

Question 22

The reliability of an electrical fuse is the probability that a randomly chosen fuse will function under the conditions for which it has been designed; in this case the reliability is known to be 0.98. What is the distribution of the number of defective fuses in a batch of size 1000, assuming independence from fuse to fuse?

If you wanted to use an approximation, and *not* the exact distribution what distribution would you use in order to calculate the approximate probability of observing 27 or more defective fuses in a random sample of 1000?

[3]

$$B(1000, 0.02)$$

approximation given by
 $N(20, 19.6)$

Question 23

Give three properties of the normal distribution.

[3]

symmetric about the mean
values outside range $(\bar{x} - 3\sigma) \leq X \leq (\bar{x} + 3\sigma)$
very unlikely.
mean = median.