

## Honors Algebra II Summer Required Work 2018

The following packet is being given as a review of topics from Algebra I. These are necessary skills for success in Honors Algebra II. Your packet will be collected during the first week of school. It will be graded on completeness and correctness. Please use a pencil and make sure to show relevant work. You will lose points if you fail to show the required work to reach the correct answer.

Please do not wait until the last day of vacation to get started! On the other hand, do not attempt to complete the packet during the first week of vacation. This packet is designed to maintain your current knowledge of algebra over the summer so that the topics discussed in the fall will be fresh in your mind.

If you are having difficulties with the packet, feel free to search the internet for help on certain topics. Also, it may be beneficial to work with others. Have an enjoyable summer! I look forward to working with you this fall.

Part 1. Complete.

1. If  $x = 3$  find the value of  $3(x - 7)$

2. Simplify  $2[3^3 - 3(8 - 6)] \div 7 + 3$

3. Simplify  $46 - 3[(3 - 4)^3 - 3]$

4. Simplify  $4x + 3xy - 2x + 2x^2$

5. Simplify  $(2x + 3y) - (5x - 12y) - 6x$

6. Simplify  $2x(3x - 2)$

7. Simplify  $(5x - 1)(2x + 5)$

8. Simplify  $-3x(6x^2 - 1)(3x^2 + 4)$

9. Simplify  $(2x^2y^4)^5$

10. Simplify  $3(2x^3)^2(-3y)^4$

11. Simplify  $\frac{56x^4y^3}{8xy^2}$

12. Simplify  $\frac{4x^3 + 16x^2 - 8x}{2x}$
13. Write the prime factorization of  $108x^2y^5$ .
14. Find the GCF of  $12x^2y$  and  $27xy^3z$ .
15. Find the LCM of  $12x^2y$  and  $27xy^3z$ .
16. Factor  $10x^4 + 8x^3$ .
17. Factor  $52a^3 - 13a$ .
18. Factor  $x^2 - 1$ .
19. Factor  $x^2 + 5x + 6$ .
20. Factor  $6x^2 - 11x - 10$ .

Part 2. Graphing.

1. Explain how the slopes of two lines can indicate if they are parallel or perpendicular.
2. Solve for  $k$  such that a line passing through  $(-k, 5)$  and  $(-3, k+2)$  has a slope of  $3/4$ .

3. Graph  $3x - y = 4$  on the attached graph paper.
4. Graph and label the following points on the attached graph paper.  
A(-2,3)      B(-2,9)      C(5,9)      D(5,3)
5. Use the information in the previous problem to complete the following.
- Find the length of AB
  - Find the length of BC
  - Find the length of the diagonal from A to C
  - Find the slope of AB
  - Find the slope of BC
  - Find the slope of the diagonal from A to C
  - Find the area of quadrilateral ABCD

Part 3. Set up expressions or equations and solve.

- Five less than x. \_\_\_\_\_ (set up expression only - do NOT solve)
- Eight more than twice x. \_\_\_\_\_ (set up expression only - do NOT solve)
- What is the perimeter of a rectangle if the length is 5 and the width is x?  
\_\_\_\_\_ (write simplified expression only)

4. What is the perimeter of an equilateral triangle if each side is  $(x + 3)$ ?  
\_\_\_\_\_ (write simplified expression only)
5. If the perimeter of an isosceles triangle is 32, with each leg measuring  $2x + 3$  and the base measuring  $6x - 2$ , find  $x$ . \_\_\_\_\_
6. In an isosceles triangle, the length of each leg exceeds twice the base by 2 cm. The perimeter is 24. How long is each leg? \_\_\_\_\_
7. The degree measure of an angle and its supplement are consecutive odd integers. Find the measure of each angle. \_\_\_\_\_

Part 4. Solve the following equations or systems of equations.

Factor where necessary and show your work.

1. Solve for  $x$ :  $5x - 11 = -6$
2. Solve for  $y$  in terms of  $x$ :  $3y - 2x = 7$
3. Solve for  $x$ :  $2(6x - 4) = 8x + 4 - 2x$
4. Solve for  $x$ :  $4(x + 2) - x = 30$
5. Solve for  $x$ :  $\frac{x - 3}{12} = \frac{x}{8}$

6. Solve for x:  $x^2 + 5x = -6$

7. Solve for y:  $y^2 - 121 = 0$

8. Solve for x:  $12x^2 - 7x - 10 = 0$

9. Solve for a:  $25a^2 + 18a - 5 = 8a - 6$

10. Find the solution for: 
$$\begin{cases} 3c - 8d = 7 \\ 7 + c = -2d \end{cases}$$
  
solution format = (c,d)

11. Find the solution for: 
$$\begin{cases} 3x = -5y \\ 2x - 2y = 8 \end{cases}$$
  
solution format = (x,y)

12. Find the solution for: 
$$\begin{cases} x - y = 5 \\ x + y = 7 \end{cases}$$
  
solution format = (x,y)