Name: Date:

WORKSHEET :

One, Two, Multistep Equations

Solve the Equations

1) $-5 = 3 + f$

2) $6 = 7 + n$

3) $k - 6 = 13$

4) $12 = 2v$

5) $60 = 5a$

6) $-5h = 30$

7) $\frac{x}{7} = -8$

8) $12 = \frac{r}{6}$

9) $6s = -36$

10) $4 = c - 4$

WORKSHEET :

One, Two, Multistep Equations

Solve the Equations

Round your answers to the nearest hundredth if needed.

1) $\frac{7}{8}r + 14 = -29$

2) $\frac{f + 27}{-19} = -11$

3) $\frac{28 - z}{5} = -6$

4) $\frac{a + 16}{27} = -6$

5) $\frac{23 + v}{19} = -4$

6) $\frac{11 - n}{-6} = 25$

7) $\frac{d - 7}{-24} = -19$

8) $\frac{h - 18}{10} = -14$

9) $\frac{29 + b}{-10} = 25$

10) $-13 - 22x = 10$

WORKSHEET :

One, Two, Multistep Equations

Solve the Equations

Round your answers to the nearest hundredth if needed.

1) $-31 = -3y + 8y$

6) $9(5x + 7) = 26 + 6x$

2) $-3a + 5a = 24$

7) $-35 - 8r = -6(9r + 7)$

3) $21 = -8(4h - 6)$

8) $-2(6v + 9) = 23$

4) $-6f + 5 - 4f = 16$

9) $-7b + 3 - 4 = 25$

5) $8(7 - 4d) = -16$

10) $7 - 2(1 + 5z) = -20$

ANSWERS :

One, Two, Multistep Equations

Solve the Equations

1) $-5 = 3 + f$

$f = -8$

2) $6 = 7 + n$

$n = -1$

3) $k - 6 = 13$

$k = 19$

4) $12 = 2v$

$v = 6$

5) $60 = 5a$

$a = 12$

6) $-5h = 30$

$h = -6$

7) $\frac{x}{7} = -8$

$x = -56$

8) $12 = \frac{r}{6}$

$r = 72$

9) $6s = -36$

$s = -6$

10) $4 = c - 4$

$c = 8$

ANSWERS :

One, Two, Multistep Equations

Solve the Equations

Round your answers to the nearest hundredth if needed.

1) $\frac{7}{8}r + 14 = -29$

$r = -49.14$

6) $\frac{11 - n}{-6} = 25$

$n = 161.00$

2) $\frac{f + 27}{-19} = -11$

$f = 182.00$

7) $\frac{d - 7}{-24} = -19$

$d = 463.00$

3) $\frac{28 - z}{5} = -6$

$z = 58.00$

8) $\frac{h - 18}{10} = -14$

$h = -122.00$

4) $\frac{a + 16}{27} = -6$

$a = -178.00$

9) $\frac{29 + b}{-10} = 25$

$b = -279.00$

5) $\frac{23 + v}{19} = -4$

$v = -99.00$

10) $-13 - 22x = 10$

$x = -1.05$

ANSWERS :

One, Two, Multistep Equations)

Solve the Equations

Round your answers to the nearest hundredth if needed.

1) $-31 = -3y + 8y$

$y = -6.20$

2) $-3a + 5a = 24$

$a = 12.00$

3) $21 = -8(4h - 6)$

$h = 0.84$

4) $-6f + 5 - 4f = 16$

$f = -1.10$

5) $8(7 - 4d) = -16$

$d = 2.25$

6) $9(5x + 7) = 26 + 6x$

$x = -0.95$

7) $-35 - 8r = -6(9r + 7)$

$r = -0.15$

8) $-2(6v + 9) = 23$

$v = -3.42$

9) $-7b + 3 - 4 = 25$

$b = -3.71$

10) $7 - 2(1 + 5z) = -20$

$z = 2.50$

KEY CONCEPTS:

Learn the basic approaches to solving one, two, and multistep equations. Equations are expressions that equal each other in value connected by the "=" symbol.

1. Any operation performed on one side of an equation must be performed on the other side also to maintain equality. The objective of most any solution is to isolate a particular variable as equal to a value or expression. e.g. $x = 10$. In order to isolate the variable it is essential to undo all the various operations that transformed the variable to more complex expressions.

2. Typical operations performed on both sides of an equation to undo the complexity of an expression and isolate a single variable on one side of the equation include....

a. **Multiplication (Clean up fractions/denominators)** - multiply both sides of the equation by the expression in the denominator to eliminate any fraction formats.

e.g. $4/x = 12$ multiply both sides by the denominator
$x(4/x) = x(12)$
$4 = 12x$

b. **Addition/Subtraction** - add or subtract a constant from both sides to eliminate constants on the same side as the variable.

e.g. $x + 12 = 50$ subtract 12 from both sides
$(x + 12) - 12 = (50) - 12$
$x = 38$

c. **Division** - divide by the coefficient of the variable

e.g. $5x = 10$ divide both sides by the coefficient 5
$(5x)/5 = (10)/5$
$x = 2$

d. **Square/Square Root** - Undo a square by taking the square root or vice versa.

e.g. $16x^2 = 100$ take the square root of both sides
$\sqrt{16x^2} = \sqrt{100}$
$4x = 10$

e. **Exponent/Base** - Undo the exponent-base relation

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e.g. $2^{5x + 5} = 2^{10}$ both sides are exponents of 2 so restate as
$5x + 5 = 10$

3. Avoid typical mistakes that do not follow PEMDAS or otherwise cannot be performed.

e.g. $2(x - 10) = 50$

$\underline{\quad +10 \quad +10}$

$2x = 60$ NOT CORRECT (must evaluate parentheses 1st then multiplication 2nd)

$(2x - 20) + 20 = (50) + 20$

$2x = 70$ CORRECT

e.g. $\frac{x+y}{y} \neq x + 1$ The x + y over the fraction bar has an assumed parentheses which must be evaluated 1st so division cannot act on only one variable in the binomial. It must divide the entire expression.

4. Always plug the numerical result back into the original equation and check its validity. It is possible to have no solutions or many solutions as well as one solution for any equation.

e.g. $4x - 10 = 6x - 2(x - 5)$

$4x - 10 = 4x + 10$

$-10 \neq 10$

NO SOLUTION

** TEACHER'S NOTE **

Mastery of basic algebra and the ability to solve equations is a critical foundation for doing well on the exam. Make certain every student demonstrates ability to execute all the problem types contained in this lesson module and others in the lesson category. Often students will indicate they understand, but that is simply not true in practice unless they can demonstrate ability to correctly solve the problems on their own accord.