Lake Zurich High School

GETTING STARTED PACKET *for* Honors Algebra I

Purpose: This is a self-evaluation tool which will provide you and your teacher with information about what you already know and what you need to work on. Your teacher will then address any skills that need more practice. You may use a calculator. Show all your work. Bring to class with you on the first day of school.

Grading: This packet will be graded for completion only. You will be tested on this material the second week of school. The test will be taken for a grade.

1.1A: I can evaluate algebraic expressions by substituting in the given number for the variable.

Ex. 1: Evaluate $6 - 2x^3$ when $x = 3$

1.1B: I can write a power as a product.

Ex. 1: Evaluate -2^2

1.1C: I can evaluate powers by substituting and writing as a product.

Ex. 1: Evaluate $(x^2 - 3y)^3$ when $x = 2$ and $y = -1$

1.2A: I can use order of operations to evaluate expressions. PEMDAS

Ex. 1: Evaluate $\dfrac{(12-7)^3+5}{64 \div 4^3 - (2+3)^2}$

Ex. 2: Evaluate $\dfrac{6x-3}{2(x+1)^2}$ when $x = -2$

1.3A: I can translate words into algebraic expressions.

Ex. 1: Translate the phrase "8 times the quantity 4 plus a number n" into an expression.

Ex. 2: Translate the phrase " 12 decreased by a number x" into an algebraic expression.

Ex. 3: Translate the phrase "the quotient of the square of a number w and 5" into an algebraic expression.

1.3B: I can write an expression for a real world problem.

Ex. 1: The length of a building is 20 feet more than its width w. Write an expression for the length of the building.

Ex. 2: You are making candles for your friends. A mold for the candles costs $22.50 and wax to make one candle costs $5.

a) Write an algebraic expression for the total cost of making x candles.

b) You make 8 candles. Use your expression to find the total cost.

1.4A: I can translate words into equations.

Ex. 1: The difference of 22 and the quotient of a number m and 4 is 54

1.4B: I can translate words into inequalities.

Ex. 1: The sum of 7 and three times a number b is at least 12.

1.4C: I can check whether a number is a solution of an equation.

Ex. 1: Check whether 36 is a solution of $\frac{b}{4} - 7 = 1$

1.4D: I can check whether a number is a solution of an inequality.

Ex. 1: Check whether 9 is a solution of $\frac{m}{3} + 14 < 33$.

1.4E: I can use mental math to solve an equation.

Ex. 1: Solve 3x + 2 = 20 using mental math.

1.4F: I can write an equation for a real world problem.

Ex. 1: When building a staircase, you need to be concerned with the height of the riser and the depth of the tread so that people can go up and down the stairs comfortably. One rule of thumb used to determine proper riser height and tread depth is that the sum of the tread depth (in inches) and twice the riser height (in inches) should equal 26 inches. Write an equation that models this situation. The riser height of a set of steps is 5 inches. Use mental math to determine what the depth should be.

1.3C: I can find a unit rate.

Ex. 1: A 16 oz. box of cereal costs $2.99. Find the unit rate to the nearest cent.

1.5A: I can read, develop a plan, solve and then look back to solve a real life problem.

Ex. 1: A builder lays sod on the lawns of new homes. The installed cost for sod is $.38 per square foot. What is the cost of installing sod on a rectangular lawn that is 32 feet long and 18 feet wide?

Ex. 2: You are designing the layout for a newspaper about teen issues. The newspaper will be $22\frac{1}{2}$ inches wide. You plan to have 5 columns with $\frac{1}{8}$-inch gaps between them and $\frac{3}{8}$-inch margins on the left and right sides. How wide will each column be?

1.6A: I can identify the domain and range of a function given its pairing.

Ex. 1: The input-output table shows the amount of money Miguel earns at his job for several numbers of hours. Identify the domain and range of the function.

Input (hours)	2	5	7	8
Output(dollars)	14	35	49	56

1.6B: I can identify a function given its pairing.

Ex. 1: Tell whether the pairing is a function.

Input	1	3	5	7
Output	15	20	15	20

1.6C: I can make a table for a function.

