

Lesson 12 Independent Practice

1. For each problem, use the properties of inequalities to write a true inequality statement. The two integers are -2 and -5 .
 - a. Write a true inequality statement.
 - b. Subtract -2 from each side of the inequality. Write a true inequality statement.
 - c. Multiply each number by -3 . Write a true inequality statement.

2. On a recent vacation to the Caribbean, Kay and Tony wanted to explore the ocean elements. One day they went in a submarine 150 feet below sea level. The second day they went scuba diving 75 feet below sea level.
 - a. Write an inequality comparing the submarine's elevation and the scuba diving elevation.
 - b. If they only were able to go one-fifth of the capable elevations, write a new inequality to show the elevations they actually achieved.
 - c. Was the inequality symbol preserved or reversed? Explain.

3. If a is a negative integer, then which of the number sentences below is true? If the number sentence is not true, give a reason.
 - a. $5 + a < 5$
 - b. $5 + a > 5$
 - c. $5 - a > 5$
 - d. $5 - a < 5$
 - e. $5a < 5$
 - f. $5a > 5$
 - g. $5 + a > a$
 - h. $5 + a < a$
 - i. $5 - a > a$
 - j. $5 - a < a$
 - k. $5a > a$
 - l. $5a < a$

Lesson 13 Independent Practice

1. Match each problem to the inequality that models it. One choice will be used twice.

_____	The sum of three times a number and -4 is greater than 17.	a. $3x + -4 \geq 17$
_____	The sum of three times a number and -4 is less than 17.	b. $3x + -4 < 17$
_____	The sum of three times a number and -4 is at most 17.	c. $3x + -4 > 17$
_____	The sum of three times a number and -4 is no more than 17.	d. $3x + -4 \leq 17$
_____	The sum of three times a number and -4 is at least 17.	

2. If x represents a positive integer, find the solutions to the following inequalities.

a. $x < 7$

e. $-x \geq 2$

b. $x - 15 < 20$

f. $\frac{x}{3} < 2$

c. $x + 3 \leq 15$

g. $-\frac{x}{3} > 2$

d. $-x > 2$

h. $3 - \frac{x}{4} > 2$

3. Recall that the symbol \neq means *not equal to*. If x represents a positive integer, state whether each of the following statements is always true, sometimes true, or false.

a. $x > 0$

e. $x \geq 1$

b. $x < 0$

f. $x \neq 0$

c. $x > -5$

g. $x \neq -1$

d. $x > 1$

h. $x \neq 5$

Lesson 13 Homework continue

4. Twice the smaller of two consecutive integers increased by the larger integer is at least 25. Model the problem with an inequality, and determine which of the given values 7, 8, and/or 9 are solutions. Then, find the smallest number that will make the inequality true.
- 5.
- The length of a rectangular fenced enclosure is 12 feet more than the width. If Farmer Dan has 100 feet of fencing, write an inequality to find the dimensions of the rectangle with the largest perimeter that can be created using 100 feet of fencing.
 - What are the dimensions of the rectangle with the largest perimeter? What is the area enclosed by this rectangle
6. At most, Kyle can spend \$50 on sandwiches and chips for a picnic. He already bought chips for \$6 and will buy sandwiches that cost \$4.50 each. Write and solve an inequality to show how many sandwiches he can buy. Show your work and interpret your solution.

Lesson 14 Independent Practice

1. As a salesperson, Jonathan is paid \$50 per week plus 3% of the total amount he sells. This week, he wants to earn at least \$100. Write an inequality with integer coefficients for the total sales needed to earn at least \$100, and describe what the solution represents.
2. Systolic blood pressure is the higher number in a blood pressure reading. It is measured as the heart muscle contracts. Heather was with her grandfather when he had his blood pressure checked. The nurse told him that the upper limit of his systolic blood pressure is equal to half his age increased by 110.
 - a. a is the age in years, and p is the systolic blood pressure in millimeters of mercury (mmHg). Write an inequality to represent this situation.
 - b. Heather's grandfather is 76 years old. What is *normal* for his systolic blood pressure?
3. Traci collects donations for a dance marathon. One group of sponsors will donate a total of \$6 for each hour she dances. Another group of sponsors will donate \$75 no matter how long she dances. What number of hours, to the nearest minute, should Traci dance if she wants to raise at least \$1,000?
4. Jack's age is three years more than twice the age of his younger brother, Jimmy. If the sum of their ages is at most 18, find the greatest age that Jimmy could be.
5. Brenda has \$500 in her bank account. Every week she withdraws \$40 for miscellaneous expenses. How many weeks can she withdraw the money if she wants to maintain a balance of at least \$200?
6. A scooter travels 10 miles per hour faster than an electric bicycle. The scooter traveled for 3 hours, and the bicycle traveled for $5\frac{1}{2}$ hours. Altogether, the scooter and bicycle traveled no more than 285 miles. Find the maximum speed of each.

