packet. Please bring the completed packet with you on the first day of school and it will be collected on the second day of class – Wednesday, September 7th.

Good luck. See you in September.

Please simplify each of the following:

1.) $-3(2x-5)-2(4x-2)$

2.) $\frac{2}{3}(6x+12)-\frac{4}{5}(10x-20)$

Please solve for *x*:

3.) $2(x-1)-6(3-x)=-4$

4.) $-4(2x-5)-6<2(x-1)+8$

5.) $2x+4<8$ and $3x+7>-2$

6.) $y=3w(2z-x)$

For problems # 7-9, please simplify the expressions using the laws of exponents and order of operations.

7.) $3x+9x^2-12x^2-(-2x)$

8.) $\left(4x^2\right)\cdot\left(3x^3\right)-\left(2x^5\right)\cdot(3)+(5x)\cdot\left(-x^4\right)$

9.) $\left(-2a\right)^2\cdot\left(-a^2b\right)^3\left(ab^2\right)^2$

For problems # 10-13, perform the appropriate operation and simplify.

10.) $(2x-7)^2$

11.) $\left(3\sqrt{6}\right)\cdot\left(2\sqrt{3}\right)$

12.) $3\sqrt{28}+5\sqrt{63}-4\sqrt{7}$

13.) $(5x-7)(2x-3)$

14.) Rationalize the denominator of the expression $\frac{2}{\sqrt{3x}}$

15.) Evaluate $-x^2+3(x-y)$ when $x=-1$ and $y=-3$

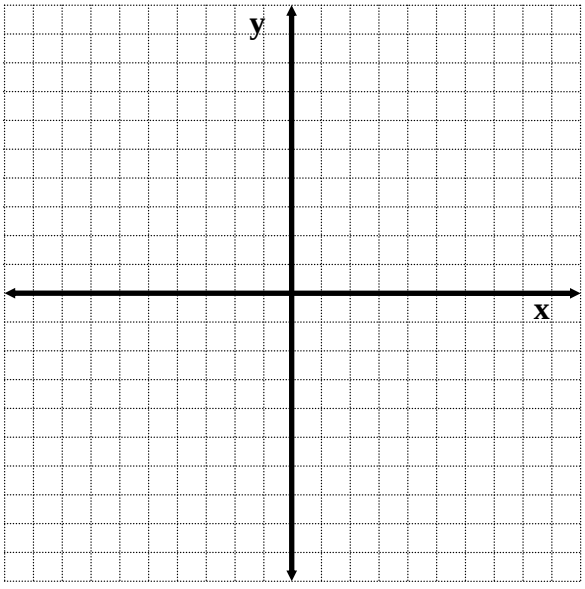
16.) Solve $(3x+5)(5x-3)-(5x+3)(3x-5)=10$

17.) Three times a certain number is five less than two times the number. Find the number.

18.) While on vacation, your family rented a car for a total of $293. The car rental cost $180, plus $.25 for every mile driven over 150 miles. How many miles did you drive while on vacation? *(Please set up the appropriate equation(s) and solve.)*

19.) Find the slope of the line that passes through the points $(3,4)$ and $(-4,2)$

20.) Graph the linear equation $2x-3y=9$ on the axes below:



21.) Find the equation of the line that passes through the points $(-2,6)$ and $(4,-2)$

22.) Find the equation of the line parallel to $y = 2x - 4$ that passes through the point $(1,-7)$.

23.) Solve the system of equations $\begin{cases} 2x - 3y = -4 \\ 3x + y = 5 \end{cases}$ using substitution or linear combinations (i.e. the elimination method).

For problems # 24-29, please factor each of the following expressions completely:

24.) $3a^3 - 4ax + 5ay$

25.) $x^2 + 3x - 18$

26.) $5x^2 + 35x - 90$

27.) $3x^2 - 8x - 3$

28.) $5x^4 - 5$

29.) $x^2y - 3x^2 - y + 3$

For problems # 30-33, please solve for *x*:

30.) $\frac{x+5}{2} + \frac{4(x-3)}{8} = \frac{x+1}{4}$

31.) $\frac{6}{x-5} = \frac{4}{x-2}$

32.) $x^2 = 3x + 10$

33.) $x^2 + 4x = 0$

Please solve each of the following algebraically. *(Please set up the appropriate equation(s) and show all work.)*

34.) Find the second of three consecutive odd integers such that three times the smallest is two less than 5 times the largest.

35.) Mark has 4 times as many nickels as quarters. Together, these coins are worth $\$5.85$. How many nickels does he have?

36.) At a vegetable stand, you bought 3 pounds of peppers – a combination of orange and green peppers – for $4.50 total.

Green peppers cost $1 per pound and orange peppers cost $4 per pound. How many pounds of each pepper did you buy? *(Please set up the appropriate equation(s) and solve.)*

37.) Solve $2x^2 - 3x - 4 = 0$ by using the quadratic formula.

38.) Find the equation of the line perpendicular to the line $2x - 3y = 6$, passing through the point $(-3, 5)$. Leave your answer in slope-intercept form.

39.) Simplify $\dfrac{3x^{-2}y^{3}z^{0}}{3^{-1}x^{-3}y^{-1}z^{-4}}$. Do not leave negative exponents in your answer.

40.) Find two consecutive even integers such that four times the reciprocal of the lesser integer is equal to five times the reciprocal of the greater integer.

Please solve the following for *x*:

41.) $|4x-3|=12$

42.) $|2x-5|\leq 7$