1) If x denotes the sum of the numbers obtained when 2 dices are thrown obtain an upper bound for $P[|x-7| \geq 3] \leq \frac{35}{54}$ and compare this value with an exact probability.

2) A fair dice is tossed 600 times. Use Tchebycheff inequality to find a lower bound for the probability of getting 80 to 120 sixes.

3) A random variable x has pdf $f(x) = e^{-x}$; $x \geq 0$. Use Tchebycheff's inequality to show that $P[|x-1| \geq 1] \leq 1/4$. and show also that the actual probability is e^{-3}.