

Name _____
Reasoning with Equations and Inequalities

Algebra 1 Final Review 5
A-REI.1, A-REI.3, A-REI.4

1. Solve for x and name the properties used:

$$\frac{3}{4}(x + 2) = 6(x + 12)$$

2. Solve for x and name the properties used:

$$3(5 - 5x) > 5x$$

3. The equation $A = P + Prt$ relates the amount of money in an account, A , with the principal amount invested P , simple interest rate r , and length of the investment, t .
Solve this literal equation for P .

4. The formula $F = \frac{9}{5}C + 32$ gives the temperature in degrees Fahrenheit if you know the temperature in degrees Celsius. What is the formula for C in terms of F ? Use the formula to convert 86° F to Celsius.

5. Brian correctly used a method of completing the square to solve the equation $x^2 + 7x - 11 = 0$. Brian's first step was to rewrite the equation as $x^2 + 7x = 11$. He then added a number to both sides of the equation. Which number did he add?

(1) $\frac{7}{2}$

(3) $\frac{49}{2}$

(2) $\frac{49}{4}$

(4) 49

6. If $x^2 + 2 = 6x$ is solved by completing the square, an intermediate step would be

(1) $(x + 3)^2 = 7$

(3) $(x - 3)^2 = 11$

(2) $(x - 3)^2 = 7$

(4) $(x - 6)^2 = 34$

7. Solve $8m^2 + 20m = 12$ for m by factoring.

8. Solve: $6x^2 - 6 = 9x$.

9. Solve for x : $x + 6x + 49 = 2(5x + 59)$

10. The equation $3x + 4 = 5x - 4$ has the solution set $\{4\}$.

Explain why the equation $(3x + 4) + 4 = (5x - 4) + 4$ also has the solution set $\{4\}$.

11. Which ordered pair is *not* in the solution set of $y > -\frac{1}{2}x + 5$ and $y \leq 3x - 2$?

(1) $(5, 3)$

(2) $(4, 3)$

(3) $(3, 4)$

(4) $(4, 4)$

12. Write the equation $y = x^2 - 10x + 4$ in vertex form.

13. If the quadratic formula is used to find the roots of the equation $x^2 - 6x - 19 = 0$, the correct roots are

(1) $3 \pm 2\sqrt{7}$

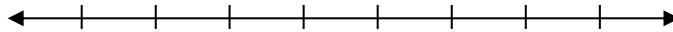
(3) $3 \pm 4\sqrt{14}$

(2) $-3 \pm 2\sqrt{7}$

(4) $-3 \pm 4\sqrt{14}$

14. The surface area of an object is the total area of its surfaces. For example, a cylinder has a top, bottom, and sides. The top and bottom are circles and the side is a rectangle when opened up. The formula to find the surface area, S , of a cylinder is $S = 2\pi r^2 + 2\pi rh$. Solve the equation for h .

15. Valley Video charges a \$15 annual membership fee plus \$3 for each movie rental. Tanya puts aside \$100 for renting movies for the year. How many movies can Tanya rent from Valley Video? Use an inequality to solve this problem. Graph your solution on the number line and explain the meaning of your graph in a sentence.



16. What is the larger root of the equation $x^2 - 10x + 21 = 0$.