

Warm-up: Solve and Graph

1. $15 \leq 5x - 10 < 45$

$$25 \leq 5x < 55$$

$$5 \leq x < 11$$

$$x \geq 5$$

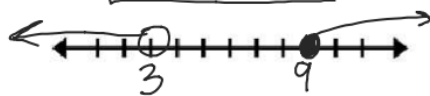


2. $2x - 3 \geq 15$ or $18x < 54$

$$2x \geq 18 \quad x < 3$$

$$x \geq 9$$

$$x < 3 \text{ or } x \geq 9$$

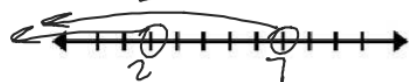


3. $6x - 3 < 9$ or $x + 11 < 18$

$$6x < 12 \quad x < 7$$

$$x < 2$$

$$x < 2$$



4. $-55 \leq -3y - 7 \leq 23$

$$+7 \quad +7 \quad +7$$

$$-48 \leq -3y \leq 30$$

$$16 \geq y \geq -10$$

$$-10 \leq y \leq 16$$



5. Ants can carry between 10 and 50 percent of their bodyweight, inclusive. If an ant weighs 4 mg, write an inequality that represents the amount of weight it can carry.

$$10\% - 50\%$$

$$0.4 \leq x \leq 2$$

$$10\% \text{ of } 4\text{mg}$$

$$0.1 \cdot 4 = 0.4$$

$$0.5 \cdot 4 = 2$$

Elena works at the ticket booth of a local playhouse. On the opening night of the play, tickets are \$10 each. The playhouse has already sold \$500 worth of tickets during a presale. The function $f(x) = 10x + 500$ represents the total sales as a function of tickets sold on opening night.

1. How many tickets must Elena sell in order to make at least \$1000?

A) $10x + 500 \geq 1000$
 B) $1000 \leq 10x + 500$

3. How many tickets must Elena sell in order to make at most \$1200?

$10x + 500 \leq 1200$ $1200 \geq 10x + 500$
 $x \leq 70$

2. How many tickets must Elena sell in order to make less than \$800?

$10x + 500 < 800$
 $\frac{10x}{10} < \frac{300}{10}$ $x < 30$

4. How many tickets must Elena sell in order to make exactly \$1400?

$10x + 500 = 1400$
 $x = 90$

Sally also works at a playhouse selling tickets. At her playhouse they charge \$6 per child and \$9 per adult.

5. Write an expression that would calculate how much Sally makes based on how many of each ticket she sells.

$$6x + 9y$$

6. Write an inequality that shows Sally needs to make at least \$300.

$$6x + 9y \geq 300$$

7. Write an inequality that shows Sally needs to make less than \$600.

$6x + 9y < 600$
 \$ made

This season on the basketball team Leon has scored a total of 52 points. He scores an average of 13 points per game. The function $f(x) = 13x + 52$ represents the total number of points Leon will score this season, where x represents the number of games. **Write an inequality to answer each question.**

8. How many more games must Leon play to score at least 117 points?

$$13x + 52 \geq 117$$

9. How many more games must Leon play to score fewer than 182 points?

$$13x + 52 < 182$$

10. How many more games must Leon play to score more than 143 points?

$$13x + 52 > 143$$

11. You are making gifts for your friends. You have already made 5 gifts. You plan to make 4 gifts per week.

- a. Write an expression to calculate how many gifts you will have made after x weeks.

~~$$5 + 4x$$~~
$$5 + 4x$$

- b. Write an inequality to represent if you want to make no more than 40 gifts total. Solve the inequality.

$$5 + 4x \leq 40$$

- c. Change the inequality to represent if you want to make more than 50. Solve the inequality.

$$5 + 4x > 50$$

- d. Change the inequality to represent if you want to make at least 75. Solve the inequality.

$$5 + 4x \geq 75$$

12. A bathtub filled with 55 gallons of water is being drained. The water drains at a rate of 5 gallons per minute.

- a. Write a function that represents the amount of water ($f(x)$) in the tub as it drains after x minutes.

$$55 - 5x$$

- b. Write and solve an inequality that represents how many minutes have passed if the tub still has more than 20 gallons of water remaining in it.

$$55 - 5x > 20$$

- c. Write and solve an inequality that represents how many minutes have passed if the tub has at most 15 gallons.

$$55 - 5x \leq 15$$

- d. Write and solve an inequality that represents how many minutes have passed if the tub has at least 40 gallons.

$$55 - 5x \geq 40$$

13. You go to the store to buy pork and chicken. Pork costs \$5 per pound and chicken costs \$4 per pound.

- a. Write an expression that represents how much you would spend if you bought x pounds of pork and y pounds of chicken

$$5x + 4y$$

- b. Write an inequality that shows you can't spend more than \$100.

$$5x + 4y \leq 100$$

- c. Write an inequality that shows you want to spend \$200 or more.

$$5x + 4y \geq 200$$

- d. Write an inequality that shows you want to spend at most \$75.

$$5x + 4y \leq 75$$