

Coupon collector problem. Associate a success with a paper that receives a grade that has not been received before. Let X_i be the number of papers between the i th success and the $(i + 1)$ st success. Then we have $X = 1 + \sum_{i=1}^5 X_i$ and hence

$$\mathbf{E}[X] = 1 + \sum_{i=1}^5 \mathbf{E}[X_i].$$

After receiving $i - 1$ different grades so far ($i - 1$ successes), each subsequent paper has probability $(6 - i)/6$ of receiving a grade that has not been received before. Therefore, the random variable X_i is geometric with parameter $p_i = (6 - i)/6$, so $\mathbf{E}[X_i] = 6/(6 - i)$. It follows that

$$\mathbf{E}[X] = 1 + \sum_{i=1}^5 \frac{6}{6 - i} = 1 + 6 \sum_{i=1}^5 \frac{1}{i} = 14.7.$$