

Chapter 3: Solving Equations

Steps to solve an equation:

- 1st: Simplify each side of the equation
- 2nd: Decide which side you want the variable to be on
- 3rd: Using inverse operations, move the variable to that side.
- 4th: Once the variable is on one side, decide which operation would be done last in the order of operations if you were trying to evaluate that expression. Undo it by using its inverse operation with the number.
- 5th: Continue working backwards from the order of operations using inverse operations until the variable is alone. ("Alone" means only positive one multiplying/dividing the variable and nothing adding/subtracting it.)

Rules to solving equations:

- ◆ Both sides must be completely simplified before you can start solving.
- ◆ Always work down. Never work across.
- ◆ Decimals can only be used if there are decimals in the equation or you are working with money.
- ◆ You must work with improper fractions only, never with mixed numbers!
- ◆ Solutions must be written in { }'s and boxed/highlighted or circled.
- ◆ Fractional solutions must be reduced or changed into mixed numbers.
- ◆ Anytime there is a fraction, your first step after simplifying must be getting rid of the denominator.
- ◆ Multiplying by negative one or dividing by negative one will change negative x into positive x .

Rules to check equation:

- ◆ In the ORIGINAL equation, replace the variable with the solution. (If the solution is a mixed number, use the improper fraction because we never work with mixed numbers.)
- ◆ Using the order of operations and working down, simplify the left hand side (LHS).
- ◆ Using the order of operations and working down, simplify the right hand side (RHS).
- ◆ Once both sides have been simplified down to a number, the type of statement determines whether the answer you got is the solution:
 - A true statement ($LHS = RHS$) means your answer is the solution so box it and go on.
 - A false statement ($LHS \neq RHS$) means you have made an error and you have to go back and redo.
- ◆ Remember you are not using the order of operation if you:
 - Use equation solving techniques while checking.
 - Use the distributive property while checking. [You only distribute when you can't simplify what is in the parentheses. Since you will only have numbers, you should be able to simplify the parentheses.]

Define in notes **by** the date specified:

- q Equivalent equations, Addition Property of Equality, Subtraction Property of Equality (3-1)M 9/19
- q Multiplication Property of Equality, Division Property of Equality (3-2) Tu 9/20
- q Identity, No Solution (3-5) F 9/23