Chapter 1: Function Sense   Activity 1.15 – How Long Can You Live?

Learning Objectives

1. Solve linear inequalities in one variable numerically and graphically.
2. Use properties of inequalities to solve linear inequalities in one variable algebraically.

3. Solve compound inequalities algebraically.
4. Use interval notation to represent a set of real numbers described by an inequality.

Practice Exercises

1. *Express each inequality in interval notation.*

   a. $x < 14$ **b.** $x \geq -5$ **c.** $-2.4 < x \leq 13$ **d.** $-100 \leq x \leq 100$

2. *Express each interval as an inequality.*

   a. $[-5, 9)$ **b.** $(6, \infty)$ **c.** $(-\infty, 2]$ **d.** $(-8.2, -4)$

3. *Solve each inequality algebraically.*

   a. $5x > 35$ **b.** $8x < -48$ **c.** $4 - 3x \geq 19$

   d. $6 - 5x \geq -14$ **e.** $1 - 2x < -5$ **f.** $7 - 4x < 15$

   g. $x + 8 \leq 4x - 7$ **h.** $6x - 5 > 2x + 11$ **i.** $-1 < 2x - 3 < 5$

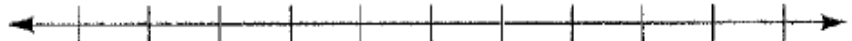**j.** $-8 < \frac{x}{3} - 1 < 4$ **k.** $4 \leq 3x + 1 \leq 19$ **l.** $8 \leq 2 - x \leq 21$
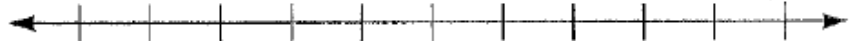
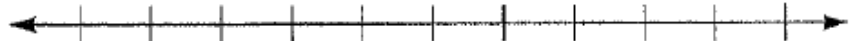**4.** *Graph each interval on a number line:*

a. (3, 8)

b. [-2, oo)
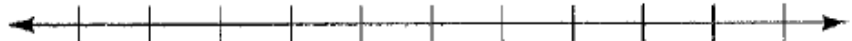
c. (-oo, 1)

d. (-4, 5]

Concept Connections

1. What three approaches are used to solve inequalities?

2. Explain the difference between open interval, half-open (or half-closed) interval, and a closed interval. Give an example of each.