# Equations with variables on both sides

Sections 3.11

# Agenda:

**Objective**: I can solve multi-step equations with variables on both sides!

- Warm Up: Practice WKS Circled Problems
- HW Review
- 3.1 – 3.3 Quiz
- 3.4 Solving Equations with Variables on both sides
- Classwork: pg 154 #4-11
- Homework: 3.4 A WKS #10-18

"Even if you're on the right track, you'll get run over if you just sit there."
-Will Rogers

# Warm Up

**Solve the equation.**

13. $3x + 8 = 32$

14. $5x - 4 = 21$

15. $2x + 3 = 11$

16. $3x - 1 = 8$

17. $5x - 20 = 5$

18. $2x + 5 = -2$

19. $-4 = \frac{1}{2}x + 3$

20. $\frac{2}{3}x + 11 = 7$

21. $\frac{2}{3}x - \frac{2}{3} = 0$

**Solve the equation by simplifying both sides and then using transformations to isolate the variable.**

22. $2x + 3x = 5$

23. $10x - 3x = 20 + 1$

24. $2(x - 4) = 2$

25. $\frac{1}{3}(x + 6) = 1$

26. $4 = \frac{2}{3}x + 9 + \frac{1}{3}x$

27. $14 = -2(4x + 5)$

28. $17 = 2(2x + 9)$

29. $5x - 8x = 18$

30. $2(x + 5) + 3x = 0$

# Solving for the variable

- **GOAL:** To get the variable by itself

- **Steps:**
  - Get the variable on one side (try to keep it positive)
  - "Undo" by performing the opposite operation
  - Follow the REVERSE of the order of operations

# Examples:

1. $2x + 4 = 6x$

2. $-5x + 3 = -12x$

3. $6a = -2(a - 2)$

4. $5m - 18 = -4m$

# Examples:

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

6. $2x + 2 = 5(x - 2)$

7. $7x - 8 = 7x - 5$

8. $12 + 5c = -4c - 6$

# Classwork

- Pg 157 # 4-11

- Wkst 3.4 A # 1-9

# Homework

- Wkst 3.4 A # 10-18