

Answers

1. We have an average rate here: $\lambda = 2$ errors per quiz. Hence, we are dealing with a Poisson distribution.
Answer: 0.1353
2. Again, average rate given: $\lambda = 0.5$ crashes/day = 3.5 crashes/week. Hence, Poisson.
Answer: 0.1850
3. We have a probability of having a defective bolt ($p=.1$) vs. not defective ($p=.9$) and we are looking for the probability of having 2 defective bolts out of 20 ($n=20$). Hence, we are dealing with a Binomial distribution.
Answer: 0.2852
4. We have a probability of a battery being faulty ($p = .02$) vs. not faulty ($q = .98$) and we are looking for the probability of having 2 faulty batteries out of 10 ($n=10$). Hence, we are dealing with a Binomial distribution.
Answer: 0.0153
5. Here we have an average rate of faults occurring of 8 per house. Hence, we are dealing with a Poisson distribution where $\lambda = 8$.
Answer: 0.0027
6. Here we have a probability of brass washers ($p=1/3$) and of washers that are not brass---i.e. steel--- ($q=2/3$) and we are looking for the probability of having 0,1, 2, 3 or 4 brass washers out of 4 ($n=4$). Hence, we are dealing with a binomial distribution.
P(0)=0.1975
P(1)=0.3951
P(2)=0.2963
P(3)=0.0988
P(4)=0.0123
P(0,1,2,3,4)=P(0)+P(1)+P(2)+P(3)+P(4)=1
7. Because we are asked for the probability of the basketball player's first success on the 4th shot, this will use the geometric distribution. $n=4$, $p=.26$, $q=.74$
Answer: 0.1054
8. Here we are asked for the probability of the first success to occur on the 2nd trial, so use the geometric distribution with $n = 2$, $p = .46$, $q = .54$.
Answer: 0.2484