Problem 1b:

b) Any measurement whose real value is 172.45 or above will be included as greater than or equal to 172.5. Any measurement that is measured as less than 175.85, will be included as less than 175.8. This is because the measurements are measured to the nearest tenth of a centimeter.
Now we can compute the bounds with z-values as:

$$\begin{aligned} Z &= \frac{X-\mu}{\sigma} \\ &= \frac{172.45-174.5}{1.38} \\ &= -1.49 \end{aligned}$$

Also,

$$\begin{aligned} Z &= \frac{X-\mu}{\sigma} \\ &= \frac{175.85-174.5}{1.38} \\ &= 0.98 \end{aligned}$$

Now,

$$\begin{aligned} P(174.45 < X < 175.85) &= P(-1.49 < Z < 0.98) \\ &= P(Z \leq 0.98) - P(Z \leq -1.49) \\ &= 0..8365 - 0.0681 \\ &= \mathbf{0.7684}. \end{aligned}$$

This number is the probability that one sample mean falls in the desired region. Then, the expected number of tests to succeed with this probability, in the 200 sample tests is: $(200)(0.7684) = 153.68$, which will be rounded up to **154**.