

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Summer 2019 Algebra II Enriched Packet

The goal of summer math is to ensure that students are prepared for their high school math classes. The skills learned in elementary and middle school are an integral part of success at the high school level, and this packet covers many of the important concepts that students entering high school should have mastered through Algebra I.

All students entering **Algebra II Enriched** must complete this math packet over the summer. It is due Friday, September 6, 2019 (or the first day you are in school). Packets will **not** be accepted late.

You will receive **2 grades** for this packet - one grade for **completion** and another for a **summative assessment** of the material. All problems should be completed with all work shown in a notebook. This will be checked. **Be sure to show all work** to complete the problems.

You will be using a calculator regularly in your Algebra II-Enriched class.. Therefore, students are encouraged to buy their own **SCIENTIFIC CALCULATOR**. Students are more efficient using a calculator that they are familiar with. If you have not purchased a scientific calculator yet, we recommend Texas Instruments TI-30XS.

For more practice or explanation on the skills in the packet, you may use the following as resources:

[www.purplemath.com](http://www.purplemath.com)

[www.khanacademy.com](http://www.khanacademy.com)

If you lose your packet, there is a copy on the school department website.

### Supplies:

Notebook or binder with lined paper

Pocket folder

Pencils

Colored pencils

Scientific calculator

An enthusiastic attitude!

Good luck and have a great summer!

## System of Equations and Inequalities Review

Please do all work on a separate sheet of paper. Show all work for credit!

Solve each system of equations by graphing.  
(Lesson 3-1)

- |                                  |                                      |
|----------------------------------|--------------------------------------|
| 1. $y = 2x + 4$<br>$y = -x - 2$  | 2. $5x + 2y = 3$<br>$5x - 4y = 9$    |
| 3. $x = 2y - 4$<br>$x = -3y + 1$ | 4. $2x - 5y = 14$<br>$4x + 3y = -24$ |

5. **MULTIPLE CHOICE** What type of system is shown? (Lesson 3-1)

$$\begin{aligned} 2x + 4y &= 5 \\ 3x + 6y &= 11 \end{aligned}$$

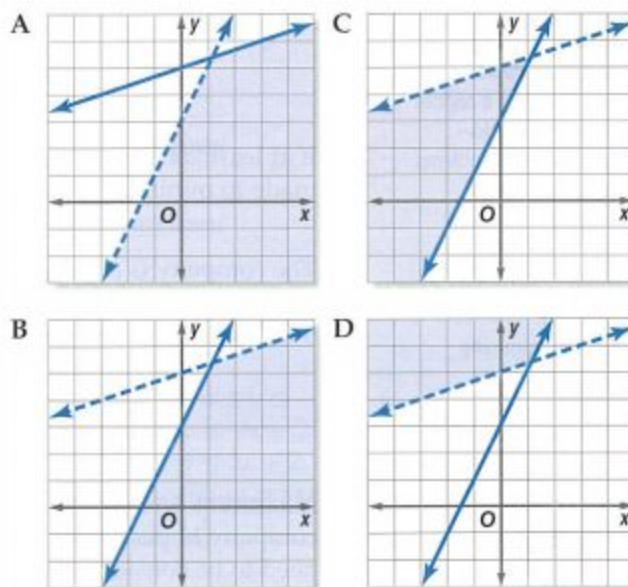
- A consistent and dependent  
B consistent and independent  
C inconsistent  
D none of the above

Solve each system of equations by using either substitution or elimination. (Lesson 3-2)

- |  |   |
|--|---|
| 6. $y = x + 4$<br>$x + y = -12$  | 7. $3x + 5y = -7$<br>$6x - 4y = 0$        |
| 8. $\frac{1}{3}x - \frac{3}{8}y = 28$<br>$\frac{1}{7}x + \frac{5}{7}y = -37$ | 9. $\frac{1}{3}x = y + 2$<br>$x = 5y - 2$ |
| 10. $5x + 2y = 4$<br>$3y - 4x = -40$   | 11. $8x - 3y = -13$<br>$-3x + 5y = 1$     |
| 12. $6x - 5y = 92$<br>$9x + 2y = 100$  | 13. $4y + 7x = -92$<br>$5x - 6y = 14$     |

