Algebra 1 Honors: **Equations and Inequalities Unit REVIEW**

Name _____

I.   A-REI.1   Learning Target: *I can justify each step used to solve an equation.*

1.   Solve the equation and state a reason for each step. $5(\dfrac{y}{10} + 0.3) = 25$

Solution Steps	Justifications
$5(\dfrac{y}{10} + 0.3) = 25$	

2.   Solve the equation and state a reason for each step. $-(-3x + 2) = 13$

Solution Steps	Justifications
$-(-3x + 2) = 13$	

3.   Solve $-\dfrac{1}{2}x < 50$

4.   Given the inequality: $15 \ge -2x + 5$

Part A: Solve the inequality.

Part B: How many solutions does the inequality have?

5.   Solve. $5 - 2x < 15$

6. Given the equation: $5 - 2x = 15 - x$

Part A: Solve the equation.

Part B: How many solutions does the equation have?

7. Solve the equation and state a reason for each step.

Solution Steps	Justifications
$3(x-2) - 2(x+3) = 125 + \dfrac{1}{2}(2x-8)$	

A-CED.1 Learning Target: *I can set up an equation or inequality to model a real-world problem with one unknown variable. I can solve this equation to answer the real world problem.*

8. The width of a rectangle is one-third of the length. The perimeter is 72 *in*. What is the width?

9. Zuzu's salary is three-fourths of Paul's salary. Together they earn $1323 a month. What is Zuzu's salary?

10. You are driving to Flagstaff from school. In the first hour you travel ¾ of the total distance. In the second hour you travel the remaining 55 miles. What is the total distance that you drove?

11. The maximum capacity of a theater is 471 people. So far, 254 people are seated in the theater. **Write an inequality can be solved to show the number of people p that can still enter the theater.** How many people can still enter the theater?

12. The population of pandas in China is predicted to decrease by $\dfrac{1}{3}$ this year. If there were 1500 pandas at the start of the year. How many pandas will be remaining at the end of the year?

13. Susie is renting a car and the rental company is charging $150 per week for a midsize car. They also charge $0.03 per mile. If Susie can spend no more than $200 how many miles can she drive in one week?

III. **A-CED.2 Learning Target:** *I can set up an equation to solve a real-world problem with two unknown variables and graph this equation on a coordinate plane.*
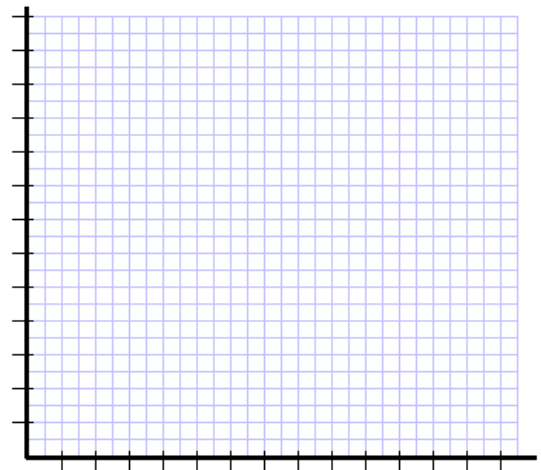
14. Lawrence's parents pay him a base allowance of $20 per week and $3.55 per hour for extra chores he completes.

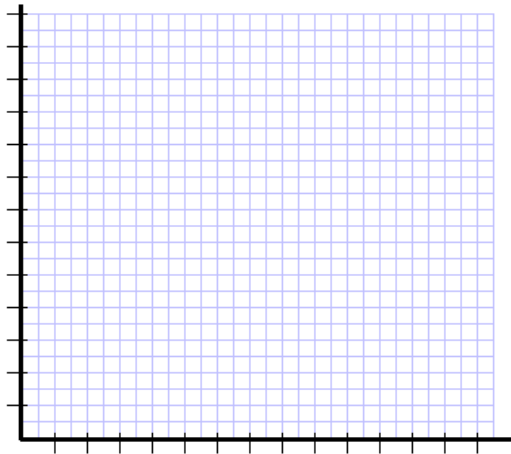**Part A:** Write an equation that models Lawrence's total weekly income.

