

Exponential Distribution Problems

1. What is the probability that an exponential random variable with a mean of 5 will be less than 2?

2. If the average time between events is 10 minutes, what is the probability that the next event will occur in less than 3 minutes?

3. What is the probability that an exponential random variable with a mean of 8 will be greater than 12?

4. If a company expects an average of 4 defects per day, what is the probability of having no more than 2 defects on a given day?

5. What is the probability that an exponential random variable with a mean of 6 will take less than 4 units of time?

6. If a computer system crashes on average once every 10 days, what is the probability of it crashing twice in the next 5 days?

7. What is the probability that an exponential random variable with a mean of 2 will be greater than 3?

8. If the average number of visitors to a website per hour is 50, what is the probability that the website will receive no more than 30 visitors in a given hour?

9. If the average lifespan of a certain type of light bulb is 1000 hours, what is the probability that a bulb will last between 800 and 1200 hours?

10. What is the probability that an exponential random variable with a mean of 7 will be greater than 5 but less than 9?

11. The lifetime of a certain brand of light bulbs is known to be exponentially distributed with a mean of 1500 hours. What is the probability that a randomly selected light bulb will last between 1000 and 1200 hours?

12. The amount of time between arrivals at a certain bus stop is exponentially distributed with a mean of 10 minutes. What is the probability that the next bus will arrive between 8 and 12 minutes from now?

13. A certain type of electronic component has a lifespan that is exponentially distributed with a mean of 6 years. What is the probability that a component will last less than 5 years?

14. The amount of time it takes a certain machine to complete a task is exponentially distributed with a mean of 30 minutes. What is the probability that the machine will take more than 45 minutes to complete the task?

15. The inter-arrival time between customers at a certain store is exponentially distributed with a mean of 5 minutes. What is the probability that the next customer will arrive more than 10 minutes from now?

16. The amount of time it takes for a customer service representative to answer a call is exponentially distributed with a mean of 2 minutes. What is the probability that a customer will wait on hold for more than 5 minutes before the representative answers?

17. The amount of time it takes for a customer to complete an online survey is exponentially distributed with a mean of 8 minutes. What is the probability that a customer will take less than 6 minutes to complete the survey?

18. The inter-arrival time between emails at a certain office is exponentially distributed with a mean of 4 hours. What is the probability that there will be no emails for the next 2 hours?

19. The amount of time it takes for a car mechanic to repair a car is exponentially distributed with a mean of 3 hours. What is the probability that the mechanic will take between 2 and 4 hours to complete the repair?

20. The amount of time it takes for a computer to process a task is exponentially distributed with a mean of 15 seconds. What is the probability that the computer will take less than 10 seconds to complete the task?