

Name:

Key

Date:

Topic:

Class:

Main Ideas/Questions	Notes/Examples	
Multi-Step Equations (Variables on One Side)	Steps to Solve:	
	① Distribute (if needed).	
	② Combine Like Terms (if needed).	
	③ Solve the remaining equation.	
	④ Check your solution!	
Examples	Directions: Solve each equation. Check all solutions.	
	1. $2x - 8x + 1 = 49$ $\begin{array}{r} -6x + 1 = 49 \\ -1 \quad -1 \\ \hline -6x = 48 \\ \frac{-6x}{-6} = \frac{48}{-6} \\ x = -8 \end{array}$	2. $-19 = -5 - 3a - 11$ $\begin{array}{r} -19 = -3a - 16 \\ +16 \quad +16 \\ \hline -3 = -3a \\ \frac{-3}{-3} = \frac{-3a}{-3} \\ a = 1 \end{array}$
	3. $19 = 10 - 5w + 9w - 7$ $\begin{array}{r} 19 = 4w + 3 \\ -3 \quad -3 \\ \hline 16 = 4w \\ \frac{16}{4} = \frac{4w}{4} \\ w = 4 \end{array}$	4. $2k - 6 - 7 + 3k = -48$ $\begin{array}{r} 5k - 13 = -48 \\ +13 \quad +13 \\ \hline 5k = -35 \\ \frac{5k}{5} = \frac{-35}{5} \\ k = -7 \end{array}$
	5. $7(x - 6) = -14$ $\begin{array}{r} 7x - 42 = -14 \\ +42 \quad +42 \\ \hline 7x = 28 \\ \frac{7x}{7} = \frac{28}{7} \\ x = 4 \end{array}$	6. $16 = -2(k + 9)$ $\begin{array}{r} 16 = -2k + (-18) \\ +18 \quad +18 \\ \hline 34 = -2k \\ \frac{34}{-2} = \frac{-2k}{-2} \\ k = -17 \end{array}$
	7. $-52 = 4(3n - 1)$ $\begin{array}{r} -52 = 12n - 4 \\ +4 \quad +4 \\ \hline -48 = 12n \\ \frac{-48}{12} = \frac{12n}{12} \\ n = -4 \end{array}$	8. $-\frac{1}{2}(12p - 42) = -33$ $\begin{array}{r} -6p + 21 = -33 \\ -21 \quad -21 \\ \hline -6p = -54 \\ \frac{-6p}{-6} = \frac{-54}{-6} \\ p = 9 \end{array}$

$\frac{2}{3} = \frac{42}{14}$

9. $5(y-2) - 7y = -32$
 $5y - 10 - 7y = -32$
 $-2y - 10 = -32$
 $\quad +10 \quad +10$

 $-2y = -22$
 $\quad -2 \quad -2$

 $y = 11$

10. $-3 + \frac{2}{3}(6n - 42) = -51$
 $-3 + 4n - 28 = -51$
 $4n - 31 = -51$
 $\quad +31 \quad +31$

 $4n = -20$
 $\quad \frac{4}{4} \quad \frac{-20}{4}$

 $n = -5$

11. $57 = -3(4v + 1) + 2v$
 $57 = -12v + (-3) + 2v$
 $57 = -10v + (-3)$
 $\quad +3 \quad \quad +3$

 $60 = -10v$
 $\quad -10 \quad -10$

 $v = -6$

12. $7(3k - 2) - 13k = 82$
 $21k - 14 - 13k = 82$
 $8k - 14 = 82$
 $\quad +14 \quad +14$

 $8k = 96$
 $\quad \frac{8}{8} \quad \frac{96}{8}$

 $k = 12$

13. $-3 = -15 - 2(c - 1) - 3c$
 $-3 = -15 - 2c + 2 - 3c$
 $-3 = -5c - 13$
 $\quad +13 \quad \quad +13$

 $10 = -5c$
 $\quad -5 \quad -5$

 $c = -2$

14. $-18 = 5 - (6k - 19)$
 $-18 = 5 - 6k + 19$
 $-18 = -6k + 24$
 $\quad -24 \quad \quad -24$

 $-42 = -6k$
 $\quad -6 \quad -6$

 $k = 7$

15. $r - 3(r - 9) + 4 = 5$
 $r - 3r + 27 + 4 = 5$
 $-2r + 31 = 5$
 $\quad -31 \quad -31$

 $-2r = -26$
 $\quad -2 \quad -2$

 $r = 13$

16. $6(8 - 3x) - (2x + 1) = 107$
 $48 - 18x - 2x - 1 = 107$
 $-20x + 47 = 107$
 $\quad -47 \quad -47$

 $-20x = 60$
 $\quad -20 \quad -20$

 $x = -3$