

Tracking Lead Responses with AI Hint

Question:

Your company uses software to keep track of new sales leads. Amir responds to an average of 4 leads per day, and his coworker responds to an average of 5.5 leads per day. This scenario corresponds to a Poisson distribution. Calculate the probability of Amir and his coworker responding to different numbers of leads in a day.

Explanation of the Question:

This problem requires applying the Poisson distribution, which models the probability of discrete events occurring in a fixed interval. Given the average leads answered daily (lambda values), the Poisson pmf and cdf functions are used to compute probabilities.

Answer:

```
# Import Poisson distribution from scipy.stats
from scipy.stats import poisson

# Probability Amir's coworker responds to exactly 5 leads in a day
prob_coworker = poisson.pmf(5, 5.5) # lambda = 5.5 (average responses
for coworker)
print(prob_coworker)

# Probability Amir responds to 2 or fewer leads in a day
prob_amir_2_or_fewer = poisson.cdf(2, 4) # lambda = 4 (average responses
for Amir)
print(prob_amir_2_or_fewer)

# Probability Amir responds to more than 10 leads in a day
prob_amir_more_than_10 = 1 - poisson.cdf(10, 4) # complement of
cumulative probability up to 10
print(prob_amir_more_than_10)
```

Explanation of the Answer:

The Poisson distribution models probabilities of discrete events over a fixed interval. The pmf function calculates the probability of the coworker answering exactly 5 leads with an average of 5.5. For Amir, the cdf is used to find the cumulative probability of 2 or fewer responses, and the complement rule calculates the probability of more than 10 responses. This

demonstrates how the Poisson distribution handles probabilities of events with varying λ values.