Lesson 15 Independent Practice

1. Ben has agreed to play fewer video games and spend more time studying. He has agreed to play less than 10 hours of video games each week. On Monday through Thursday, he plays video games for a total of $5\frac{1}{2}$ hours. For the remaining 3 days, he plays video games for the same amount of time each day. Find t , the amount of time he plays video games, for each of the 3 days. Graph your solution.

2. Gary’s contract states that he must work more than 20 hours per week. The graph below represents the number of hours he can work in a week.



- a. Write an algebraic inequality that represents the number of hours, h , Gary can work in a week.
- b. Gary is paid \$15.50 per hour in addition to a weekly salary of \$50. This week he wants to earn more than \$400. Write an inequality to represent this situation.
- c. Solve and graph the solution from part (b). Round to the nearest hour.

3. Sally’s bank account has \$650 in it. Every week, Sally withdraws \$50 to pay for her dog sitter. What is the maximum number of weeks that Sally can withdraw the money so there is at least \$75 remaining in the account? Write and solve an inequality to find the solution, and graph the solution on a number line.

4. On a cruise ship, there are two options for an Internet connection. The first option is a fee of \$5 plus an additional \$0.25 per minute. The second option costs \$50 for an unlimited number of minutes. For how many minutes, m , is the first option cheaper than the second option? Graph the solution.

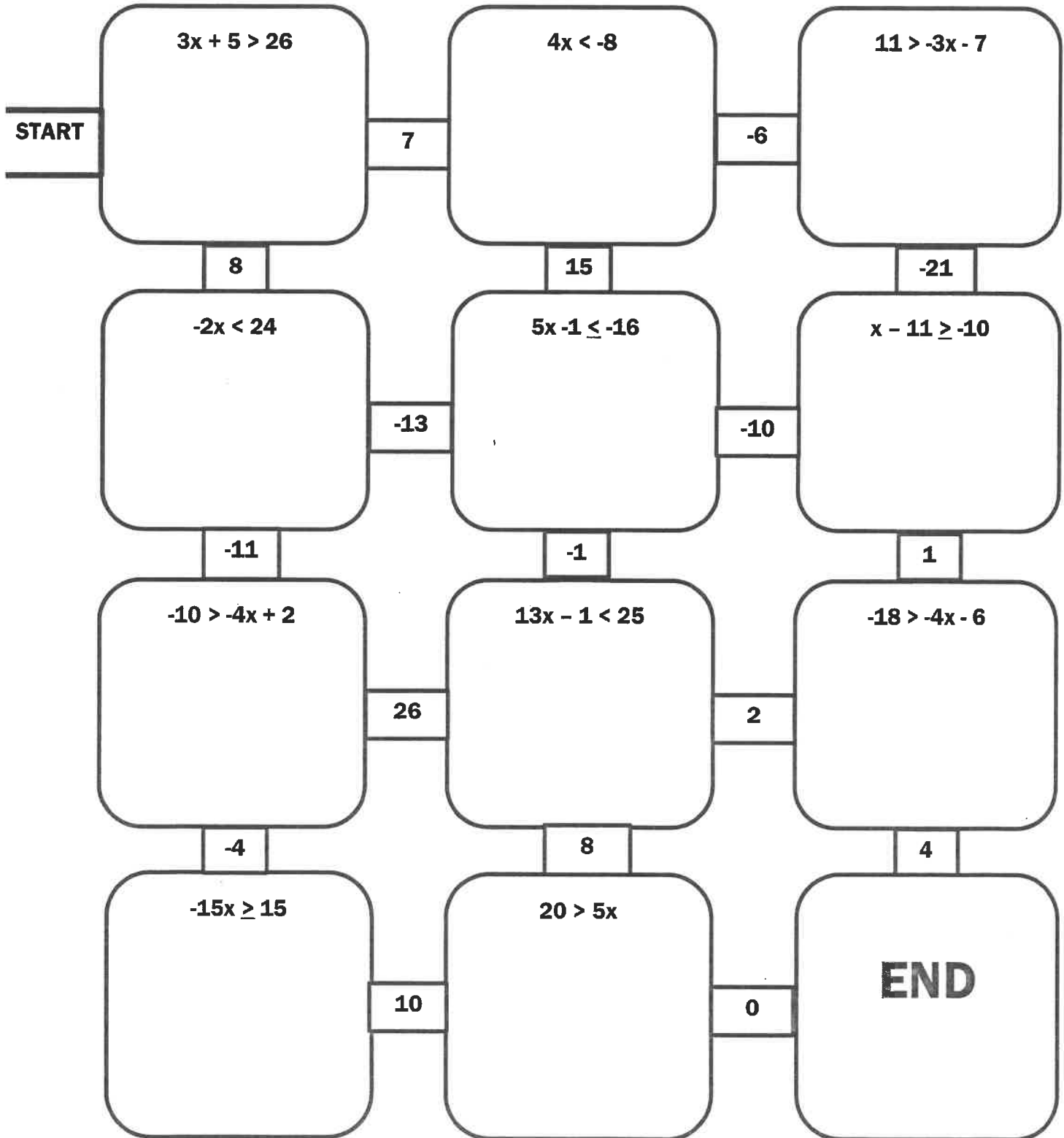
5. The length of a rectangle is 100 centimeters, and its perimeter is greater than 400 centimeters. Henry writes an inequality and graphs the solution below to find the width of the rectangle. Is he correct? If yes, write and solve the inequality to represent the problem and graph. If no, explain the error(s) Henry made.



