

Math 9 Adapted Notes - LG 8
Solving One Step Equations - Addition & Subtraction



An = sign is kind of like a seesaw
 So remember, whatever you do to one side you need to do to the other.

Solve means we find the value of unknown number (variable)

Opposite operations:

- opposite of addition is _____
- opposite of subtraction is _____

$x + 3 = 5$	$g - 2 = 4$	$- 10 = 2 + j$	$- 5 = y - 7$
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We can use the same process with decimal numbers

$x + 3.2 = 5.7$	$g - 2.6 = 4.8$	$- 10.1 = 2.2 + j$	$- 58.3 = y - 7.8$
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ANSWERS

$x = 2$	$g = 6$	$j = - 12$	$y = 2$
$x = 2.5$	$g = 7.4$	$j = -12.3$	$y = - 50.5$

Solve each equation.

1) $x + 9 = 12$

2) $s - 1 = 10$

3) $3 = z - 11$

4) $5 + y = 7$

5) $8 = 2 + q$

6) $6 = n - 4$

7) $r - 2 = 5$

8) $6 = m + 6$

9) $p + 7 = 8$

10) $4 + a = 13$

1. $x = 3$	2. $s = 11$	3. $s = 14$	4. $y = 2$	5. $q = 6$
6. $n = 10$	7. $r = 7$	8. $m = 0$	9. $p = 1$	10. $a = 9$

Solve each equation:

1. $x - 8 = 4.2$	2. $S + 5.1 = 11.3$
3. $4.3 + s = 14.1$	4. $12.4 = 2.2 + y$
5. $8.3 = q - 12.6$	6. $n - 8.8 = 10.3$
7. $5.5 + r = 9.3$	8. $3.7 + m = 2.2$
9. $p + 9.1 = 9.1$	10. $7.43 + a = 3.67$

Check your work:

1. $x = 12.2$	2. $s = 6.2$	3. $s = 9.8$	4. $y = 10.2$	5. $q = 20.9$
6. $n = 19.1$	7. $r = 3.8$	8. $m = -1.5$	9. $p = 0$	10. $a = -3.76$

If you happen to solve and end up with a negative variable, the answer is the opposite.

Example: $2 - x = 8$

$$\begin{array}{r} -2 \\ -2 \end{array}$$

$$-x = 6 \quad \text{therefore} \quad x = -6$$

Try these:

1. $8 - x = 4$	2. $7 - p = 11$
3. $4 - s = 14$	4. $12 = 2 - y$
5. $8.3 - q = -12.6$	6. $8.8 = 10.3 - n$
7. $5.1 - r = 9.7$	8. $3.7 - m = 2.2$

Check your work:

1) $x = 4$	2) $p = -4$	3) $s = -10$	4) $y = -10$
5) $q = 20.9$	6) $n = 1.5$	7) $r = -4.6$	8) $m = 1.5$

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Solving One Step Equations – Multiplication & Division

In algebra:

- multiplication looks like a number that is right beside the variable:
 $7p = 14$ means... 7 times $p = 14$

- fractions are division! $\frac{x}{2}$ is the same as $x \div 2$

Solve means we find the value of unknown number (variable)

Opposite operations:

- opposite of multiplying is _____
- opposite of dividing is _____

$5x = 15$	$8 = 2x$	$\frac{x}{3} = 10$	$\frac{x}{2} = 6$
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Evaluate the following:

1. $4p = 12$	2. $x \div 5 = 3$
3. $20 = 5x$	4. $\frac{x}{6} = 4$

Check your work:

1) $p = 3$	2) $x = 15$	3) $x = 4$	4) $x = 24$
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5. $-7v = -21$	6. $\frac{x}{2} = -6$
7. $p \div -10 = 3$	8. $25 = -5x$
9. $2 = \frac{x}{-9}$	10. $12 = -4x$
11. $8.4 = \frac{x}{1.9}$	12. $6.9 = 2.3f$
13. $2.4 = \frac{x}{-3.9}$	14. $-3.7 = 1.2d$
15. $-7.4v = 21.2$	16. $\frac{x}{-3.3} = -9.4$

