**Algebra II: 3.2 Applications**

1. An artist formerly known as DJ Heezy is releasing a new CD. The record company will manufacture the basic CD plus a special promotional version to distribute to radio stations. No more than 10,000 CDs will be made, and the number of promotional CDs will be at most 20% of the number of basic CDs. Write and graph the system of inequalities that describes the possible number of each type of CD that is to be manufactured. Make sure to define the variables.
2. Ms Torrez works for a textbook company during the summer. She makes $35 per page to write the material and $25 per page to type it. Ms Torrez would like to earn at least $3500, but does not want more than 120 pages of work. Let x be the number of pages written and y be the number of pages typed. Write and graph the system of inequalities that represents the situation.
3. Noah works 40 hrs or fewer per week programming computers and tutoring. He earns $20 per hour programming and $10 per hour tutoring. Noah needs to earn at least $500 per week. Write a system of inequalities that describes the number of hours he works doing both. Graph the system, and then give a possible way Noah can divide his time and reach his goals. (IE, how many hours could he work programming and how many tutoring to meet his goal?)
4. Kendall the ticket officer sells reserved tickets and general admission tickets to a Metallica concert. The venue normally holds no more than 5000 people. There can be no more than 3000 reserved tickets and no more than 4000 general admission tickets. Write a system of inequalities that represents the number of each ticket Kendall can sell. Graph the system and give an example of the number of tickets sold that would satisfy the constraints. (IE, give an example of how many of each ticket Kendall can sell and not have the fire marshall come and say there are too many Metallica fans in the venue!)
5. Jaden traveled almost 350 miles in under 7 hrs of highway driving to go watch a cricket game. He stopped for a brief rest that was not included in his driving time. Jaden averaged 60mph for the first part of his trip and 50mph for the second part of his trip. Write and graph a system of inequalities that can be used to determine how many hours Jaden spent driving in each part of his trip.
6. Mathetropolis is a small community trying to establish a public transportation system of large and small vans. The town can spend no more than $100,00 for both sizes of vans and no more than $500 per month for maintenance. The community can purchase a small van for $10,000 and maintain it for $100 per month. The large vans cost $20,000 each and maintenance is $75 per month. Write and graph a system of inequalities that represents the amount of each size van that can be purchased with the given budget.