Name _____

Date _____

- To begin solve the inequality located at **START**.
- To move on to the next inequality box, the number in the path **MUST** be a possible solution to the previous inequality solved.
- Solve only the inequalities required to navigate through the puzzle.
- Use arrows to indicate the path you took.
- When you have reached the **END**, you have completed the maze! Good luck!



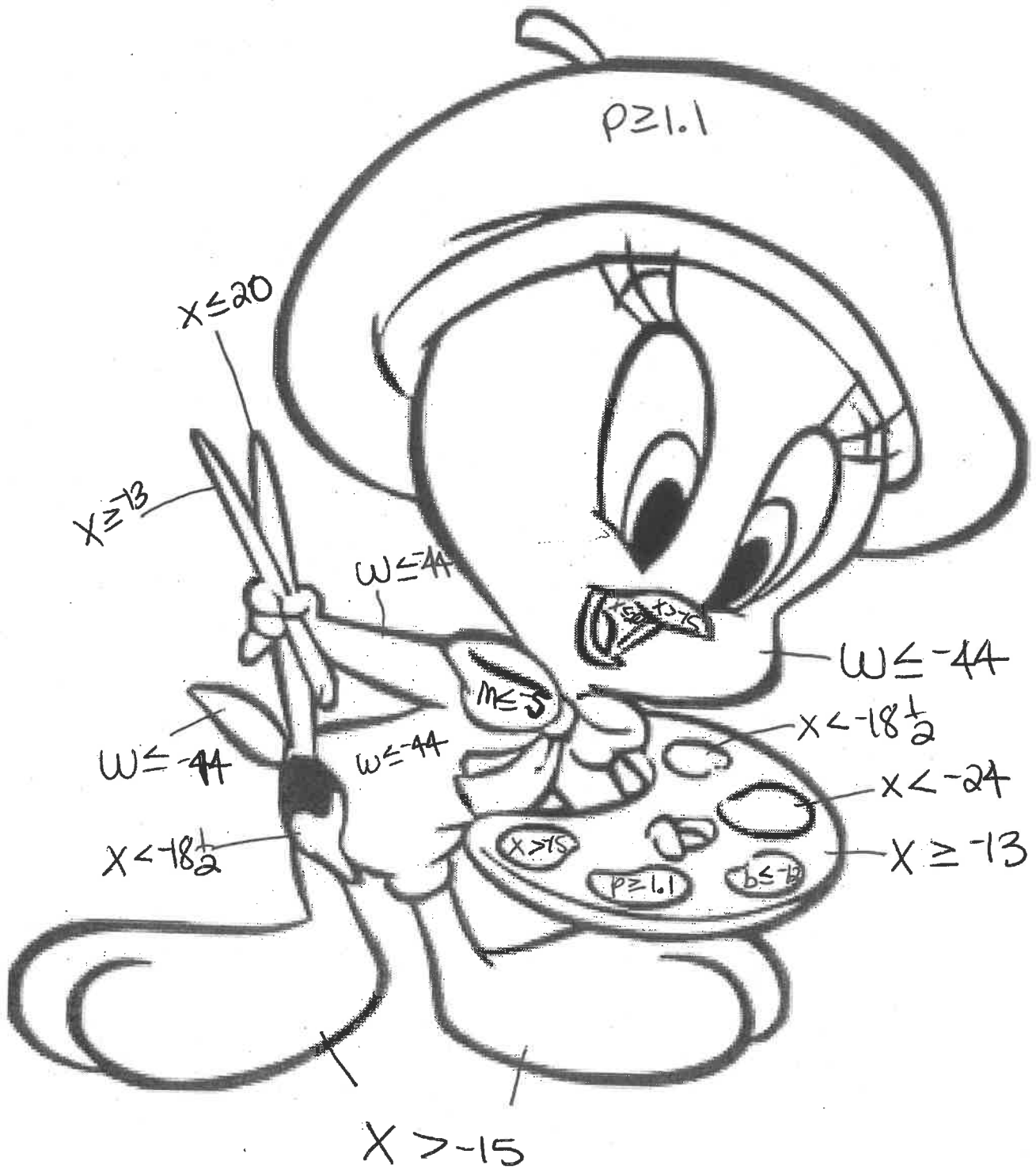


Two-step Inequality Color by Number

Name: _____

Directions: Solve each problem and show all your work. Then find the matching answer on the color key and color the picture of Donald Duck according to the color key.

1) $4x - 15 \leq 5$	2) $-73 \geq 15 + 11x$	3) $\frac{x}{5} - 2 > 1$
4) $9 \leq \frac{x}{14} + 6$	5) $5 + 3x > 35$	6) $75 + 5x \geq 110$
7) $-20 > -2x + 4$	8) $4x - 13 < 11$	9) $\frac{x}{13} + 3 \geq 4$



