

Challenge: Skills and Applications

For use with pages 346–352

1. If $a < x < b$ has no solution, what is the relationship between a and b ?
2. If the compound inequality $x < a$ or $x > b$ has every real number as a solution, what is the relationship between a and b ?
3. If $a < x < b$ and $c < 0$, write a true inequality for ac , cx , and bc .
4. Solve the inequality $-2 < 4x - 3\frac{1}{2} \leq 9$.
5. Graph the solution from Exercise 4.
6. Is $x = -1$ a solution to the inequality from Exercise 4?
7. Is $x = 2\frac{2}{3}$ a solution to the inequality from Exercise 4?
8. Solve the inequality $2.5x + 4 \leq 3.25$ or $3x - 7.3 > -4.6$.
9. Graph the solution from Exercise 8.
10. Is $x = -0.5$ a solution to the inequality from Exercise 8?
11. Is $x = 0.5$ a solution to the inequality from Exercise 8?

In Exercises 12–14, use the following information.

Two rivers combine to make another. The flow rate of the combined river is less than or equal to the sum of the flow rates of the two tributaries, but it is greater than or equal to either tributary's individual flow rate. One of the three rivers flows at a rate of 52 gallons per minute. Another flows at a rate of 38 gallons per minute.

12. Find the minimum flow rate f of the third river.
13. Find the maximum flow rate f of the third river.
14. Write an inequality that describes the possible flow rates f of the third river.