6th Grade Advanced Math Unit 2
Expressions and Equations
Pre-Assessment

The purpose of this pre-assessment is to show your teacher what you already know about math. There will be many items that you do not know how to solve yet, and that is okay! Take time to show your mathematical thinking.

_____/44 pts

I can apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

Use the expression below to answer questions 1 and 2.

$$4x-3(x-2y)+\frac{1}{2}(6x-8y)$$

1. Write an equivalent expression in standard form and collect like terms. (2 pts)

2. Express the answer from question 1 as an equivalent expression in factored form. *(*1 pt)

I can write a simple algebraic equation (in the form $px + q = r$ and $p(x + q) = r$,) to represent a real world problem.

For each statement below, translate the verbal expression to an algebraic equation.

3. Ann has 5 new music CDs, which is 3 less than twice the amount Bob has. (1 pt)

4. Rob, who has all 13 girls' phone numbers that are in his homeroom, has 3 more than half the number of girls' phone numbers that Jay has. (1 pt)

I can solve a simple algebraic inequality and graph the solution on the number line.

The Woodridge Community Center can spend up to $175 on video games for its new gaming system. Games are on sale for $35 each.

5. Write and solve an inequality to represent the number of games the center could afford to purchase. Explain your solution in reference to the problem. (3 pts)

6. Graph the solution in question **#5** on the number line. (1 pt)

I can describe the solution to an inequality in relation to the problem.

The Community Center is considering signing up for an online game-rental service rather than buying the games. The table below shows the details for two possible game-rental services the center can join.

Game Rental Services		
Service	**Equipment Cost**	**Monthly Fee**
NetGames	$99	$8
Anytime Games	$19	$19

7. Write and solve an inequality that represents the number of complete months the center could rent games from NetGames with its $175. Explain the solution in terms of the problem. (4 pts)

I can describe the solution to an inequality in relation to the problem.

8. Write and solve an inequality to represent the number of complete months the center could rent games from Anytime Games. Explain the solution in terms of the problem. (4 pts)

9. Use your answers from questions **#7** & **#8** to justify which service the community center should purchase. (1 pt)

I can solve a simple algebraic equation by using the properties of equality or mathematical reasoning.

10. Sean sold 4 more boxes of candy for the school fundraiser than Marta. The sum of the boxes they sold was 22. (5 pts)

a. Create an equation to find the solution to the question: How many boxes did each person sell?

b. Support your solution using a tape diagram to model the equation.

I can use a variable to represent an unknown quantity.

11. Ned weighs 1½ times as much as Jill and Tom weighs 15 kilograms more than Jill. Their combined weight is 190 kilograms. Write and solve an equation to find out how much each person weighs. (6 pts)

I can solve a simple algebraic equation by using the properties of equality or mathematical reasoning.

Solve for x.

12. $6 + (-12)x = 0$ (1pt)

13. $30 = 4x + 6$ (1pt)

14. $2(x + 4) = 16$ (1 pt)

15. $24 = \frac{3}{4}x + 12$ (1 pt)

I can compare an algebraic solution to an arithmetic solution.

16. A picture 10¼ feet long is to be centered on a wall that is 14½ feet long. How much space is there from the edge of the wall to the picture?

a. Solve the problem arithmetically. (2 pts)

b. Solve the problem algebraically. (2 pts)

17. Compare the approaches to solve question #16 in parts a & b above. (1 pt)

I can write a simple algebraic inequality (in the form $px + q > r$ and $p(x + q) < r$,) to represent a real world problem

Ben wants to have his birthday at the bowling alley with a few of his friends, but he can spend no more than $80. The bowling alley charges a flat fee of $45 for a private party and $5.50 per person for shoe rentals and unlimited bowling.

18. Write an inequality that represents the total cost of Ben's birthday for ***(p)*** people given his budget. (1 pt)

I can describe the solution to an inequality in relation to the problem.

19. How many people can Ben pay for (including himself) while staying within the limitations of his budget? (2 pts)

I can solve a simple algebraic inequality and graph the solution on the number line

20. Graph the solution set of the inequality from question #19. (1 pt)

21. Using the graph, explain how many people Ben can pay for (including himself) if he receives an additional $20 to spend on his party from his grandma. (2 pts)