Math 99 Linear Inequalities

1. You can rent a moving truck from U-Haul for \$120 with unlimited mileage, or from V-Haul for \$65 plus \$1.25 per mile. Let m denote the number of miles you drive the truck. Find two functions, $f(m)$ and $g(m)$, that give the cost (in dollars) of driving the truck m miles, if you rent from U-Haul and V-Haul, respectively. Use your functions to determine for what mileages it would be cheaper to rent from U-Haul.

2. Uniform Medical Insurance has a yearly deductible of $\$3,000$, after which you pay 10% of your medical bills for the year. Blue Cross has a yearly deductible of $\$1,400$, after which you pay 15% of your medical bills for the year. Find functions, $f(c)$ and $g(c)$, that give your out-of-pocket expenses for the year (in dollars) if your annual medical bills total c dollars, under the Uniform and Blue Cross plans, respectively. Then use your functions to determine for what amounts of annual medical bills it would be cheaper have the Blue Cross plan. Assume the annual premiums are the same.

3. As an insurance agent, you are offered the choice of two commission scales. The first pays you 10% of all premiums on policies you sell, while the second pays 6% on the first $\$10,000$ of the premiums you collect, plus 20% of all additional premiums. Find function, $f(p)$ and $g(p)$, that give your total commission if you collect p dollars of premiums for the year. Then use your functions to determine for which sales amounts you would be better off with the first option.

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