Algebra 1   (2.3 HW)   **Name_____ Class Period_____**

Modeling Linear Inequalities

Carlos works at an electronics store selling computer equipment. He can earn a bonus if he sells $10,000 worth of computer equipment this month. So far this month, he has sold $4000 worth of computer equipment. He hopes to sell additional laptop computers for $800 each to reach his goal. The function $f(x) = 800x + 4000$ represents Carlos's total sales as a function of the number of laptop computers he sells.
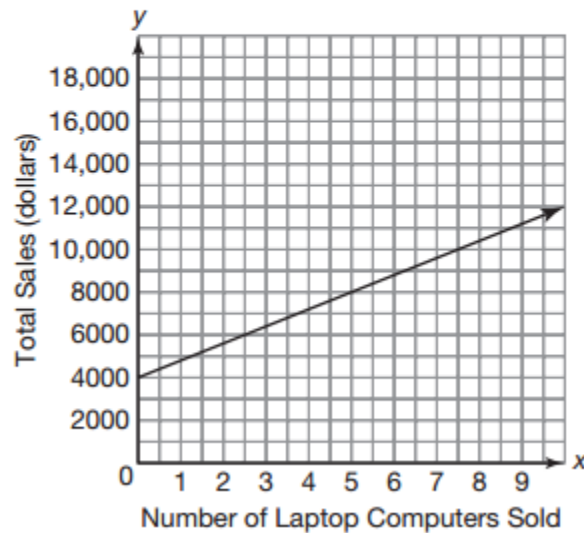
Use the graph to write an equation or inequality to determine the number of laptop computers Carolos would need to sell to earn each amount.

1.   At least $10,000

2.   Less than $,7000

3.   More than $12,000

4.   Exactly $8,000

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.
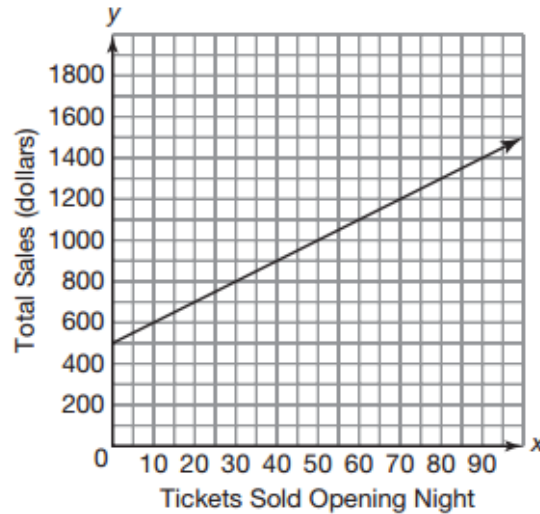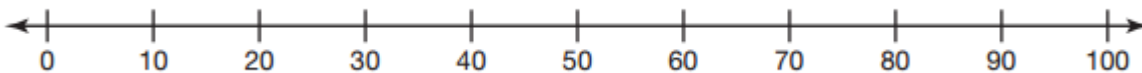

Use the graph of the function to answer each question. Graph each solution on the number line.
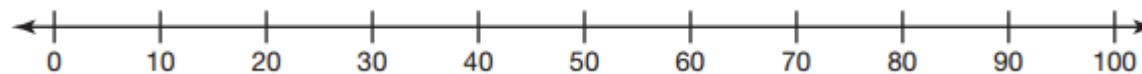
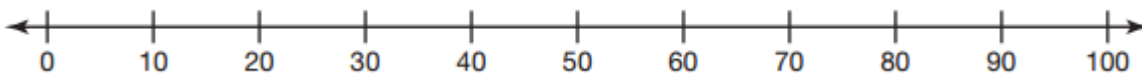5. How many tickets must Elena sell in order to make less than $800?

