

# 2.3.D2 - LINEAR INEQUALITIES

Use the indicated variable to write an inequality to model each situation. Refer to the 2.3 example "Writing & Solving Inequalities" in the Chapter 2 Summary.

- The school auditorium can seat at most 1200 people. Let  $p$  = people who can be seated.
- The high temperature will be at least 75°F today. Let  $t$  = high temperature.
- For a certain swim meet, a competitor must swim faster than 23 seconds to qualify. Let  $s$  = the number of seconds.
- For a touch-typing test, a student must type at least 65 wpm to receive an "A." Let  $w$  = words per minute.
- No more than 10 people may use the treadmills at any time in the gym. Let  $n$  = the number of people.
- The class can contain at most 34 students. Let  $s$  = the number of students.
- To train for a marathon, a runner decides that she must run at least 12 miles each day. Let  $d$  = the number of miles.

**Problems 8 – 11:** 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.

- Identify the expression representing the input value, the output value, the  $y$ -intercept, and the rate of change for the function.

Input value: \_\_\_\_\_ Output value: \_\_\_\_\_

$y$ -intercept: \_\_\_\_\_ Rate of change: \_\_\_\_\_

Use the graph of the function to determine the number of tickets Elena must sell to earn each amount. Graph each solution on the number line. Refer to the 2.3 examples "Representing Inequalities on a Number Line" and "Representing Inequalities on a Coordinate Plane" in the Chapter 2 Summary.

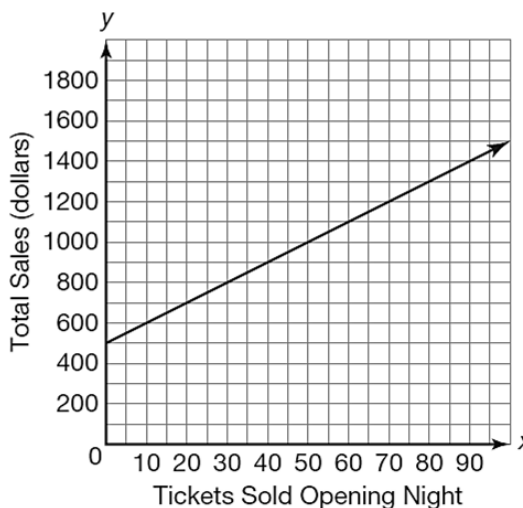
- At least \$1000



- Less than \$800



- Exactly \$1400

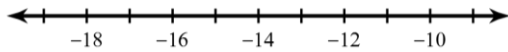


Write and solve an inequality to answer the question. Refer to the 2.3 example "Writing & Solving Inequalities" in the Chapter 2 Summary.

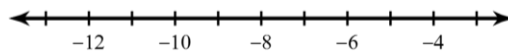
12. Leon plays on the varsity basketball team. So far this season he has scored a total of 52 points. He scores an average of 13 points per game. The function  $f(x) = 13x + 52$  represents the total number of points Leon will score this season. How many more games must Leon play in order to score at least 117 points?

Solve each inequality and graph the solution set. Refer to the 2.3 example "Solving an Inequality with a Negative Rate of Change" in the Chapter 2 Summary.

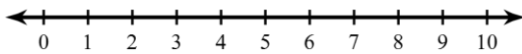
13.  $-4m - 5 \geq 63$



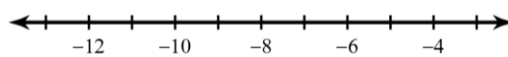
15.  $-10b + 8b < 20$



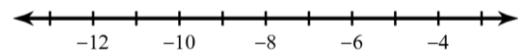
17.  $-4y - 8y < -24$



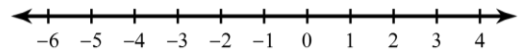
19.  $6(-9a - 10) < 426$



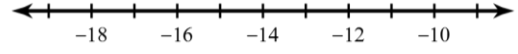
14.  $6 - 5w > 31$



16.  $6x - 9x \leq 15$



18.  $-2 - 8d + 6d \geq 18$



20.  $-6(9k - 8) > -330$

