

### 3B Solving 2-variable Inequalities

Name: \_\_\_\_\_ Per: \_\_\_\_\_

SHOW YOUR WORK FOR FULL CREDIT. NO WORK IN PEN.

Solve the following.

1.  $16x - 12 > 2(7 - 5x)$

2.  $2(x + 8) > 4x + 12$

3.  $3y + 4 \leq 18 - (y + 6)$

Solve the following inequalities for s.

4.  $-8s > -6(8b - 4)$

5.  $-s + 4w \leq -25 + 3(2w + 5)$

6.  $5 - (7 + 2s) - 2d > d + 10$

Solve the following inequalities for y. State the slope and y-intercept.

7.  $x - 2y > 10 + 3x$

8.  $4x - 7y > 10 - (y + 2)$

Solved: \_\_\_\_\_

Solved: \_\_\_\_\_

Slope: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

Slope: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

9.  $-3x - 6y \leq 12 + 3(y - 9)$

10.  $-2(x - 4) + x - 2y \geq 10$

Solved: \_\_\_\_\_

Solved: \_\_\_\_\_

Slope: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

Slope: \_\_\_\_\_ Y-intercept: \_\_\_\_\_

Solve the following multi-step inequalities. Justify (describe) your steps.

11.  $2r + 1 < 15 - 2(r + 3)$

12. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

13.  $2(4n^2 - 2) - 4n^2 \geq 21 - n^2$

14. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Write and then solve an inequality to represent the given situations.**

15. Andy has \$550 in a savings account at the beginning of the summer. He wants to have at least \$200 in the account by the end of the summer. He withdraws \$25 each week for food, clothes, and movie tickets.

- a. Inequality:
- b. How many weeks can the money last?

Solution: \_\_\_\_\_

16. Kimberly took a TOTAL of 6 nieces/nephews to a hockey game. She wants to buy them snacks.

- a. Inequality: \_\_\_\_\_
- b. How much can each child spend on snacks if Kimberly wants to spend *no more than* \$30 total? (don't worry about tax)

Solution: \_\_\_\_\_

17. The school is running a carnival to make money. Tickets sell for \$0.50 each, and they need to buy supplies for the carnival that cost \$50.

- a. Inequality: \_\_\_\_\_
- b. How many tickets must they sell to raise *at least* \$200 in profit?

Solution: \_\_\_\_\_

18. VHMS collected food for a food drive. We started with *no more than* 500 items and the students collected 100 items each day.

- a. Inequality: \_\_\_\_\_
- b. If the school collected donations for 5 days, how many items would we have collected?

Solution: \_\_\_\_\_

19. Your quiz grades are 78, 72, 87, 90, and the score on your fifth quiz will make your average quiz grade *at least* 82.

- a. Inequality: \_\_\_\_\_
- b. What is the score on the fifth quiz?

Solution: \_\_\_\_\_

**Tell whether the given value is a solution to the inequality (makes the inequality true) by evaluating the following inequalities for the given value.**

20.  $x - 1 < 7$ ; can  $x$  be 8?

21.  $7y < 27$ ;  $y = 8$

22.  $\frac{1}{2}x \geq 5$ ;  $x = 10$

Solution? YES / NO

Solution? YES / NO

Solution? YES / NO