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0    10   20   30   40   50   60   70   80   90   100
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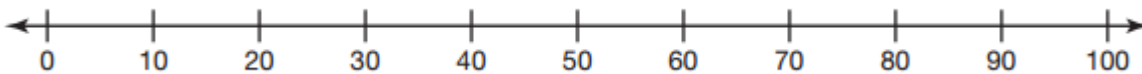
6. How many tickets must Elena sell in order to make at most $1,000?

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0    10   20   30   40   50   60   70   80   90   100
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7. How many tickets must Elena sell in order to make a minimum of $1,200?

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0    10   20   30   40   50   60   70   80   90   100
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8. How many tickets must Elena sell to make no more than $1,400?

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0    10   20   30   40   50   60   70   80   90   100
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Chang-Ho is going on a trip to visit some friends from summer camp. He will use $40 for food and entertainment. He will also need money to cover the cost of gas. The price of gas at the time of his trip is $3.25 per gallon.

9. **Consider a function in the form $C(g)$ to represent this problem situation.**

   a. **Write a function to represent the total cost of the trip as a function of the number of gallons used.**

   b. **Identify the independent and dependent quantities and their units.**

   c. **Identify the rate of change and the y-intercept. Explain their meanings in terms of the problem situation.**

   d. **Below is the graph of the function representing this situation on the coordinate plane. Use the graph to determine how many gallons of gas Chang-Ho can buy if he has $170 saved for the trip. *Draw an oval on the graph* to represent the solution. Then *write your answer in words and as an inequality.***

$C(g) = 3.25g + 40$
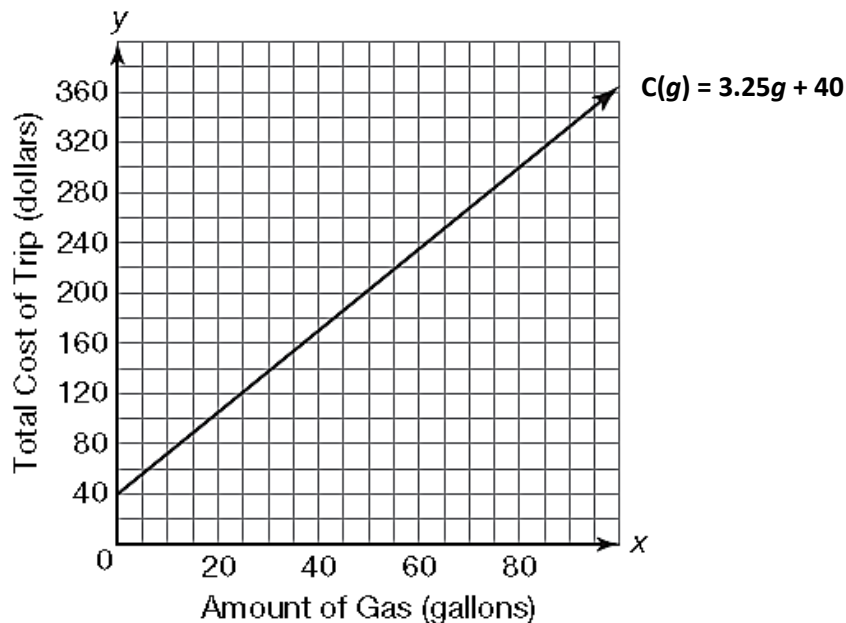
e. Verify the solution set you interpreted from the graph by writing the function from part d. as an inequality and use it to determine how many gallons of gas Chang-Ho can buy if he has $170 saved for the trip.

f. Chang-Ho's mom gives him some money for his trip. He now has a total of $220 saved for the trip. What is the greatest number of gallons of gas he can buy before he runs out of money? Write and solve an inequality and graph your solution on the number line.

g. If Chang-Ho spent more than $92 on his trip, how much gas could he have bought? Write and solve an inequality and graph your solution on the number line.

10. Solve the following inequalities and graph your solution on the number line.

a. $2(x+6) \leq 10$

b. $32 > 23 - x$

c. $-7x - 4 > -2x + 16$