Math 6 – Unit 4: Equations & Inequalities
Study Guide – End of Unit Test

Name: **KEY**

Class Period: 1 2 3 4 Date: _____

1. List out the characteristics of a direct variation graph. (Where does it start, what does it look like?)

   STARTS AT (0,0); ALWAYS A STRAIGHT LINE

Solve the equations below. Show all of your work, including the check.

2. $\frac{1}{5}x = 42 \div \frac{1}{5}$

   $\frac{42}{1} \div \frac{1}{5} \quad \times \frac{42}{5}$

   $42 \cdot \frac{5}{1} \quad \frac{210}{1}$

   $\boxed{x = 210}$

   $42 = 42 \checkmark$

   $\frac{1}{5}(210) = 42$

   $\frac{1}{5} \cdot \frac{210}{1} = 42$

3. $67 + c = 183$

   $\quad -67 \quad -67$

   $\boxed{C = 116}$

   $67 + 116 = 183$
   $183 = 183 \checkmark$

   $\begin{array}{r} 116 \\ + 67 \\ \hline 183 \end{array}$

4. $j - 5.6 = 4.6$

   $\quad +5.6 \ +5.6$

   $\boxed{j = 10.2}$

   $4.6 = 4.6 \checkmark$

   $10.2 - 5.6 = 4.6$

   $\begin{array}{r} 10.2 \\ - 5.6 \\ \hline 4.6 \end{array}$

4. Jennifer spent $8.99 on a bag of Jolly Ranchers that cost x dollars a piece. If there were 110 Jolly Ranchers in the bag, write an equation that could be solved using inverse operations to find out how much each Jolly Rancher would cost. (You do not need to solve the equation.

   $110x = 8.99$

5. Write a situation that could describe the following inequality graph.

   $x > 2$
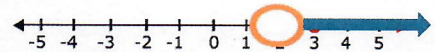
6. Write an inequality to represent the fact that there are **at least** 13 questions on your test.

   $x \geq 13$

7. Write an inequality to represent that there are **more than** 125 cars in the parking lot.

   $x > 125$

8. Gabriel wants to solve the equation, $\frac{3}{4}m = 25$.
   Which step should he **do to isolate m** on one side of the equation?

   DIVIDE BY $\frac{3}{4}$ ON BOTH SIDES.

9. Judy spent **$5.67** on oranges that cost **$0.63 each**. If x = the number of oranges, write an equation that would determine how many oranges Judy purchased?

   $0.63x = 5.67$

10. Write a direct variation equation to represent the data in the table.

x	0	1	2	5
y	0	5	10	25

   $y = 5x$

11. Write one possible solution and one non-solution to the inequality, x > 4.
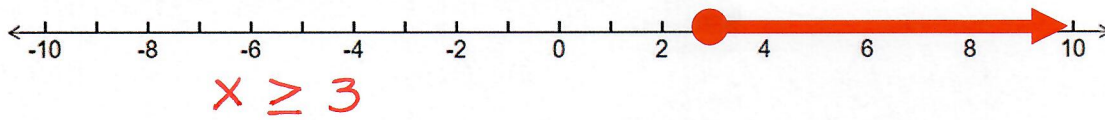
   POSSIBLE: 5   NON-SOL: 2

12. Explain how to solve an equation.

   USE INVERSE OPERATIONS ON BOTH SIDES OF THE EQUATION SUBSTITUTE THE SOLUTION TO CHECK
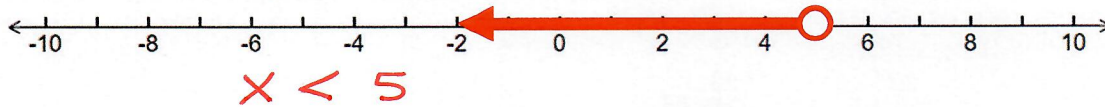
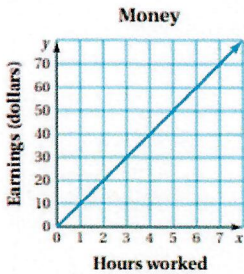13. Complete the table to satisfy the direct variation equation, y=12x

x	0	1	2	4	5
y	0	12	24	48	60

14. What inequality is graphed on the number line?

$x \geq 3$

15. What inequality is graphed on the number line?

$x < 5$

16. What direct variation is graphed on the coordinate plane below?

Money

Earnings (dollars)

Hours worked

$y = 10x$

17. Julia paid **$140** for **7 gift cards**. Each gift card was the same price. Write an equation that that represents the situation and find the **price of each** gift card?

$7x = 140$

18. A music teacher bought 17 recorders of equal price. She spent a total of $51. The equation $17r = 51$ can be used to find r, the price of each recorder in dollars. What was the price of each recorder?

$\dfrac{17r}{17} = \dfrac{51}{17}$ $r = 3$ EACH RECORDER COST $3.

19. Mrs. Katz bought chick-fil-a biscuits for her homeroom and spent a total of $160. If each biscuit cost $5, write an equation that you could use inverse operations to solve and solve it to find out how many biscuits Mrs. Katz bought.

$5x = 160$ $x = $ # OF BISCUITS BOUGHT

20. Which **solution** makes the **equation true**? $x - 6.5 = 19$

$+6.5 \;+6.5$

$x = 25.5$

$25.5 - 6.5 = 19$

$19 = 19 \checkmark$

For **questions 21-22**, determine whether the given value is a solution of the equation by selecting **true** or **false**.

21. $25 = \dfrac{k}{3}$ for $k = 3$

$25 = \dfrac{3}{3}$ $25 \neq 1$

a. TRUE   b. ~~FALSE~~

22. $0.7y = 49$ for $y = 70$

$0.7(70) = 49$ $\times\;\begin{array}{r}70\\.7\\\hline 49.0\end{array}$

a. ~~TRUE~~   b. FALSE

$49 = 49 \checkmark$

23. **Opposite** operations that "undo" each other are called __INVERSE OPERATIONS__

24. Which step should be taken to **isolate the variable** in the following equation?

$$213n = 1418$$

DIVIDE BY 213 ON BOTH SIDES.