Confidence Intervals

Name:_____

A mobile needle exchange in Berkeley, California

Needle exchange programs are one of the main harm reduction measures that aim to curb the spread of blood-borne viruses such as HIV and Hepatitis C among injecting drug users (IDUs). Only 77 countries have needle exchange programs and, particularly in developing nations, these are often poorly funded and have low coverage rates.

In 2001, a sample of 412 NYC injecting drug users entering drug abuse treatment were tested for HIV. 54 of the 412 tested positive for HIV.
(Assume all conditions to use a normal model are satisfied)

Questions

1. Calculate $\hat{p}$, the proportion of IDUs in the sample who were HIV positive.

2. Calculate the standard error of $\hat{p}$.

$$\text{SE}_{\hat{p}} = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} =$$

3. Make a 98% confidence interval for p.

4. Complete the interpretation of the confidence interval.

   I am _____ that between _____ and _____ of all NYC injecting drug users in 2001 are HIV positive.

5. In 1990, the proportion of all injecting drug users in New York City who were HIV positive was 54%. Using your confidence interval, does 54% seem like a plausible value for the proportion of all NYC injecting drug users, in 2001, who are HIV positive. **Explain Your answer**.