A.REI.B.3: Solving Linear Inequalities 1b

1. What is the solution to $2h + 8 > 3h - 6$?
2. What is the solution of $4x - 30 \geq -3x + 12$?
3. What is the solution of the inequality $-6x - 17 \geq 8x + 25$?
4. When $3x + 2 \leq 5(x - 4)$ is solved for $x$, the solution is
5. What is the solution of $3(2m - 1) \leq 4m + 7$?
6. The solution to $4p + 2 < 2(p + 5)$ is
7. The inequality $7 - \frac{2}{3}x < x - 8$ is equivalent to
8. The inequality $\frac{1}{2}x + 3 < 2x - 6$ is equivalent to
9. What is the solution to the inequality $2 + \frac{4}{5}x \geq 4 + x$?
10. Which inequality is shown on the accompanying graph?
11. Which inequality is represented in the graph below?
12. Which inequality is represented in the accompanying graph?
13. Which graph best represents the solution set for the inequality $x > \sqrt{2}$?
14. Which graph represents the solution set of $2x - 5 < 3$?
15. Which graph represents the solution set for $2x - 4 \leq 8$ and $x + 5 \geq 7$?
16. In order to be admitted for a certain ride at an amusement park, a child must be greater than or equal to 36 inches tall and less than 48 inches tall. Which graph represents these conditions?
17. On June 17, the temperature in New York City ranged from 90° to 99°, while the temperature in Niagara Falls ranged from 60° to 69°. The difference in the temperatures in these two cities must be between
18. Solve the inequality $-5(x - 7) < 15$ algebraically for $x$.
19. Solve the inequality below: $1.8 - 0.4y > 2.2 - 2y$
20. Solve algebraically for $x$: $3600 + 1.02x < 2000 + 1.04x$
21. Solve algebraically for $x$: $2(x - 4) \geq \frac{1}{2}(5 - 3x)$
22. Solve $\frac{3}{5}x + \frac{1}{3} < \frac{4}{5}x - \frac{1}{3}$ for $x$.
23. When $3a + 7b > 2a - 8b$ is solved for $a$, the result is
24. Given that $a > b$, solve for $x$ in terms of $a$ and $b$: $b(x - 3) \geq ax + 7b$
25. The manufacturer of Ron's car recommends that the tire pressure be at least 26 pounds per square inch and less than 35 pounds per square inch. On the accompanying number line, graph the inequality that represents the recommended tire pressure.

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Answer Section

1 ANS:
\[ h < 14 \]
\[ 2h + 8 > 3h - 6 \]
\[ 14 > h \]
\[ h < 14 \]

REF: 081607ai

2 ANS:
\[ x \geq 6 \]
\[ 4x - 30 \geq -3x + 12 \]
\[ 7x \geq 42 \]
\[ x \geq 6 \]

REF: 061406ia

3 ANS:
\[ x \leq -3 \]
\[ -6x - 17 \geq 8x + 25 \]
\[ -42 \geq 14x \]
\[ -3 \geq x \]

REF: 081121ia

4 ANS:
\[ x \geq 11 \]
\[ 3x + 2 \leq 5x - 20 \]
\[ 22 \leq 2x \]
\[ 11 \leq x \]

REF: 061609ai

5 ANS:
\[ m \leq 5 \]
\[ 3(2m - 1) \leq 4m + 7 \]
\[ 6m - 3 \leq 4m + 7 \]
\[ 2m \leq 10 \]
\[ m \leq 5 \]

REF: 081002ia
6 ANS:
\[ p < 4 \]
\[ 4p + 2 < 2p + 10 \]
\[ 2p < 8 \]
\[ p < 4 \]

REF: 061801ai

7 ANS:
\[ x > 9 \]
\[ 7 - \frac{2}{3}x < x - 8 \]
\[ 15 < \frac{5}{3}x \]
\[ 9 < x \]

REF: 011507ai

8 ANS:
\[ x > 6 \]
\[ \frac{1}{2}x + 3 < 2x - 6 \]
\[ 9 < \frac{3x}{2} \]
\[ 6 < x \]

REF: 010425a

9 ANS:
\[ x \leq -\frac{18}{5} \]
\[ 2 + \frac{4}{9}x \geq 4 + x \]
\[ -2 \geq \frac{5}{9}x \]
\[ x \leq -\frac{18}{5} \]

REF: 081711ai

10 ANS:
\[ x \geq -1 \]
\[ 10 \times 8 + \frac{1}{2} \pi \times 4^2 = 80 + 8\pi \]

REF: 080815a
11 ANS:
\[-4 \leq x < 2\]
REF: 060001a

12 ANS:
\[-3 < x \leq 4\]
REF: 080411a

13 ANS:
\[
\begin{array}{c}
\text{REF: 060616a}
\end{array}
\]

14 ANS:
\[
\begin{array}{c}
\text{REF: 011418ia}
\end{array}
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15 ANS:
\[
\begin{array}{c}
\text{REF: 010312a}
\end{array}
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16 ANS:
\[
\begin{array}{c}
\text{REF: 010610a}
\end{array}
\]

17 ANS:

20° and 40°
The greatest difference occurs when NYC’s temperature is 99° and Niagara Falls’ temperature is 60°. The maximum difference is less than 40°. The least difference occurs when NYC’s temperature is 90° and Niagara Falls’ temperature is 69°. The minimum difference is greater than 20°.

REF: 089910a

18 ANS:
\[-5(x - 7) < 15\]
\[x - 7 > -3\]
\[x > 4\]
REF: 061331ia
19 ANS:
1.8 − 0.4v ≥ 2.2 − 2v
1.6v ≥ 0.4
v ≥ 0.25

REF: 011727ai

20 ANS:
1600 < 0.02x
80000 < x

REF: 011925ai

21 ANS:
2(x − 4) ≥ \frac{1}{2} (5 − 3x)
4(x − 4) ≥ 5 − 3x
4x − 16 ≥ 5 − 3x
7x ≥ 21
x ≥ 3

REF: 011234ia

22 ANS:
\frac{2}{3} < \frac{x}{5}
\frac{10}{3} < x

REF: 081929ai

23 ANS:
a > −15b
a + 7b > −8b
a > −15b

REF: 061913ai
24 ANS:
\[ b(x - 3) \geq ax + 7b \]
\[ bx - 3b \geq ax + 7b \]
\[ bx - ax \geq 10b \]
\[ x(b - a) \geq 10b \]
\[ x \leq \frac{10b}{b - a} \]

REF: 011631ai

25 ANS:

REF: 060532a