

Name: \_\_\_\_\_ Middle School: \_\_\_\_\_

Due: September 9th, 2022

*What students need to know for.....*

### **Grade 9 Algebra 1**

Students expecting to take Algebra 1 next year at Lowell High should demonstrate the ability to:

#### **General:**

- ❖ Keep an organized notebook
- ❖ Be a good note taker
- ❖ Complete homework every night
- ❖ Be active learners
  - Ask questions and participate in class
  - Seek help outside of class if needed
- ❖ Work with others
- ❖ Work with and without a calculator

#### **Specific math skills:**

- ❖ Work with fractions, decimals, and integers comfortably
- ❖ Solve various types of equations
  - One-step/two-step
- ❖ Identify different functions using multiple representations
  - Table/equation/graphically
  - Linear/quadratic/absolute value
- ❖ Solve ratios and proportions
- ❖ Understand exponents and roots

**Lowell High School Summer Readiness Packet  
(Algebra 1)**

**Please show all your work.**

1. $\sqrt{7}$ is between what two consecutive integers?	2. $2^3 \times 2^4 = 2^p$ What is the value of p?	3. $x^3 = 8$ Find the value(s) of x.
4. Simplify: $\sqrt[3]{27}$	5. Identify the Slope(m) and the y-intercept(b) for $y = 2x + 1$  m = _____  b = _____	6. Simplify: $-3 + 8 \div 2 + 7$
7. Simplify: $-7(2) - (-12)$	8. Simplify: $5x - 3x + 25 + 16x$	9. Simplify: $3(2x - 4)$

<p>10. Evaluate: <math>-4x + 5</math> for <math>x = -2</math></p>	<p>11. Evaluate: <math>x^2 + z^3 \div 2</math> for <math>x = 4</math> and <math>z = 2</math></p>	<p>12. Evaluate: <math>(2 - 2c) \div 5</math> for <math>c = 6</math></p>
<p>13. Evaluate: <math> m  -  2n </math> for <math>m = -12</math> and <math>n = 8</math></p>	<p>14. Simplify: <math>\frac{5^4}{5^2}</math></p>	<p>15. Simplify: <math>4^{-2}</math></p>
<p>16. Simplify: <math>m^3 \cdot m^6</math></p>	<p>17. Simplify: <math>(n^4)^3</math></p>	<p>18. Solve for the unknown: <math>x + 20.6 = 64.3</math></p>
<p>19. Solve for the unknown: <math>9 = \frac{x}{3}</math></p>	<p>20. Solve for the unknown: <math>3x - 7 = 8</math></p>	<p>21. Solve for the unknown: <math>4 - x = 7</math></p>

22. Solve for the unknown:

$$\frac{x}{4} = \frac{5}{20}$$

23. Use the table below:

$x$	$y$
0	3
2	11
4	19
6	27
8	35

m = \_\_\_\_\_

b. Find the y intercept

b = \_\_\_\_\_

24. Simplify the following

a.  $4 - 8 =$

b.  $-2 - (-5) =$

c.  $12(-3) =$

d.  $\frac{-48}{-12} =$

**College level STOP HERE**

25. Determine which of the following is the lesser quantity and explain why it is less.

$-2\frac{5}{11}$ ,  $-2.45$

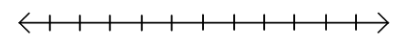
26. Simplify:  $(3n^2m^4)^2$

27. Solve for the unknown:  
 $5(3x - 10) = 40$

28. Solve for the unknown:  
 $6x - 2 = x + 13$

29. Solve for the unknown:  
 $7.8y + 2 = 165.8$

30. Solve the inequality and illustrate the solution set on the given number line:  
 $w - 4 \leq 9$



31. To solve  $-\frac{1}{2}(3x - 5) = 7$ , you can use the Distributive Property, order of operations, or you can multiply each side of the equation by  $-2$ . Which method do you prefer? Explain why?

32. Find the mistake in this solution. Explain the mistake and show how to solve the problem correctly.

$$2x = 11x + 45$$

$$2x - 11x = 11x - 11x + 45$$

$$9x = 45$$

$$\frac{9x}{9} = \frac{45}{9}$$

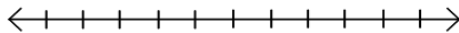
$$x = 5$$

33. Determine whether this relation is a function or not a function  $\{(3, 7), (3, 8), (3, -2), (4, 5), (0, 2)\}$

34. Determine whether this relation is a function or not a function  $\{(2, 5), (3, -5), (4, 5), (5, -5)\}$

35. Solve the inequality and illustrate the solution set on the given number line:  
 $1 - 4x \geq 4 - x$

36. Solve for the unknown:  
 $10z - 5 + 3z = 8 - z$



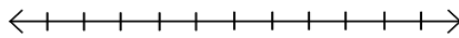
**Honors level STOP HERE**

37. Solve the equation and justify each step using appropriate mathematical language. If this equation has no solution, explain why.

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

38. Solve the inequality and illustrate the solution set on the given number line:

$$-2(0.5 - 4x) \geq -3(4 - 3.5x)$$



39. Write an equation in slope-intercept form for the line that passes through the following points:

$(6, -4), (-3, 5)$

40. Write an equation in slope-intercept form for the line that passes through the following points:  $(3, -8), (-2, 5)$ .

41. Evaluate

$$f(x) = 15 - x \text{ when } x = -3$$

42. Evaluate

$$g(x) = x^2 + 2 \text{ when } x = -5$$

## Videos that may help

Solving Equations and Inequalities	<ul style="list-style-type: none"><li>• <a href="#">Solving One Step Equations</a></li><li>• <a href="#">Solving Two Step Equations</a></li><li>• <a href="#">Solving Equations with Variables on Both Sides</a></li><li>• <a href="#">Different Types of Solutions Equations Can Have</a></li></ul>
Simplifying and Evaluating Expressions	<ul style="list-style-type: none"><li>• <a href="#">Combining Like Terms</a></li><li>• <a href="#">Distributive Property</a></li><li>• <a href="#">Evaluating Expressions</a></li></ul>
Exponent Rules	<ul style="list-style-type: none"><li>• <a href="#">Multiplying &amp; dividing powers</a></li><li>• <a href="#">Powers of products &amp; quotients</a></li></ul>
Functions and Function Notation	<ul style="list-style-type: none"><li>• <a href="#">Relations and Functions</a></li><li>• <a href="#">Function Notation</a></li><li>• <a href="#">Function Notation</a></li></ul>
Writing the Equation of a Line	<ul style="list-style-type: none"><li>• <a href="#">Finding Slope from Coordinates</a></li><li>• <a href="#">Writing Lines in Slope Intercept Form</a></li></ul>