

## Section 10.3 - Linear Equations

Name: \_\_\_\_\_ Class: \_\_\_\_\_

### Video Notes

#### Solving Equations

Steps to solving linear equations:

- 1.) Distribute.
- 2.) Clear any fractions by multiplying by the least common denominator.
- 3.) Combine like terms.
- 4.) Get all the variables on one side of the equation.
- 5.) Get all the constants on the other side of the equation.
- 6.) Multiply or divide to isolate x.

There is one solution when...

There is no solution when...

There are infinite solutions when...

Example:

$$\frac{3}{5}(2x - 1) = 3\left[\frac{1}{2}x + (-2)\right] + \frac{9}{2}$$

#### Real-World Example

Cab Company A charges \$2.00 plus an additional \$4.00 per mile. Cab Company B charges \$5.00 plus an additional \$3.00 per mile. At what distance, in miles, will both companies cost the same?

1.) Solve for  $x$ :  $72x + 436 = -96x + 1108$

2.) Solve for  $r$ :  $3(11r - 13) = -7r + 57 + 32r$

3.)  $0.4\left(2x + \frac{1}{2}\right) = 3[0.2x + (-2)] - 4$

4.) You have \$12.50 in a savings account. You deposit \$7.25 more each week. Your friend has \$32.50 in a savings account. She deposits \$5.25 more each week. In how many weeks will the amount of money in the accounts be equal?

5.) Solve for x:  $\frac{7}{9}x - 6 = 17$

6.) Craft club members pay \$39 a year plus \$9 for each craft kit. Non-members can buy craft kits for \$12 each. How many kits will have to be bought for the price of membership and non-membership to be equal?

7.) Solve for x:  $\frac{2}{3}x + 15 = \frac{4}{6}x + 15$

8.) Solve for  $x$ :  $4(18a - 7) + 40 = 3(4 + 24a)$

9.) Solve for  $x$ :  $7y - 9 = 18$

10.) Solve:  $\frac{2}{3}\left(9x - \frac{3}{2}\right) = x(0.45 + 2) + 7.52$