MATH: SOLVING EQUATIONS FOR X TO FIND SIMPLE FORMULAS

Overview	Students will learn the simple steps for solving for the value of X. Show the students how to take steps to solve for simple equations, such as area and perimeter.
Objective	After teaching, and then reviewing, each student should understand how a number can be subbed into a formula, and why the values work the way they do.
ISTE/NETS Standards	**2. Design and Develop Digital-Age Learning Experiences and Assessments**
Materials	Teacher: Chalk Board, Chalk, and Power point program attached with this lesson plan. Student: Notebook and Pencil with Eraser

Procedure	• **1:** Review Solving for X. Make sure all steps are demonstrated clearly.
	Ex. x+4=8 Answer: x=4
	   2x+12=16 Answer: x=2
	   1/3x-8=4 Answer: x=4
	
	• **2:** Review solving for a specific variable in a formula.
	Ex. Solve for c: 2a+c=12
	   Answer: c=12-2a (Make sure to point out when moving the variable over, since will be solving for c, (2a) is considered to be one whole variable).
	   Solve for g: 3g-12f=18
	   Answer: g=6+4f (Point is that you still must get the variable 'g' by itself. So must divide 3 into both 12f, and 18. The f remains but you still take 3 into 12, leaving an answer of 4).
	   Solve for t: 2t+6r-4j=7+4r
	   Answer: t= (7/2) +2j-r (Let it be understood that you group together common letters when moving over, for example, r, and it is okay to have fractions in your answer. Make sure you keep dividing each variable and number if there is a number on the variable that you are solving for).

Procedure	- **3:** Show the relationships in equations with the methods used above.
	Ex. Area of Square: A=BH- (In A=area, B=base, H=height)
	 -In solving for each either A, you would use the base x height. A=bh
	 -In solving for base when given the height and area you do area÷height.
	 -In solving for the height when given the area and base it is area÷base.
	Now Solve for each variable giving a value for each.
	   1. Solve for area: Base=8; Height=3
	     A=BH; A=8x3; A=24
	     (Make sure to draw a picture of a box)
	   2. Solve for Base: Area=36; Height=4
	     B=A/H; B=36/4; B=9
	   3. Solve for Height: Area=52; Base=3
	     H=A/B; H=52/3; H=14
	     *Make sure students understand how each variable I solved for, and how numbers sub in for variables when being solved for.
	
	- **4:** In solving for Perimeter of a square.
	Ex. Perimeter of square is solved by P=2L+2W (P=Perimeter, L=Length, W=width)
	  -Above was solved for the area, length, and width. The same can be used for the perimeter, length and width.
	   -The equations are as followed:
	$$P=2L+2W$$
	$$L=1/2P-2W$$
	$$W=1/2P-2L$$
	  -To find Perimeter, Length, or Width, simply use the numbers you are given and plug in for the letter as done for area.
	Ex. Solve for the Perimeter. Length=12 Width=5
	    P=2(12)+2(5) :Make sure you use order of operations
	    P=24+10: The Perimeter is thus 34.
	-Have it be recognized that like in area you can reverse the order so that you are solving for either Length or Width using the equations above. (Don't need to show since it was already proven above.)
	- After following this procedure a teacher could also use the power point that was made to go along with this lesson plan.

Evaluation	- In order to find out if the students have grasped the concept, I will give them a short quiz in which they have to manipulate the volume of a square as I did for the area and the perimeter of a square. - So the answer to the quiz will be the following: Volume=Length x Width x Height Length= (Volume)/(Width x Height) Width= (Volume)/(Length x Height) Height=(Volume)/(Length x Width) - This quiz will prove whether or not the student grasped the concept.