Solutions

Use the rules form linear combinations of independent Poisson Variables to prind these probabilites (out of context)

X~Po(2) and Y~Po(3). Find P([X+Y] = 5)

0.1755

X~Po(2) and Y~Po(3). Find P([X+Y] < 7)

0.7622

X~Po(12) and Y~Po(18). Find P([X+Y] = 35)

0.0453

X~Po(12) and Y~Po(18). Find P([X+Y] ≤ 31)

0.6186

X~Po(7) and Y~Po(2). Find P([2X] = 10)

0.0663

X~Po(7) and Y~Po(2). Find P([2X] < 11)

0.1757

X~Po(2.4) and Y~Po(2.1). Find P([2Y] = 3)

0.1852

X~Po(2.4) and Y~Po(2.1). Find P([2Y] ≤ 4)

0.5898

X~Po(1.9) and Y~Po(2.5). Find P([2X+2Y] = 8)

0.1344

X~Po(1.9) and Y~Po(2.5). Find P([2X+2Y] < 9)

0.4823

Solutions

Use the rules form linear combinations of independent Poisson Variables to prind these probabilites (in context)

A computer help line receives on average 2 calls every 10 minutes. Find the probability that they will receive exactly 12 calls in a thirty minute period

☐ 0.0000 ☒ 0.0112 ☐ 0.9999 ☐ 0.9997

A computer help line receives on average 6 calls every 30 minutes. Find the probability that they will receive no calls in a ten minute period

☐ 0.0025 ☐ 0.8647 ☒ 0.1353 ☐ 0.0002

A bad stretch of road has, on average, 65 accidents per year. Find the probability that over a two-week period there will be exactly 3 accidents

☐ 0.0933 ☒ 0.2137 ☐ 0.7576 ☐ 0.9617

A stretch of road has, on average, 22 accidents per year. Find the probability that over a three-year period there will be no more than 50 accidents

☐ 0.0000 ☒ 0.0068 ☐ 0.9999 ☐ 0.0244

Electric wire is produced in lengths of 300 metres. On average there is 1 defect in every 3000 metres of wire produced. Find the probability that in a 300 metre length there will be at least one defect.

☐ 0.9048 ☒ 0.0952 ☐ 0.9953 ☐ 0.0047

Electric wire is produced in lengths of 250 metres. On average there is 1 defect in every 5000 metres of wire produced. Find the probability that in a 250 metre length there will be at least one defect.

☐ 0.3679 ☐ 0.6321 ☐ 0.9512 ☒ 0.0488

The number of radioactive emissions from two sources, A and B, are independent Poisson distributions with means of 1.5 and 2.5 per minute, respectively. Find the probability that there are a total of 7 emissions from A and B in 2 minutes.

☒ 0.1396 ☐ 0.0595 ☐ 0.9489 ☐ 0.4530

The number of measurable emissions from two sources, X and Y, are independent Poisson distributions with means of 2.7 and 2.9 per minute, respectively. Find the probability that there are a total of 10 emissions from X and Y in 2 minutes.

☐ 0.9718 ☐ 0.0309 ☐ 0.4362 ☒ 0.1170

The number of telephone calls received at a switchboard averages 2 every 5 minutes. Calculate the probability of there being at least 6 calls in the next 10 minutes

☐ 0.1042 ☐ 0.0120 ☒ 0.2149 ☐ 0.1107

The number of telephone calls received at a switchboard averages 12 every 2 minutes. Calculate the probability of there being at least 200 calls in the next half hour.

☐ 0.9251 ☒ 0.0749 ☐ 0.9348 ☐ 0.0652