Name: **Key**   Date: **Feb 10th**

Checking Solutions of Equations

1. An __equation__ is a mathematical sentence that shows that two expressions are equal using an __equals__ sign.
2. It is always important to check if a value makes an equation __true__ or __false__
3. A __solution__ of an equation is a value that makes the equation __true.__
4. To check if a value is a solution, __substitute__ the value in for the variable.
5. Then __evaluate__ it.
6. Make sure that __both__ __sides__ of the equation are equal.
7. The symbol __$\neq$__ means "is not equal to"
8. Find out whether the given value is a solution. Show all of your work!

$3 + g = 15 : g = 12$ $3 + (12) \overset{?}{=} 15$ $15 = 15 \checkmark$ 12 is a Solution	$k - 4 = 15 : k = 11$ $(11) - 4 \overset{?}{=} 15$ $7 \neq 15$ 11 is not a solution
$\dfrac{m}{4} = 5 : m = 20$ $\dfrac{(20)}{4} \overset{?}{=} 5$ $5 = 5 \checkmark$ 20 is a solution	$24 = 6f : f = 3$ $24 \overset{?}{=} 6(3)$ $24 \neq 18$ 3 is not a Solution

Practice: Checking Solutions of Equations

Name:_____ Date:_____

Find out whether the given value is a solution. Show all of your work!

#1	#2
$6m = 36 : m = 6$	$k + 4 = 25 : k = 29$
$6(6) \overset{?}{=} 36$	$(29) + 4 \overset{?}{=} 25$
$36 = 36 ✓$	$33 \neq 25$
6 is a solution	29 is not a solution

#3	#4
$\dfrac{d}{7} = 7 : d = 14$	$n - 13 = 24 : n = 11$
$\dfrac{(14)}{7} \overset{?}{=} 7$ 14 is not a solution	$(11) - 13 \overset{?}{=} 24$
$2 \neq 7$	$-2 \neq 24$
	11 is not a solution

#5	#6
$75 = 3t : t = 25$	$20 = p - 4 : p = 16$
$75 \overset{?}{=} 3(25)$	$20 \overset{?}{=} (16) - 4$
$75 = 75 ✓$	$20 \neq 12$
25 is a solution	16 is not a solution

#7	#8
$23 + n = 50 : n = 73$	$36 = 12r : r = 3$
$23 + (73) \overset{?}{=} 50$	$36 \overset{?}{=} 12(3)$
$96 \neq 50$	$36 = 36 ✓$
73 is not a solution	3 is a solution

Writing Equations

1. An ___equation___ is a mathematical sentence that shows that two expressions are ___equal___ using an equal sign.

2. An equal sign shows that ___both___ sides of an equation have the same value.

3. Some examples of equations are:

$$3 + 2 = 5 \qquad 4x + 2 = 19$$

4. When writing equations, key words to look for are:

"is"   "equals"   "the same as"

5. Write each word sentence as an equation:

The sum of a number g and 6 is 54.	A number k decreased by 10 is 12.
$g + 6 = 54$	$k - 10 = 12$
The quotient of h and 12 is 4.	45 is the product of a number n and 15.
$\frac{h}{12} = 4 \qquad h \div 12 = 4$	$45 = 15n \qquad 45 = 15 \cdot n$ $45 = 15(n)$

$12\overline{)h}$

6. You can write ___equations___ to help you solve real-life problems.

7. When writing an equation from a real-life situation, it is important to ___define___ the variable.

8. Together, you and a friend have $75. Your friend has $45. Write an equation that you can use to find how much money you have.

Variable: let x = the amount of money you have

Equation:

$$75 = 45 + x \qquad \text{ALL correct} \qquad 75 = x + 45$$

$$x = 75 - 45 \qquad\qquad x + 45 = 75$$

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Practice: Writing Equations

Write an equation for each situation. Define the variable if necessary.

#1	#2
14 greater than a number g is 32	The product of 32 and f is 64
$14 + g = 32$	$32f = 64$
$g + 14 = 32$	$32 \cdot f = 64 \qquad 32(f) = 64$

#3	#4
50 is the same as the quotient of p and 10.	30 is equal to 25 less than k.
$50 = p \div 10$	$30 = k - 25$
$50 = \dfrac{p}{10}$	

#5 The Coners family is going on a 250 mile road trip. The first day they drive 100 miles. Write an equation that can be used to find the number of miles remaining.	#6 Mrs. Cooper has a jar of candies. She wants to split them into 25 equal groups. There are 30 candies in each group. Write an equation that can be used to find the total number of candies.
$100 + m = 250$ OR $250 - m = 100$ OR $250 - 100 = m$	$\dfrac{c}{25} = 30$ $c = 30 \cdot 25$ $\dfrac{c}{30} = 25$

[Equivalent Equations]