

Answer on Question #78786 – Math – Statistics and Probability

Question

In an experiment, the probability that the white mouse will be alive for 7 hours is $\frac{7}{10}$ and that of a black mouse will be alive for 10 hrs is $\frac{9}{10}$. find the probability that at the end of ten hours , **a)** both the mice will be alive **b)** only the black mouse will be alive **c)** only the white mouse will be alive **d)** at least one mouse will be alive

Solution

$$\mathbf{a)} \ P(\text{both alive}) = \frac{7}{10} \cdot \frac{9}{10} = 0.63$$

$$\mathbf{b)} \ P(\text{only black alive}) = \frac{9}{10} \cdot \left(1 - \frac{7}{10}\right) = 0.27$$

$$\mathbf{c)} \ P(\text{only white alive}) = \frac{7}{10} \cdot \left(1 - \frac{9}{10}\right) = 0.07$$

$$\mathbf{d)} \ P(\text{at least one alive}) = 1 - P(\text{both die}) = 1 - \left(1 - \frac{7}{10}\right) \left(1 - \frac{9}{10}\right) = 0.97$$