Tweety's tongue is: $x < -18\frac{1}{2}$

Solve each inequality & color
on the back

Name: _____

1. $\frac{w}{4} \leq -11$

Yellow

2. $-\frac{1}{2}x > 9\frac{1}{4}$

Pink

3. $x + 16 \geq 3$

Brown

4. $-8 + \frac{5}{6}x < -28$

Purple

5. $7 + \frac{2}{5}x > 1$

Orange

6. $-6 \leq -3m - 21$

Red

7. $3.6 \geq -2p + 5.8$

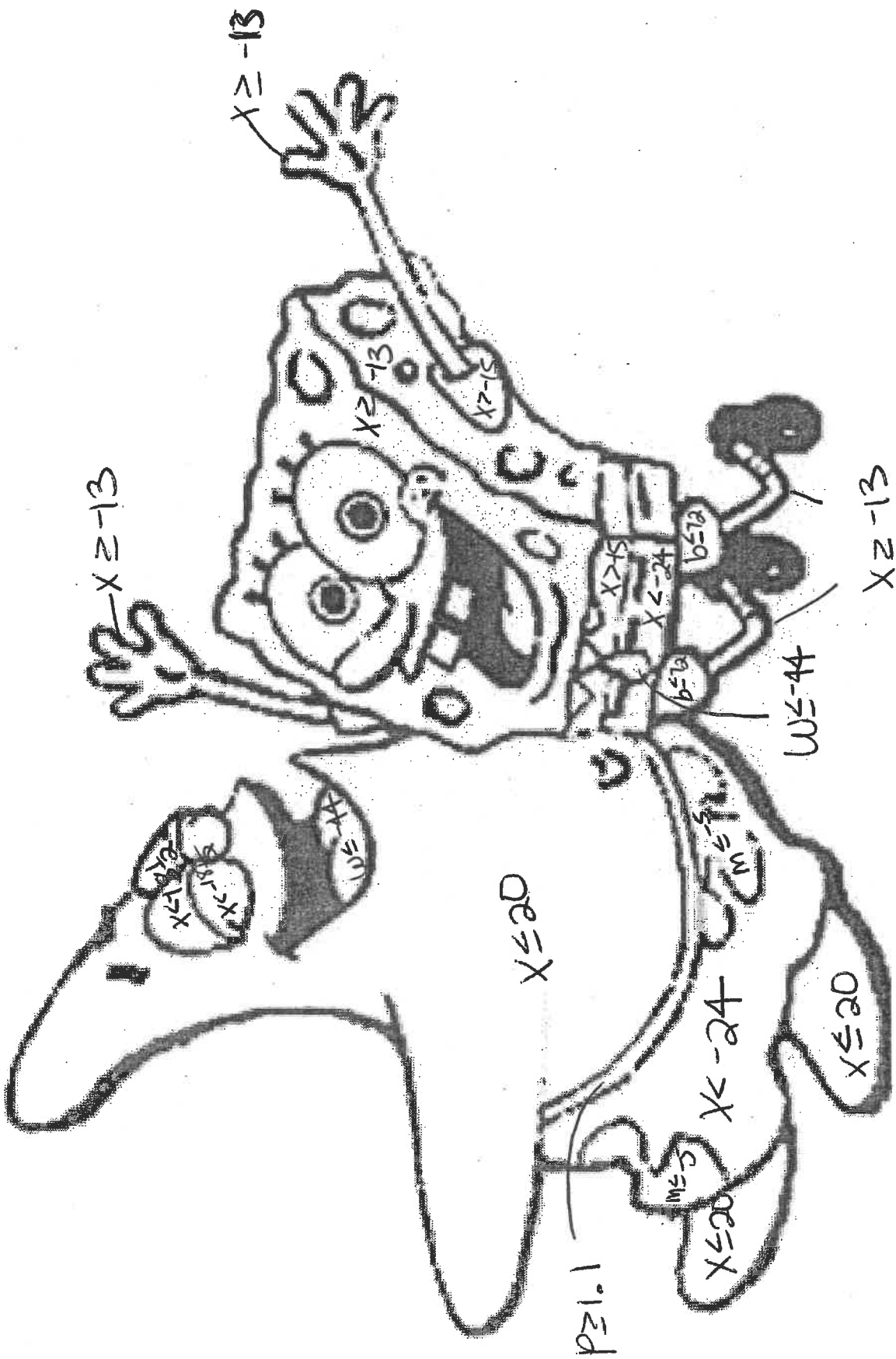
Blue

8. $\frac{x}{4} - 7 \leq -2$

Black

9. $3 \geq 6t + \frac{6}{4}$

Green



Name: _____

Solve each inequality & color
on the back

1. $\frac{w}{4} \leq -11$

Red

2. $-\frac{1}{2}x > 9\frac{1}{4}$

Purple

3. $x + 16 \geq 3$

Yellow

4. $-8 + \frac{5}{6}x < -28$

Blue

5. $7 + \frac{2}{5}x > 1$

White

6. $-6 \leq -3m - 21$

Green

7. $3.6 \geq -2p + 5.8$

Orange

8. $\frac{x}{4} - 7 \leq -2$

Pink

9. $3 \geq 6 + \frac{b}{4}$

Black

Name _____

Date _____

Inequalities Study Guide

Solve each inequality. **SHOW ALL YOUR WORK!!!** Graph the solution on a number line.

1. $y + 4 > 73$



2. $-3q < -33$



3. $\frac{x}{-2} > 8$



4. $\frac{b}{3} + 4 \leq 10$



Solve each inequality. **SHOW ALL YOUR WORK!!!** Graph the solution on a number line.

