Term 1	Definition 1
When would you use Substitution to solve Simultaneous Equations?	**When one variable can be easily expressed in terms of the other**
Term 2	Definition 2
When would you solve 2 simultaneous equations by Combination?	**Whenever it's easy to manipulate the equations so that the coefficients for one variable are the SAME or OPPOSITE**
Term 3	Definition 3
If you plan to ADD 2 simultaneous equations to solve by combination, what should you do?	**Multiply ONE or BOTH of the equations so that the coefficient of a variable in one equation is the OPPOSITE of that variable's coefficient in the other equation**

Term 4	Definition 4
If you plan to SUBTRACT 2 simultaneous equations by combination, what should you do?	Multiply ONE or BOTH of the equations so that the coefficient of a variable in one equation is the SAME of that variable's coefficient in the other equation

Term 5	Definition 5
How would you solve 3 simultaneous equations with 3 variables in each?	Using substituion or combination, or both

Term 6	Definition 6
What's the sum of x, y and z ?: x + y = 8 x + z = 11 y + z = 7	x + y = 8 x + + z = 11 + y + z = 7 -------------------------------- 2x + 2y + 2z = 26 thus, x + y + z = 13 !

Term 7	Definition 7
What is the rule for determining whether 2 equations involving 2 variables (say, x and y) will be sufficient to solve for the variables?	**1) If both equations are LINEAR (i.e. no squared terms and no xy terms) - the equations are SUFFICIENT, *UNLESS* the two equations are MATHEMATICALLY IDENTICAL** **2) If there are ANY non-linear terms in either of the equations (i.e. x^3, xy or x/y), there will USUALLY be 2 more different solutions for each of the variables,and the equations will NOT be sufficient.**
Term 8	Definition 8
When solving 2 equations involving 2 variables, if both equations are LINEAR (i.e. no squared terms and no xy terms)... CAN you solve them? Why/Why not?	**YES** **If both equations are LINEAR (i.e. no squared terms and no xy terms) - the equations are SUFFICIENT to solve the question,*UNLESS* the two equations are MATHEMATICALLY IDENTICAL**
Term 9	Definition 9
2 equations with 2 variables have a non-linear term in one of the equations. Are they solvable? Why/Why Not?	**NO** **If there are ANY non-linear terms in either of the equations (i.e. x^3, xy or x/y), there will USUALLY be 2 more different solutions for each of the variables,and the equations will NOT be sufficient.**

Term 10	Definition 10
What should you do when you see a COMBO problem, i,e, asked to find the value of x + y ?	TRY to manipulate the given equation (s) so that the COMBO is isolated on one side of the equation. ONLY try to solve for the individual variables once you've exhausted all the other avenues.
Term 11	**Definition 11**
Term 12	**Definition 12**
What are the MADS manipulations in relation to solving most COMBO problems?	M Multiply/Divide by the WHOLE equation by a single number A Add/Subtract a number on BOTH SIDES of the equation D Distribute or factor an expression on ONE side of the equation S Square/Unsquare both sides of the equation

Term 13	Definition 13
To solve for a variable combo, what should you do?	**Isolate the combo on one side of the equation**
Term 14	**Definition 14**
In DS problems, when you detect that it may involve a combo, you should try to manipulate the equation(s) in either the question or the statement so that the combo is isolated on one side of the equation. Then, how do you tell if the equation is SUFFICIENT? What about NOT SUFFICIENT?	**Sufficient: The other side of an equation from a statement contains a VALUE.** **NOT Sufficient: The other side of the equation contains a VARIABLE EXPRESSION**
Term 15	**Definition 15**

Term 16	Definition 16
What are the 3 steps for solving ABSOLUTE VALUE EQUATIONS?	**1. ISOLATE the Absolute Value expression** **2. Once you have an equation of the form |x| = a and a>0 , you know that x = (+ -) a... Remove the absolute value brackets and solve the RHS of the equation for 2 DIFFERENT CASES.**