Check your work:

5) $v = 3$	6) $x = -12$	7) $p = -30$	8) $x = -5$	9) $x = -18$	10) $q = -3$
11) $x = 15.96$	12) $f = 3$	13) $x = -9.36$	14) $d = -3.083$	15) $v = -2.86$	16) $x = 31.02$

******Ask your teacher for mini quiz 1******

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Solving Two Step Equations – Whole Numbers

Opposite of addition is _____ & the opposite of subtraction is _____.

Opposite multiplication is _____ & the opposite of division is _____.

When doing an inverse (opposite) operation we do it in the OPPOSITE order of BEDMAS! This means we do _____ before _____.

$+$ $-$ then $\times$ $\div$

Goal: to solve for x (will look like $x = \underline{\hspace{1cm}}$)

$4x - 2 = 10$	$15 = 2g + 3$	$2 + \frac{x}{3} = 17$	$-9 = \frac{y}{3} - 5$

ANSWERS

$x = 3$	$g = 6$	$j = -12$	$y = -12$
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Always check your work by substituting the answer back in the question:

$4x - 2 = 10$	$15 = 2g + 3$	$2 + \frac{x}{3} = 17$	$9 = \frac{y}{3} - 5$

Solve each equation.

1) $9c + 1 = 10$

2) $6y - 5 = 7$

3) $8 = 3a - 4$

4) $\frac{m}{5} + 9 = 11$

5) $13 + 7x = 27$

6) $17 - q = 6$

7) $3n - 14 = 22$

8) $1 + 2r = 35$

9) $42 + 5t = 2$

10) $4p - 3 = 17$

Check your work:

1) $c = 1$	2) $y = 2$	3) $a = 4$	4) $m = 10$	5) $x = 2$
6) $q = 11$	7) $n = 12$	8) $r = 17$	9) $t = 14$	10) $p = -8$

Try these:

$$(1) \quad -3x + 20 = -10 \qquad (2) \quad 25 + 10x = -55 \qquad (3) \quad -33 = 75 + 12x$$

$$(4) \quad 5 = \frac{x}{11} - 1 \qquad (5) \quad 8 = -6 - 2x \qquad (6) \quad \frac{x}{3} + 8 = 25$$

$$(7) \quad -8x + 61 = -35 \qquad (8) \quad 17 = \frac{x}{5} + 6 \qquad (9) \quad -6x - 21 = 27$$

Check your work:

1) $x = 10$	2) $x = -8$	3) $x = -9$	4) $x = 66$	5) $x = -7$
6) $x = 51$	7) $x = 12$	8) $x = 55$	9) $x = -8$	

ask your teacher for mini quiz 2

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Solving Two Step Equations – Distributive Property

Watch: https://www.youtube.com/watch?v=bonzMy_1vGs&t=2s



Review: $2(x+3)$

$$(5 - x)(6)$$

$$\frac{1}{2} (x - 4)$$

Use distributive property 1st and then solve. Remember to use the opposite order of operations.

Distribute

then

+ **-**

then

X ÷

$$2(x+1) = 8$$

$$3(2x + 4) = 18$$

$$20 = 4(2x-5)$$

Answers:

$$x = 3$$

$$x = 1$$

$x = 5$

Try these:

$20 = 2(x + 5)$	$6 = 3(y - 3)$
$12 = 4(z - 7)$	$22 = 2(r + 4)$
$30 = 15(e - 1)$	$4(d + 3) = 36$
$5(x - 1) = 0$	$3(2x + 4) = 36$

$6(2x - 3) = 6$	$5(2x - 20) = 0$
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Check your work:

$x = 5$	$y = 5$
$z = 10$	$r = 7$
$e = 3$	$d = 6$
$x = 1$	$x = 4$
$x = 2$	$x = 10$

Ask your teacher for the LG 8 quiz