

Lesson 2.4- SWBAT solve multi-step equations.

Kickoff- Solve and check each of the following equations.

1) $41 - 2n = 2 + n$ Check
 $-2n + 2n$
 $39 = 3n$
 $13 = n$

2) $6x - 4 - 9x = -2x - 2$ Check
 $-3x - 4 = -2x - 2$
 $+4$
 $-3x = -2x + 2$
 $+2x$
 $-x = 2$
 $x = -2$

3) $3a + 9 = 3a + 9 = 6a$ Check
 $3a + 3 = 9 - 6a$
 $+6a$
 $+3 = 9$
No Solution

4) $7y - 3 = 3y + 8 + 4y$ Check
 $7y - 3 = 7y + 8$
 $-7y$
 $-3 = 8$
Many Solutions

$-6a = 6 - 6a$
 $+6a$
 $0 = 6$

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① $x = 1/2$

② Many Solutions

③ $x = 10$

④ $x = 4/3$

⑤ $x = 4$

⑥ $x = 6$

③ $6x - 7 = 8x - 13$
 -7
 $6x = 8x - 20$
 $-8x$
 $-2x = -20$
 -2
 $x = 10$

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Steps to Solving Equations

- Simplify both sides of the equal sign.
- Find inverse operation (addition/subtraction first)
- Perform the inverse operation.
- Draw a line and cross out what you can.
- Bring down everything else.
- Repeat!

Example: $2(-3a + 5) + 6 = -4a - 10$

$-6a + 10 + 6 = -4a - 10$
 $-6a + 16 = -4a - 10$
 $+10$
 $-6a + 26 = -4a$
 $+6a$
 $26 = 2a$
 $13 = a$ (one solution)

Check:
 $2(-3(13) + 5) + 6 = -4(13) - 10$
 $-62 = -62$ ✓

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Directions: Solve and check (if possible) each of the following equations.

1) $4m - 4 = 4m$ Check
 $-4m$
 $-4 = 0$
No solution

2) $-18 - 6k = 6(1 + 3k)$ Check
 $-18 - 6k = 6 + 18k$
 $16k$
 $-18 = 6 + 24k$
 -6
 $-24 = 24k$
 $-1 = k$

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3) $24a - 22 - 14a = -2(11 - 5a)$ Check
 $10a - 22 = -22 + 10a$
 $-10a$
 $-22 = -22$
Many solutions

4) $2(4x - 3) - 8 = 4 + 2x$ Check
 $8x - 6 - 8 = 4 + 2x$
 $8x - 14 = 4 + 2x$
 $-2x$
 $6x - 14 = 4$
 $+14$
 $6x = 18$
 6
 $x = 3$

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5) $3n - 5 = -8(6 + 5n)$ Check
 $3n - 5 = -48 - 40n$
 $43n = -53$
 $n = -53/43$

6) $-8 = -(x + 4)$ Check
 $-8 = -x - 4$
 $+4$
 $-4 = -x$
 $x = 4$

7) $p - 1 = 5p + 3p - 8$ Check
 $p - 1 = 8p - 8$
 $-7p = -7$
 $p = 1$

8) $-20 = -4x - 6x$ Check
 $-20 = -10x$
 $2 = x$

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9) $-(7 - 4x) = 9$ Check 10) $-5(1 - 5x) + 5(-8x - 2) = -4x - 8$ Check

11) $-6x - 5 = 25$ Check 12) $\frac{x+5}{2} = -44$ Check

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13) $-3(4x + 3) + 4(6x + 1) = 43$ Check 14) $10(1 + 3b) = -20$ Check

15) $5(2x + 6) = -4(-5 - 2x) + 3x$ Check 16) $-5n - 8(1 + 7n) = -8$ Check

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