

Answer on Question #58255 – Math – Statistics and Probability

Question

Tim Bleckie is the owner of Bleckie Investment and Real Estate Company. The company recently purchased four tracts of land in Holly Farms Estates and six tracts in Newburg Woods. The tracts are all equally desirable and sell for about the same amount. What is the probability that of the next four sold at least one will be in Holly Farms?

Solution

The event “at least one of four sold tracts is in Holly Farms” is a complement to the event “none of four sold tracts is in Holly Farms”, which means all four are from Newburg Woods.

$$P(\text{at least one from HF}) = 1 - P(\text{none from HF})$$

Number of outcomes, which involve none of four sold tracts to be in HF is

$${}^6C_4 = \frac{6!}{4!2!}.$$

The total number of outcomes of next four sold tracts is

$${}^{10}C_4 = \frac{10!}{4!6!}.$$

The probability that none of next four sold tracts are from HF:

$$P(\text{none from HF}) = \frac{{}^6C_4}{{}^{10}C_4}.$$

The probability that at least one of next four sold tracts is from HF:

$$P(\text{at least one from HF}) = 1 - \frac{{}^6C_4}{{}^{10}C_4}.$$

$$P(\text{at least one from HF}) = 1 - \frac{6 \times 6 \times 4!}{2 \times 4 \times 10!} = 1 - \frac{6 \times 6!}{2 \times 10!} = 1 - 0.0714 = 0.9286.$$

Answer: 0.9286.