Question1 :

In the worse case, how many guesses would it our guessing game take to get the right answer if we had no hints at all? Explain.

The answer is 10 guesses. What we do is pick up the right one of ten numbers and its probabilities is ten.

The worse case is that we use *the simple search,* with each guess we are eliminating only one number. Then we traverse all numbers.

Question2 :

In the worst case, how many guesses does it take to get the right number if we get a hint of "higher or lower" when guessing numbers 1-10 and guess intelligently (always picking in the middle of the remaining set of numbers)?

The answer is 4 guesses.

The total of numbers (from1 to 10) is 10. We always pick in the middle of the remaining set of numbers(binary search) , the log base is 2, and we have to check log 10 elements in the worst case.

$2^3 = 8$; $2^4 = 16$;

The answer of $\log_2(10)$ is a float between 2 and 3. The guesses should be an integer.

So it takes 4 guesses to get the right number.