

B.M.C. Durfee High School Mathematics Department



Honors Algebra II Summer Review Packet

Welcome to Honors Algebra 2! This summer review assignment is designed to refresh your Algebra skills. The packet is to be completed by the first day of school. It will be collected and graded based upon completion and correctness. It will count as your first test grade for Term I. You **MUST** show all work in order to receive credit! You will also be tested on the material when you return to school.

If you have any questions or concerns, please contact Miss Brogan at jbrogan@fallriverschools.org.

This packet can also be downloaded from the B.M.C. Durfee High School Mathematics Department website at <http://www.fallriverschools.org/math.cfm>.

B.M.C. Durfee High School Algebra II Honors Readiness Summer Packet Information Page

Additive Identity	For any number a , $a + 0 = a$.
Multiplicative Identity	For any number a , $a \cdot 1 = a$.
Multiplicative Property of 0	For any number a , $a \cdot 0 = 0$.
Multiplicative Inverse Property	For every number $\frac{a}{b}$, $a, b \neq 0$, there is exactly one number $\frac{b}{a}$ such that $\frac{a}{b} \cdot \frac{b}{a} = 1$.
Reflexive Property	For any number a , $a = a$.
Symmetric Property	For any numbers a and b , if $a = b$, then $b = a$.
Transitive Property	For any numbers a , b , and c , if $a = b$ and $b = c$, then $a = c$.
Substitution Property	If $a = b$, then a may be replaced by b in any expression.

Commutative Properties	For any numbers a and b , $a + b = b + a$ and $a \cdot b = b \cdot a$.
Associative Properties	For any numbers a , b , and c , $(a + b) + c = a + (b + c)$ and $(ab)c = a(bc)$.

Distributive Property	For any numbers a , b , and c , $a(b + c) = ab + ac$ and $(b + c)a = ba + ca$ and $a(b - c) = ab - ac$ and $(b - c)a = ba - ca$.
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Order of Operations	<p>Step 1 Evaluate expressions inside grouping symbols.</p> <p>Step 2 Evaluate all powers.</p> <p>Step 3 Do all multiplication and/or division from left to right.</p> <p>Step 4 Do all addition and/or subtraction from left to right.</p>
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Natural Numbers	$\{1, 2, 3, 4, \dots\}$
Whole Numbers	$\{0, 1, 2, 3, 4, \dots\}$
Integers	$\{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$
Rational Numbers	$\{\text{all numbers that can be expressed in the form } \frac{a}{b}, \text{ where } a \text{ and } b \text{ are integers and } b \neq 0\}$
Irrational Numbers	$\{\text{all numbers that cannot be expressed in the form } \frac{a}{b}, \text{ where } a \text{ and } b \text{ are integers and } b \neq 0\}$

For examples of each type of problem, please go to <http://www.algebra1.com>

1. Check the sets of real numbers to which each number belongs.

	Natural	Whole	Integer	Rational	Irrational
0.875					
4					
π					
$\sqrt{625}$					
0					
$-\frac{7}{8}$					
$\sqrt{29}$					
-3.18					

2. Evaluate: $7(5+3)^2 \div 2 + 9 \div 3 \cdot 2$

3. Evaluate: $[2(10-6)^3 + 8] \div 4$

4. Evaluate $\frac{a^3 + 2bc}{c^2 + 7}$ if $a = -2$, $b = 4$, and $c = -5$

5. Evaluate: $|7 - 8 \cdot 3| - 15$

6. Evaluate $a|b^2 - 2c|$ if $a = -\frac{1}{2}$, $b = -6$, and $c = 12$

7. Check the name of the property illustrated by each equation.

	Commutative	Associative	Identity	Inverse	Distributive
$2(3x + 4y) = 6x + 8y$					
$a + 0 = a$					
$(2 + 14) + 3 = 2 + (14 + 3)$					
$x \bullet 1 = x$					
$2x + 3 = 3 + 2x$					
$\frac{x}{y} \bullet \frac{y}{x} = 1$					

8. Simplify: $7a + 3b - 4a - 5b$

9. Simplify: $4(14c - 10d) - 6(d + 4c)$

10. Write an algebraic expression to represent the verbal express: *four less than the square of a number.*

11. Solve for x : $2x + 3(x - 7) = -2(x - 21)$

12. Solve for x : $\frac{5}{8} + \frac{3}{4}x = \frac{1}{16}$

13. Solve for x : $\frac{2}{5}x + \frac{3}{7} = 1 - \frac{4}{7}x$

14. Solve for x : $\frac{2x + 3}{5} = x + 6$

15. Solve for x : $\frac{6x+5}{3} = \frac{5-2x}{4}$
16. Solve for x : $|5x-10| = 20$
17. Solve for x : $8|w-7| = 72$
18. Solve for x : $9|x+3| - 6 = 12$
19. Solve for x : $|2x-3| + 8 = 6$
20. Solve for x : $|2x-3| = 3x+8$
21. Solve and graph the solution set on a number line: $3x-15 < 9+7x$
22. Solve and graph the solution set on a number line: $\frac{6+2x}{3} > -4$
23. Solve and graph the solution set on a number line: $3x+4 \leq 13$ AND $6+2x \geq -2$
24. Solve and graph the solution set on a number line: $2x-1 < -5$ OR $3x+2 \geq 5$
25. Solve and graph the solution set on a number line: $|4x-6| > 14$
26. Solve and graph the solution set on a number line: $|2x+8| \leq 10$
27. Solve for h : $V = \pi r^2 h$
28. Solve for b : $V = \frac{ax+b}{r^2}$
29. Find the slope of the line containing the points (5, -2) and (2, 10).
30. Find the slope-intercept form of a line that has slope of -2 and y-intercept of 8.
31. Find the slope and y-intercept of the line $2x-3y = 15$.
32. Find the slope-intercept form of the line that contains the point (6, 8) and has a slope $m = \frac{1}{2}$.

33. Find the slope-intercept form of the line that contains the point $(-3, 2)$ and is parallel to the line $y = \frac{2}{3}x + 2$.
34. Find the slope of the line perpendicular to the line $y = \frac{5}{3}x + 6$.
35. A tree service charges a basic fee of \$50 to make a house call plus \$20 per hour to trim trees. Write the equation that represents the total cost, C , of a house call and tree trimming in terms of the number of hours spent, h .
36. On the attached graph paper, graph each line. Label your line with the given letters.
- a. $y = 2x + 5$
 - b. $y = -4x + 6$
 - c. $y = \frac{1}{2}x - 6$
 - d. $y = x$
 - e. $y = 4$
 - f. $x = -6$
 - g. $y = -\frac{2}{3}x + 8$
 - h. $2x + 4y = 8$
 - i. $3x - 4y = -12$