ALBERT

Name _____ Date _____

Solving Linear Equations and Inequalities Worksheet

Algebra 1 · Common Core HSA-REI.B.3

> Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Practice

Builds the skill step by step.

1. Solve $5x - 3 = 22$.

2. Solve $2(x + 6) = 30$.

3. Solve $\frac{x}{3} + 4 = 10$.

4. Solve $3x + 2 > 14$.

   A. $x < 4$

   B. $x > 4$

   C. $x > \frac{16}{3}$

   D. $x < \frac{16}{3}$

5. Solve $7x + 4 = 3x + 24$.

6. Solve $-2x \leq 10$.

   A. $x \leq -5$

   B. $x \geq 5$

   C. $x \geq -5$

   D. $x \leq 5$

7. Solve $0.4x + 1.2 = 3.6$.

8. Solve $-4x + 9 = 1$.

9. Which number line graph shows $x \geq 2$?

   A. An open dot at 2, with the line shaded to the left

   B. An open dot at 2, with the line shaded to the right

   C. A closed dot at 2, with the line shaded to the right

   D. A closed dot at 2, with the line shaded to the left

10. Solve $ax = 12$ for x, where $a \neq 0$.

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On Level

Grade-level practice.

1. Solve $3(2x - 1) = 4x + 9$.

2. Solve $\frac{2}{3}x - 5 = 7$.

3. Solve $5 - 3x < 17$.

   A. $x < -4$

   B. $x > 4$

   C. $x < 4$

   D. $x > -4$

4. Solve $\frac{x + 4}{5} = \frac{x - 2}{3}$.

5. Solve $4(x - 2) - 2(x + 3) = 10$.

6. Solve $2(x + 3) \geq 5x - 9$.

   A. $x \leq 5$

   B. $x \geq 5$

   C. $x \leq -5$

   D. $x \geq -5$

7. Solve $ax - 5 = 3a$ for x, where $a \neq 0$.

8. Solve $1.5x + 2 = 0.5x + 9$.

9. Which inequality has the solution $x < 3$?

   A. $4x - 1 > 11$

   B. $-4x - 1 < -13$

   C. $-4x + 1 < -11$

   D. $4x - 1 < 11$

10. Solve $m(x + 2) = 5m + 4$ for x, where $m \neq 0$.

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Challenge

Multi-step and word problems that stretch it.

1. Solve $\frac{2x - 1}{3} - \frac{x + 2}{4} = 1$.

2. How many solutions does $3(x - 2) + 4 = 3x - 2$ have?

   A. None

   B. Exactly one, $x = 0$

   C. Infinitely many

   D. Exactly one, $x = 2$

3. How many solutions does $2(x + 5) = 2x + 7$ have?

   A. Exactly one, $x = 0$

   B. None

   C. Exactly one, $x = -1.5$

   D. Infinitely many

4. How many integers satisfy $-3 \leq 2x + 1 < 9$?

5. Solve $ax + b = cx + d$ for x, where $a \neq c$.

6. Jen solves $-5x + 3 > 18$ and writes $x > -3$. What is wrong?

   A. The answer should be $x < 3$.

   B. She didn't reverse the inequality sign when she divided by -5; the answer is $x < -3$.

   C. Nothing is wrong.

   D. The answer should be $x > 3$.

7. For what value of k does $4(x - k) = 2x + 6$ have the solution $x = 5$?

8. What is the greatest integer x that makes $7 - \frac{x}{2} > 3$ true?

9. Solve $\frac{3}{4}x - 2 = \frac{1}{2}x + 3$.

10. For what value of a does $2(ax - 1) = 6x + 5$ have no solution?