16. **MULTIPLE CHOICE** Which graph shows the solution of the system of inequalities? (Lesson 3-3)

$$\begin{aligned} y &\leq 2x + 3 \\ y &< \frac{1}{3}x + 5 \end{aligned}$$



Solve each system of inequalities by graphing.  
(Lesson 3-3)

- |  |   |
|--|---|
| 17. $x + y > 6$<br>$x - y < 0$             | 18. $y \geq 2x - 5$<br>$y \leq x + 4$   |
| 19. $3x + 4y \leq 12$<br>$6x - 3y \geq 18$ | 20. $5y + 2x \leq 20$<br>$4x + 3y > 12$ |

21. **MULTIPLE CHOICE** Tia spent \$42 on 2 cans of primer and 1 can of paint for her room. If the price of paint  $p$  is 150% of the price of primer  $r$ , which system of equations can be used to find the price of paint and primer? (Lesson 3-1)

- |   |   |
|---|---|
| F $p = r + \frac{1}{2}r$<br>$p + 2r = 42$ | H $r = p + \frac{1}{2}p$<br>$p + 2p = 42$ |
| G $p = r + 2r$<br>$p + \frac{1}{2}r = 42$ | J $r = p + 2p$<br>$p + \frac{1}{2} = 42$  |

Name: \_\_\_\_\_

## Factoring Review

Factor by Grouping only allowed in Section IV.

This is Factor by Grouping:

$$\begin{aligned}6ax - 2b - 3a + 4bx &= 6ax - 3a + 4bx - 2b \\ &= 3a(2x - 1) + 2b(2x - 1) \\ &= (2x - 1)(3a + 2b)\end{aligned}$$

### I. Greatest Common Factor

$$12a^3b + 15ab^3 = 3ab(4a^2 + 5b^2)$$

1.  $6x + 3$
2.  $24x^2 - 8x$
3.  $6x - 12$
4.  $2x^2 + 8x$
5.  $4x + 10$
6.  $10x^2 + 35x$
7.  $10x^2y - 15xy^2$

### II. Factoring the Difference of Two Squares

$$\begin{aligned}a^2 - 36 &= (a + 6)(a - 6) \\ 3x^2 - 48 &= 3(x^2 - 16) = 3(x + 4)(x - 4)\end{aligned}$$

Factor, write prime if prime.

1.  $x^2 - 1$
2.  $x^2 - 9$
3.  $x^2 + 4$
4.  $x^2 - 25$
5.  $9y^2 - 16$
6.  $4x^2 - 25$
7.  $9x^2 - 1$

### III. Factoring Trinomials $a = 1$

$$x^2 + 7x + 10 = (x)^2 + (2 + 5)x + (2)(5) = (x + 2)(x + 5)$$

Factor, write prime if prime.

1.  $x^2 + 6x + 8$
2.  $c^2 + 5c + 6$
3.  $y^2 - 9y + 14$
4.  $x^2 - 10x + 16$
5.  $a^2 + 12a + 27$
6.  $x^2 - 14x + 24$
7.  $x^2 - 15x + 36$

### Continue --- Factoring Trinomials $a > 1$

$$2x^2 - 5x - 3 = (2x + 1)(x - 3)$$

Factor, write prime if prime.

1.  $2x^2 - 5x - 3$
2.  $3x^2 + 10x - 8$
3.  $2y^2 + 15y + 7$
4.  $7a^2 - 11a + 4$
5.  $5n^2 + 17n + 6$
6.  $4y^2 + 8y + 3$
7.  $3x^2 + 4x - 7$

### IV. Factoring by Grouping

$$\begin{aligned} 6ax - 2b - 3a + 4bx &= 6ax - 3a + 4bx - 2b \\ &= 3a(2x - 1) + 2b(2x - 1) \\ &= (2x - 1)(3a + 2b) \end{aligned}$$

1.  $x^2 + 2x + xy + 2y$
2.  $3a^2 - 2b - 6a + ab$