

Midterm Quizzes Solutions

Midterm Quizzes Solutions

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 1

Since Clara wants to visit all 7 stars, and she will visit them one by one, we know that the order of the stars matters. Since she plans to spend a total of 7 days, we know she only visit each star once, and thus repetition not allowed.

Therefore, we use permutation, and Clara has $7!$ ways to plan her journey.

Chapter 2

Since Timmie has 7 ducks and 10 pigeons, there are $\binom{17}{5}$ ways for him to randomly pick 5 fowls.

So $|S| = \binom{17}{5}$

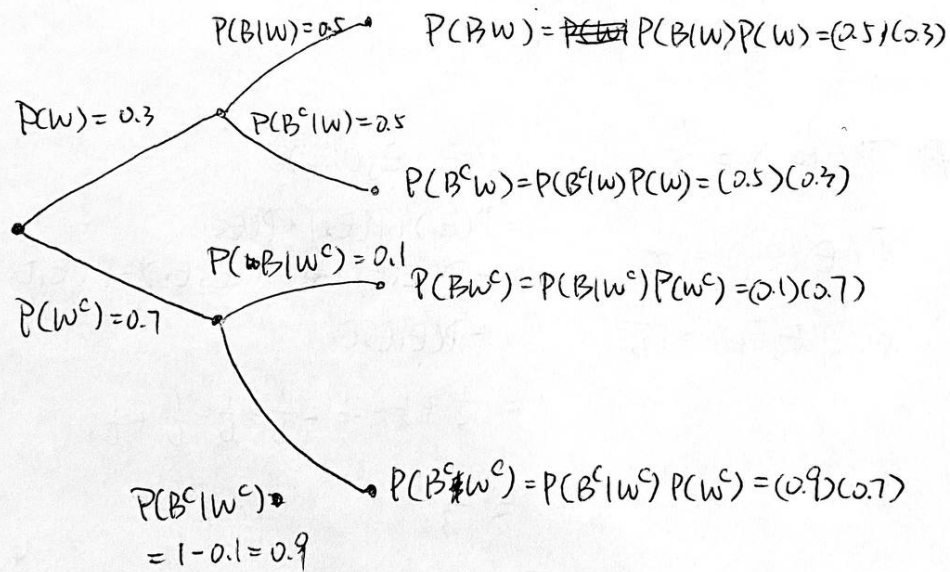
Let E be the event that all 5 are ducks, we have $|E| = \binom{7}{5}$.

Therefore, the probability is $P(E) = \frac{|E|}{|S|} = \frac{\binom{7}{5}}{\binom{17}{5}}$

Chapter 3

W = event that the person watched the show.

B = event that the person bought products from the brand.



$$P(W|B) = \frac{P(BW)}{P(B)} = \frac{P(BW)}{P(BW) + P(BW^c)} = \frac{(0.5)(0.3)}{(0.5)(0.3) + (0.1)(0.7)}$$

Chapter 4

Let X be the R.V. that counts the number of rolls Andy made.

$$X \sim \text{Geo}(0.01)$$

$$P(X = 100) = (1 - 0.01)^{99} (0.01)^1 = 0.99^{99} \cdot 0.01$$