Term 17	Definition 17
Once we have an equation of the form |x| = a, and x>0, what do we know about x ?	**x = (+-) a**

Term 18	Definition 18
What rule is essential to follow when solving ABSOLUTE VALUE EQUATIONS?	**To make sure to solve for BOTH cases.**

Term 19	Definition 19
Why are EVEN EXPONENTS dangerous?	**Because they hide the sign of the base, and can have a POSITIVE and a NEGATIVE solution!**

Term 20	Definition 20
$x^2 = 25$ **$\lvert x \rvert = 5$** **What do these have in common? What rule to explain this?**	**In both cases, x = (+ -)5** **RULE: for any x, sqrt.(x) = $\lvert x \rvert$**

Term 21	Definition 21
Solve: **$x^2 + 9 = 0$**	**$x^2 = -9$** **Therefore x has NO SOLUTION (squaring can NEVER product a negative number!)**

Term 22	Definition 22
How many solutions does an equation with an odd exponent have?	**1 only**

Term 23	Definition 23
How would you solve problems that involve exponential expressions on BOTH sides of the equation ?	**REWRITE the bases so that either the same base, or the same exponent, appears on both sides of the exponential equation.** **THEN you can usually eliminate the bases or the exponents, writing what's left over as an equation...**

Term 24	Definition 24
$0^x = 0^y$ **so, x=y...** **True or false? Why?**	**FALSE** **Because for example $0^2=0^5=0^{11}$ etc.** **So, we can't claim that x = y**

Term 25	Definition 25
$1^a = 1^d$ so, a=d... True or false? Why?	FALSE Because for example $1^2=1^5=1^{11}$ etc. So, we can't claim that a = d

Term 26	Definition 26
When are you allowed to divide by a variable, (or ANY expression) ?	When you are absolutely sure the variable or expression <> 0

Term 27	Definition 27
Be careful not to assume that a quadratic equation always has _____ _____. Always _____ quadratic equations to determine their solutions. This will enable you to see whether a quadratic equation has ____ or ____ solutions.	Be careful not to assume that a quadratic equation always has <u>TWO SOLUTIONS</u>. Always <u>FACTOR</u> quadratic equations to determine their solutions. This will enable you to see whether a quadratic equation has <u>ONE</u> or <u>MORE</u> solutions.

Term 28	Definition 28
$x^2 - y^2 = ?$	$(x + y)(x - y)$
Term 29	**Definition 29**
$x^2 + 2xy + y^2 = ?$	$(x + y)(x + y) = (x + y)^2$
Term 30	**Definition 30**
$x^2 - 2xy + y^2 = ?$	$(x - y)(x - y) = (x - y)^2$

Term 31	Definition 31
$a^2 - 1 = ?$	$(a - 1)(a + 1)$
Term 32	**Definition 32**
$(a + b)^2 = ?$	$a^2 + 2ab + b^2$
Term 33	**Definition 33**
Solve: $a^2 + b^2 = 9 + 2ab$	Step 1. $a^2 + b^2 - 2ab = 9$ Step 2. $(a - b)^2 = 9$ Step 3. $a - b = (+ -)\ 3$ ... (important step!)

Term 34	Definition 34
$(x + y)^2 = x^2 + y^2$? TRUE or FALSE?	**FALSE** $(x + y)^2 = x^2 + 2xy + y^2$

Term 35	Definition 35
$(x - y)^2 = x^2 - y^2$? TRUE/FALSE?	**FALSE** $(x - y)^2 = x^2 - 2xy + y^2$

Term 36	Definition 36
Always try to ____ a quadratic equation before solving	Always try to FACTOR a quadratic equation before solving

Term 37	Definition 37

Term 38	Definition 38
At first glance, is the following solveable? Why/Why not? 70A + 5B = 63	No - because there are 2 variables and only one equation.

Term 39	Definition 39