Ex. 1: $y = \frac{1}{2}x + 2$ Domain: 6, 7, 8, 9

1.6D: I can write a function rule.

Ex. 1: Write a rule for the function below.

Input, x	10	11	12	13
Output, y	3	4	5	6

1.6E: I can write a function rule for a real-world problem.

Ex. 1: A baker has baked 10 loaves of bread so far today and plans on baking 3 loaves more each for the rest of his shift. Write a rule for the total number of loaves baked as a function of the number of hours left in the baker's shift. Identify the independent and dependent variable. How many loaves will the baker make if her has 4 hours left in his shift?

1.6F Ext: I can identify the variables in a real world problem. I can identify the domain and range of a function.

Ex. 1: Candace is giving gifts to her friends. She is giving each male friend a video game and each female friend a CD. Identify the domain and range.

1.7A: I can graph a function if I am given the domain.

Ex. 1: Graph $y = 4x - 3$ with domain 1, 2, 3, 4, 5

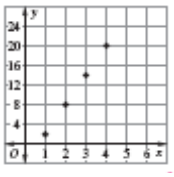
1.7B: I can graph a real life function.

Ex. 1: The table shows the high temperature H (in degrees Fahrenheit) in a city during the week as a function of the number of days d since Monday. Graph the function.

days since Monday, d	0	1	2	3	4	5
High Temp, F	24	34	41	39	37	39

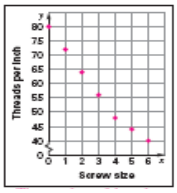
1.7C: I can write a function rule for a graph.

Ex. 1: Write a function rule for the graph.



1.7D: I can identify the independent and dependent variables of a graph.

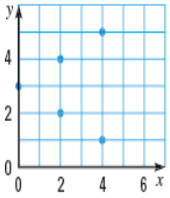
Ex. 1: The graph below shows the number of threads per inch on a screw as a function of screw size.
Identify the independent and the dependent variable.
Describe how the number of threads per inch changes as the screw size increases.



1.7ExtA: I can determine whether a relation is a function using the vertical line test.

Ex. 1: Determine if the graph in Ex. 1 above represents a function by using the vertical line test.

Ex. 2: Determine if the graph to the right represents a function by using the vertical line test.



2.1A: I can compare and graph numbers on a number line graph numbers on a number line.

Ex. 1: Graph .3, $-\sqrt{7}$, $2\frac{1}{8}$ on the number line. Then write them in order from least to greatest.

2.1B: I can find the opposite of a number.

Ex. 1: Find the opposite of $\frac{2}{3}$.

2.1C: I can find the absolute value of a number.

Ex. 1: Evaluate $-|-3+7|$

Ex. 2: Evaluate $|-x|$ + (-x) when x = -6.25

2.1D: I can classify numbers as whole, integer, rational, irrational, and real.

For examples 1-3, classify each number by type. More than one answer is possible.

Ex. 1: -2.1

Ex 2: $\frac{-5}{4}$

Ex 3: $\sqrt{7}$

2.1E: I can analyze a conditional statement.

Ex. 1: Identify the hypothesis and conclusion of: If you do your homework you will get a good grade in Algebra.

2.2A and 2.3B: I can add and subtract real numbers.

#1 – 5 Perform the following operations

Ex. 1: -4.2 + 6.5

Ex. 2: $-\left|-\frac{3}{7}\right|$ - 5

Ex. 3: $-\frac{2}{3} - \left(-\frac{3}{8}\right)$

Ex. 4: -5 –(5) – (-5)

Ex. 5: 25 + (75 + 13)

2.4A and 2.6A: I can multiply and divide real numbers.

#1-3 Perform the following operations:

Ex. 1: -15(4.3)

Ex. 2: $\frac{2}{3}$(-15)(- $\frac{3}{4}$)

Ex. 3: $-\frac{1}{9} \div (-8)$

2.6C: I can find the mean.

Ex. 1: Find the mean of -7.5, 3, -6.5 and 13

2.4Ext: I can add, subtract and use scalar multiplication of matrices.

