

1. B
Break even is when profit is equal to zero. solving for this gives $x = 28$. The **break even point** is where the cost and profit functions intersect. Plug the x-value into the cost function to get the y-value of the point.

2. C

3. E

Time start with zero in 2000. Here is the information that should be typed into the calculator.

x	3	4	7	8
y	22	40	50	60

4. C

The solution for the system of equations is $x = 7$, $y = 0$, and $z = 4$. While these are three numbers they are one solution to the system of equations.

5. E

The points are $(6, 1500)$ and $(16, 1300)$.

6. A

7. This problem was omitted. After simplifying, you end up with the following.

$$\begin{bmatrix} A-2 & -6 \\ -2 & 3-2y \\ 5-2z & -8 \end{bmatrix} = \begin{bmatrix} 12 & 8 \\ 0 & 28 \\ 24 & 12 \end{bmatrix}$$

notice that the element in row 1 column 1 of both matrices are not equal so that is not any way to solve for the variable since the matrices are not equal.

8. B

Solve the system using rref and you get $x = 6.6$ and $y = 35.6$

9. B

10. A

Note: x is measured in hundreds of items and the question is asking for the number of items. i.e. multiple by 100 to get the number of items.

11. D

be sure to line up the variables in these equations and then use rref.

12. C

The points for the demand function are $(40, 200)$ and $(240, 150)$. The other points in the problem are for the supply equation.

13. D

14. A

15. B

16. C

17. D

The last row indicates that there is no solution. Also saying no solution means that there is no solution for all of the variables.

18. A

19. E

Solving $JX = K$ for the matrix X give $X = J^{-1}K$. Now compute $J^{-1}K$ using the calculator.

20. B

K is not a square matrix, so the inverse is not possible.

21. A

22. E

note $20 \leq z \leq 75$ is all numbers in this interval. since we are talking about apartments, we only want the integers.