Equation: _____

Part B: Complete the table.

Part C: Graph

15. Verizon charges $10 for 100 texts. Every text over 100 costs $0.10 per text. Write a linear equation to represent this scenario. Graph the equation.

Equation: _____

A-CED.3 **Learning Target:** *I can write equations and inequalities that represent real-life situations within a set of limitations. I can also decide if the solution fits the limitations.*

16. Which problem could be solved using the inequality $4(12 + c) \le 76$?

   a. Marty needs to buy four shirts that cost $12 plus a charge to customize them. He can spend no more than $76.

   b. Marty earned $76 for 4 hours of work plus $12 overtime.

   c. Marty has to buy a gift for his 4 friends that cost $12 and can spend at least $76.

   d. Four students split a restaurant bill that came to less than $76.

17. Which problem could be solved using the inequality $9a \le 45$?

   a. Marty earned $45 for 9 hours of work.

   b. Nine equal-priced shirts came to at least $45.

   c. Nine students split a restaurant bill that came to less than $45.

   d. The product of 9 and a number is equal or equal to 45.

18. A carpet cleaner charges \$59 for the first room and \$30 for each additional room. A customer does not want to spend more than \$125 for having the carpets in his house cleaned.

Part A: Write an inequality for the situation.

Part B: How many rooms can the customer actually have cleaned, and how much will it cost? Explain.

Part C: A second cleaning company charges \$65 for the first room and only \$16 for each additional room. Assuming the customer will still spend no more than \$125 for cleaning, can he get more rooms cleaned by the second company? Explain.

V. **A-CED.4 Learning Target:** *I can rearrange a given formula to solve for a single unknown variable.*

19. Solve $y = \dfrac{5}{8}b + 10$ for b .

20. Solve $A = \dfrac{(b_1 + b_2)}{2}h$ for *h*.

21. Two students were asked to solve $2x - 3y = 8$. Student 1 was asked to solve for *x* and student 2 was asked to solve for *y*. Their answers are shown below.
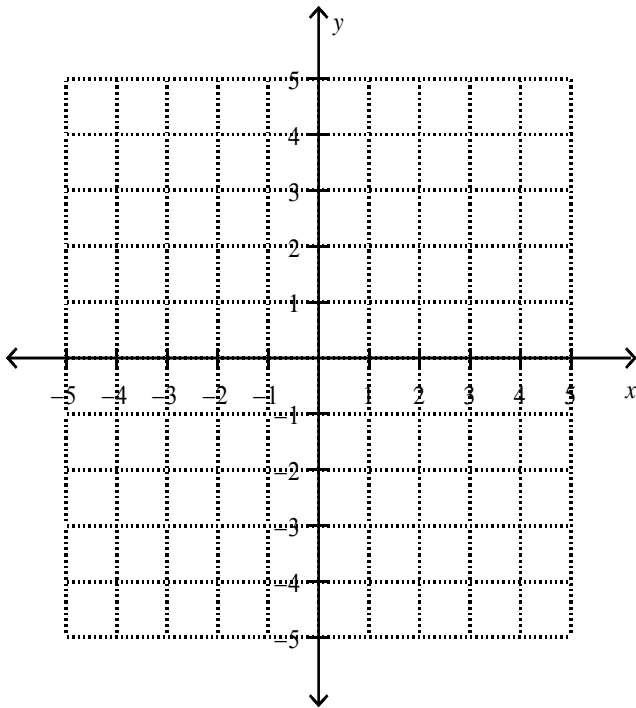
Student 1: $x = \dfrac{3}{2}y + 4$ **Student 2:** $y = \dfrac{2x - 8}{3}$

Show or explain the steps each student used to come up with their answer.

Student 1	Student 2

VI. A.REI.12 Learning Target: *I can graph the solution to one or more linear inequalities.*

22. Graph the solutions of $y < -2x + 4$

23. Graph $-3y \le 9x - 6$