If A = $\begin{bmatrix} 3 & -5 \\ -2 & 0 \end{bmatrix}$ B = $\begin{bmatrix} -1 & -3 \\ 7 & 4 \end{bmatrix}$ perform the following operations.

Ex. 1: A + B Ex. 2: B – A Ex. 3: -2(A – B)

2.5A: I can apply the Distributive Property.

Ex. 1: $-3(2x^2 - 4x + 5)$

Ex. 2: (w + 4)$\left(-\frac{1}{2}\right)$

Ex 3: Distribute and simplify: $5(x-6) - 2(x+4)$

2.5B: I can identify parts of an expression.

#1-3 Use the expression 3x + 5 – 2x

Ex 1: Identify the like terms

Ex 2: Identify the coefficients

Ex 3: Identify the constants

2.7A: I can find and use square roots.

Ex. 1: Evaluate $\sqrt{64}$

Ex. 2: Evaluate $-\sqrt{100}$

Ex. 3: Find all the square roots of 36

2.7B Extension: I can use logical reasoning.

Prove that the following is true:

Choose A Number'
Add 5
Double the result
Subtract 4
Divide the result by 2
Subtract the number you started with
The result is 3.

3.1A: I can solve a one-step equation.

Ex. 1: Solve x – 10 = 6

Ex. 2: Solve $-\frac{4}{3}x = 8$

3.1B: I can translate a word problem into a one-step equation and solve.

In the 2004 Summer Olympics, Inge de Bruijn won the women's 50-meter freestyle. Her winning time was 24.58 seconds. Find her average swimming speed to the nearest hundredth of a meter per second. Write an equation and solve to find the answer.

3.2A: I can solve a two-step equation.

Ex 1: Solve: $\frac{x}{5} + 7 = 10$

Ex 2: Solve: $-\frac{2}{3}x + 5 = -9$

3.2B: I can solve a two-step equation with like terms.

Ex. 1: Solve: 6x + 2x = 28

Ex. 2: Solve: $\frac{x}{3} + \frac{x}{5} = 7$

3.2C I can translate a word problem into a two-step equation and solve.

A contractor purchases ceramic tile to remodel a kitchen floor. Each tile costs $4, and the adhesive and grouting material costs $17.82. If the contractor is charged a total of $545.82, how many ceramic tiles did the contractor purchase? Write an equation and solve to find the answer.

3.3A: I can solve a multi-step equation by first combining like terms then using the methods learned in the targets above.

Solve: 2x + 7x – 5 = 31

3.3B: I can solve a multi-step equation by using the distributive property then using the methods learned in the targets above.

Solve: $3x - 4(x - 2) = 9$

3.3C: I can solve a multi-step equation by first multiplying by the reciprocal then using the methods learned in the targets above.

Solve: $\frac{3}{5}(5x - 10) = 24$

3.3D: I can translate a word problem into a multi-step equation and solve.

Edmund and Roberto took a 7-day , 90-mile canoe trip down the Allagash River. If they paddled at an average rate of 2.5 miles per

3.4A: I can solve an equation with variables on both sides by first getting all the variable terms on the same side using the inverse property and then using the methods learned on Day 1.

#1 – 3 Solve for the variable.

Ex. 1: $2x - 5 = 10x + 3$

Ex. 2: $2(3x + 4) = 10x - 8$

Ex. 3: $3y - 5 + .5(2y - 8) = 7y - 2y + 3$

3.4B: I can solve a multi-step equation with one, none or many solutions.

Ex. 1 – Solve for the variable: $-(6x - 3) = 4x - 10x + 3$

3.4C: I can translate a real life problem into an equation with variables on both sides and solve.

Central High's enrollment decreases at an average rate of 55 students per year while Washington High's enrollment increases at an average rate of 70 students per year. Central High has 2176 students and Washington High has 1866

students. If enrollments continue to change at the same rate, when will the two schools have the same number of students?

3.4D: I can find the input of a function.

The output of a function is 13 more than 4 times the input. Write and equation and find the input when the output is 217.