5. $2x + 5 \geq 43$



6. $-2x - 5 < 17$



For Questions 7 and 8, write and solve an inequality showing all algebraic work.

7. Ten less than a number is at most seventeen.

Inequality: _____

Solution: _____

8. The sum of -4 and a number is greater than 8.

Inequality: _____

Solution: _____

For Questions 9 and 10, write, solve, and give an interpretation for each inequality showing all algebraic work

9. Mrs. Kueper has 1,800 minutes per month on her cell phone plan. How many more minutes can she use if she has already talked for 835 minutes?

Inequality: _____

Solution: _____

Interpretation (sentence): _____

10. T.J. needs at least \$306 for a new video game system. He has already saved \$54. He earns \$7 an hour at his job. How many hours will he need to work to be able to buy the system?

Inequality: _____

Solution: _____

Interpretation (sentence): _____

Module 3 – Topic A & B Study Guide

Name _____

Period _____

Complete the test on your own. Read all directions. **SHOW ALL WORK!**

- 1) Gloria says the two expressions $\frac{1}{3}(12x + 24) - 9x$ and $-8(x + 1)$ are equivalent. Is she correct? Explain how you know. *(2 points) (7.EE.A.1)*

- 2) Find the sum of $-15x + 10$ and $-13x - 3$. **SHOW ALL WORK!**
(2 points) (7.EE.A.1)

Answer: _____

- 3) Find the difference: $3(10x + 6) - (-15x - 10)$ **SHOW ALL WORK!**
(2 points) (7.EE.A.1)

Answer: _____

4) Factor the following expression: $10x + 20$?

(1 point) (7.EE.A.1)

Solve each equation and show all work!

(2 points each) 7.EE.A.1

5) $-3x + 15 = 24$

6) $-3(x - 5) = 30$

$x =$ _____

$x =$ _____

7) Xander goes to the movies with his family. Each family member buys a ticket and two boxes of popcorn. If there are three members of his family, let t represent the cost of a ticket and p represent the cost of a box of popcorn. Write two different expressions that represent the total amount his family spent.

(1 point each) 7.EE.A.2

1st expression: _____

2nd expression: _____

Explain how the expressions are equivalent?

8) Swim lessons cost \$60 for the first half hour plus an additional \$25 for each additional session. The total cost is \$135. **Write an equation** to model this situation. Let x = the additional sessions.

(1 point) 7.EE.B.4

9) What is the value of x in the equation $3(3x - 7) = 24$? **Show your work!**

(2 points) 7.EE.B.4a

10) Jaqueline rented 1 video game and 3 movies for a total of \$14.75. The cost to rent a video game is \$4.25. Let m represent the cost to rent a movie.

7.EE.B.4a

Part A: Write a two-step equation to solve the problem: **(1 point)**

Part B: Solve to determine the cost to rent a movie: **(2 points)**

11) Ross says that these two equations have the same solution. Is he correct? Explain how you know.

(2 points) 7.EE.B.3

Equation 1: $\frac{3}{4}(x - 12) = 12$

Equation 2: $\frac{3}{4}x - 12 = 12$

12) Solve and graph the inequality: $3x + 5 < 20$ (show all work)

(3 points) 7.EE.B.4b

Solution: _____

Graph:



13) Ms. Amrhein wants to spend at most \$50 on a bike tour in Chicago. The tour guide tells her there is a \$40 charge to go on a bike tour, plus \$0.50 per mile for the tour. How many miles can she go on this tour?

(3 points) 7.EE.B.4b

Inequality: _____

Solution: _____

Interpretation (write your solution as a sentence):

From the options below, circle all of the tours that Ms. Amrhein could register for. (1 point)

Architecture Tour	Lakefront Tour	Fireworks Tour	Haunted Tour	Museum Campus Tour
11 miles	8 miles	10 miles	12 miles	5 miles

14) Tyler needs at least \$205 for a new video game system. He has already saved \$35. He earns \$10 an hour at his job. How many hours will he need to work to be able to buy the system?

(3 points) 7.EE.B.4b

Inequality: _____

Solution: _____

Interpretation (write your solution as a sentence):
