

Answer on Question #71980, Math / Statistics and Probability

Given that 51.3% of all newly born children are boys, then what is the probability that in a sample of 5 newly born children, exactly 3 are boys?

Solution

Use the binomial formula

$$P(k) = \binom{n}{k} p^k (1 - p)^{n-k}$$

We have that $n = 5, k = 3, p = 0.513$. Then

$$P(3) = \binom{5}{3} (0.513)^3 (1 - 0.513)^{5-3} = \frac{5!}{3! (5 - 3)!} (0.513)^3 (0.487)^2 \approx 0.3202$$

Answer

$$P(3 \text{ boys}) = 0.3202.$$