

For a poisson distribution, does μ have to be an integer?

- A) I really think it's yes.
- B) I'm pretty sure it's yes.
- C) I'm pretty sure it's no.
- D) I really think it's no.

Jay's reason
orig = it's an avg
new \Rightarrow graph Fig. 11.2
where $\mu = 0.75$

A radioactive sample is monitored and undergoes an average of 0.75 decays/min.

What is the probability of observing 2 decays in 2 minutes?

(You are encouraged to use Igor to solve the problem.)

- A) 0.19
- B) 0.25
- C) 0.27
- D) 0.32
- E) 0.44

Stats Poisson PDF

I ...
A) think I have a math problem
B) " an Igor problem
C) " some other problem
D) I think I've got it.

1, 0.75

C)

D) I think i've got it.

approaches
print

stats.PoissonPdf(1, 0.75) \Rightarrow doesn't match the answer options

#

$\rightarrow (2, 1.5) \Rightarrow 0.25$

$\rightarrow (2, 0.75) \Rightarrow$ doesn't match

What is the smallest integer mean for a poisson distribution that appears Gaussian? (Don't calculate the Gaussian -- yet.)

- A) 4
- B) 5
- C) 6
- D) 7
- E) 9

make/O/N=10 PoissonDist = statsPoissonPDF(x, 1.5)

Standard deviation of the Poisson distribution

$$\sigma_{\text{poiss}} = \sqrt{\mu}$$

Not the uncertainty of the counting,
but rather the variation due to randomness.

↙ of a distribution

A radioactive sample is monitored and the average decay rate is measured as 150 decays in 10 minutes. A measurement of the background radiation is measured for 3 minutes and detects 12 decay events.

Find the average rate and uncertainty of decays from the source.

$$\frac{150 - 3}{10} \quad \times \quad \frac{150 - 12}{10}$$

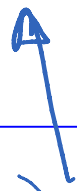
$$\boxed{\frac{150 \text{ cts}}{10 \text{ min}} - \frac{12 \text{ cts}}{3 \text{ min}}} = 15 - 4 = 11 \text{ cts/min}$$

A) I have an answer
I'm happy with

B) I have an answer
I'm not quite happy
with

C) still working

D) stuck



A) I got this B) didn't

What about uncert?

↳ prop.

$$\sqrt{\sum (\epsilon_i)^2}$$

What is unc. in each?

A) $\sqrt{15}$, $\sqrt{4}$

B) $\sqrt{150}$, $\sqrt{12}$

C) $\sqrt{\frac{150}{10 \text{ min}}}$, $\frac{\sqrt{12}}{3 \text{ min}}$

support: $\sigma = \sqrt{N}$

support: Taylor did
it this
way

c) $\frac{150}{10}$

way

→ large amt of time
(divide by total #)

bkd

avg

orig

$$\frac{150 \text{ cats}}{10 \text{ min}}$$

±

$$\frac{\text{cats}}{\text{min}}$$

unc →

counted thing

(not the time)