

## Lesson 7: Classification of Solutions

### Classwork

#### Exercises

Solve each of the following equations for  $x$ .

1.  $7x - 3 = 5x + 5$

$$\begin{array}{r} \cancel{-5x} \quad \cancel{5x} \\ \hline 2x - 3 = 5 \\ \quad +3 \quad +3 \\ \hline 2x = 8 \\ \quad \div 2 \quad \div 2 \\ \hline x = 4 \end{array}$$

Unique Solution — Different X's

one answer!

2.  $7x - 3 = 7x + 5$

$$\begin{array}{r} \cancel{-7x} \quad \cancel{-7x} \\ \hline -3 = 5 \\ \hline -3 \neq 5 \end{array}$$

No Solution — Same X's — d.iff. #'s

3.  $7x - 3 = -3 + 7x$

$$\begin{array}{r} \cancel{-7x} \quad \cancel{-7x} \\ \hline -3 = -3 \\ \hline -3 = -3 \end{array}$$

Infinite # of Solutions

— Same X's — Same #'s

$$\begin{aligned} 7x - 3 &= -3 + 7x \\ 7(6) - 3 &= -3 + 7(6) \\ 42 - 3 &= -3 + 42 \\ 39 &= 39 \end{aligned}$$

Give a brief explanation as to what kind of solution(s) you expect the following linear equations to have. Transform the equation into a simpler form if necessary.

4.  $11x - 2x + 15 = 8 + 7 + 9x$   
 $9x + 15 = 15 + 9x$

**Infinite Solutions** b/c both sides of the equation has the same X's and same numbers (constants).

5.  $3(x - 14) + 1 = -4x + 5$   
 $3x - 42 + 1 = -4x + 5$   
 $3x - 41 = -4x + 5$

Unique Solution

6.  $-3x + 32 - 7x = -2(5x + 10)$

7.  $\frac{1}{2}(8x + 26) = 13 + 4x$