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?

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

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

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

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.

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

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

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?

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

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

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.
    $$4x + 5 \qquad 5 + 4x$$
    b. Write an inequality to represent if you want to make no more than 40 gifts total. Solve the inequality.
    $$\frac{35}{4} \geq \frac{4x}{4}$$
    $$40 \geq 5 + 4x$$
    $$\underline{-5 \quad -5}$$
    $$8.75 \geq x$$
    c. Change the inequality to represent if you want to make more than 50. Solve the inequality.
    $$4x + 5 \geq 50 \qquad \boxed{4x + 5 > 50}$$
    d. Change the inequality to represent if you want to make at least 75. Solve the inequality.
    $$4x + 5 \geq 75$$

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.

    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.

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

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

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

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

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

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