

Warm up

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$$\frac{2}{3}x - 2 = 4$$

$\frac{2}{3}x$	-2	$= 4$
$(\frac{2}{3}x)$	(-2)	$(+2)$
$(\frac{2}{3}x)$	$(+2)$	$(+2)$

$$x = \frac{18}{2}$$

$$x = 9$$

$$\frac{x-3}{4} + 1 = 5$$

$\frac{x-3}{4}$	$+1$	$= 5$
$(\frac{x-3}{4})$	$(+1)$	(-1)
$(\frac{x-3}{4})$	(-1)	(-1)

$$x - 3 = 16$$

$$x = 19$$

$$\frac{x+2}{5} - 10x = 10 - 5x$$

$\frac{x+2}{5}$	$-10x$	$= 10 - 5x$
$(\frac{x+2}{5})$	$(-10x)$	$(+10x)$
$(\frac{x+2}{5})$	$(+10x)$	$(+10x)$

$$2 = 50 + 24x$$

$$-50 \quad -50$$

$$-48 = 24x$$

$$\frac{-48}{24} = \frac{24x}{24}$$

$$x = -2$$

Name:	Date:
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Topic:	Class:
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Main Ideas/Questions	Notes/Examples
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MULTI-STEP EQUATIONS
(Variables on Both Sides)

Steps to Solve:

- ① Simplify each side of the equation if needed. (Distribute/Combine)
- ② Use inverse operations to move variables to one side.
- ③ Solve the remaining equation.
- ④ Check your solution!

EXAMPLES

Directions: Solve each equation. Check all solutions.

1. $8x + 17 = 2x + 35$

$$\begin{array}{r|l} -2x & -2x \\ \hline 6x + 17 & 35 \\ -17 & -17 \\ \hline 6x & = 18 \\ \hline \frac{6x}{6} & = \frac{18}{6} \quad x = 3 \end{array}$$

2. $7k + 8 = 2k - 37$

$$\begin{array}{r|l} -7k & -7k \\ \hline 8 & -5k - 37 \\ +37 & +37 \\ \hline 45 & = -5k \\ \hline \frac{45}{-5} & = \frac{-5k}{-5} \quad k = -9 \end{array}$$

3. $m + 3 = 9m - 13$

$$m = 2$$

4. $-4y + 6 = -3y + 12$

$$y = -6$$

5. $6a + 40 = 2a$

$$a = -10$$

6. $5w - 29 = 55 - 2w$

$$w = 12$$

7. $5p - 11 = 13p - 43$

$$p = 4$$

8. $-50 - c = 5c - 2$

$$c = -8$$

<p>9. $-5x - 16 + 3x = -23 - 9x$</p> $\begin{array}{r l} -2x - 16 & -23 - 9x \\ +2x & +2x \\ \hline -16 & -23 - 7x \\ +23 & +23 \\ \hline \end{array}$ <p>$x = -1$</p> $\frac{7}{-7} = \frac{-7x}{-7}$	<p>10. $6r - 5 = 1 + 8r - 24$</p> <p>$r = 9$</p>
<p>11. $9a - 7a = 3a - 33 + 2a$</p> <p>$a = 11$</p>	<p>12. $-5 + 7m - 20 = 20 - 2m$</p> <p>$m = 5$</p>
<p>13. $4(k - 2) = 2(k - 9)$</p> $\begin{array}{r} 4k - 8 = 2k - 18 \\ -2k \quad -2k \\ \hline 2k - 8 = -18 \\ +8 \quad +8 \\ \hline 2k = -10 \\ \frac{2k}{2} = \frac{-10}{2} \\ k = -5 \end{array}$	<p>14. $-6(n - 3) = 5(4 - n)$</p> <p>$n = -2$</p>
<p>15. $-8(p + 2) + p = 4(p + 3) + 5$</p> <p>$p = -3$</p>	<p>16. $-\frac{1}{2}(12v - 20) + 4 = -12 - 8v$</p> <p>$v = -13$</p>

Tasks for Today ~ Review equations and combine like terms expressions

1~ complete the google form multistep equations p.48

2~ combine like terms walkabout p.49

3~ multistep equations riddle ws

SET 3 ONLY for homework

*** Quiz Monday

RIDDLE: What happened to the plant in math class?

Directions: Solve each equation. Show all work on a separate sheet of paper. After completing each set, find matching answers. One will have a letter and the other a number. Write the letter in the matching numbered box at the bottom of the page.

SET 1	
S. $5(x - 1) = 35$ _____	10. $2(2x - 9) = 38$ _____
R. $40 = 15 - 9x - 2$ _____	7. $3x - 1 - 7x = -33$ _____
A. $-2(x - 5) - 4 = -22$ _____	16. $-41 = -18 - (3 - 4x)$ _____
O. $-13 = 4(5x - 1) - 11x$ _____	4. $6(x - 1) - x = -21$ _____
T. $4 - 2(3x + 1) = 32$ _____	14. $24 = 28 - 9x + 13x$ _____
SET 2	
G. $7n + 15 = 5n - 9$ _____	9. $9n - 14 = 5n + 58$ _____
S. $-4n - 1 = 2n - 25$ _____	1. $18 - 4n = 2n + 60$ _____
R. $16 - 2n = n - 11$ _____	5. $2n + 23 = -19 - n$ _____
I. $-15 - 5n = 3n + 41$ _____	17. $-3n - 16 = 4n - 44$ _____
U. $n - 26 = 28 - 2n$ _____	3. $-5n - 34 = 14 - n$ _____
E. $11n + 23 = 6n - 47$ _____	13. $-6n + 5 = 2n - 67$ _____
SET 3	
W. $2(3a + 5) = 2a + 54$ _____	15. $18a - 9 = 5(2a + 3)$ _____
E. $4 - 7a = 3 - a + 13$ _____	11. $16 - 5a + 2a - 1 = 41 - a$ _____
Q. $5(2a - 3) = 3(a - 19)$ _____	2. $4(2a - 9) = 5(3a - 7) - 1$ _____
T. $3(4 - a) = 2(a + 6)$ _____	12. $7(3a + 4) = 11(a - 1) + 19$ _____
R. $8 - (2a + 7) = a + 40$ _____	6. $\frac{1}{2}(8a - 20) = 2(a + 6)$ _____
O. $-2(6a - 1) = -\frac{5}{3}(3a + 15) + 6$ _____	8. $6a + 34 = 3 - (2a + 17)$ _____

ANSWER:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	!
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