Graded Activity #11a: Fishing Problem

Use your understanding of probability distributions to solve the following problem:

If the lengths of trout in the Roaring Fork River are normally distributed with mean 15 inches and standard deviation 3.5 inches, and you are allowed a creel limit of four trout (the number of fish you are allowed to keep) within a slot limit (the length of the fish you are allowed to keep) of between 12 and 18 inches,

(a) In the decades that you have been fishing, you notice that you seem to catch a fish every 30 minutes. What is the probability that you go more than 60 minutes without catching a fish?
(b) What's the probability that you will catch your first fish in less than 10 minutes?
(c) What's the probability that you will catch your first fish in between 20 and 40 minutes?

(d) Suppose you catch one fish. What's the probability that the fish is within the slot limit?

(e) What is the probability that you will catch two or fewer fish before catching one that is within the slot limit? (Use part d answer)

(f) If you catch four fish, what's the probability that all four fish are within the slot limits? (Use your answer to part d)

(g) What is the probability of catching your fourth trout of the appropriate size on your seventh fish?

(h) How many fish do you expect to catch before you reach the creel limit of four trout of the desired length?

Note: Since you will catch and release the fish, you should consider this as sampling with replacement.