1. $\lambda = 3 \quad t = 5$

$P(X = 12)$

$\mu = \lambda t$

$\mu = 3(5)$

$\mu = 15$

$$P(X) = \frac{\mu^X \cdot e^{-\mu}}{X!}$$

$$P(X = 12) = \frac{15^{12} \cdot e^{-15}}{12!}$$

$$P(12) = \boxed{0.0889}$$

ex: $P(X < 70)$

2. $\lambda = 5 \quad t = 10$

$\mu = \lambda t = 5(10) = (50)$

$\sigma = \sqrt{\mu} = \sqrt{50} = (7.07)$

ex: I CAN MAKE 10 FAT BURGER PER HOUR, THEN OVER 7 HOURS ...

$\lambda = 10 \quad t = 7$

$\mu = \lambda t = 10(7) = 70$

ex: THERE IS 8 POTHOLES PER STREET THEN LOOKING AT 5 STREETS ...

$\lambda = 8 \quad t = 5$

$\mu = \lambda t = 8(5) = 40$

ex: AVG IS 2 PER 10,000 MILES, OVER NEXT 10,000 MILES ...

$\lambda = 2 \quad t = 1$

$\mu = \lambda t = 2(1) = 2$

ex: THERE HAVE BEEN 120 TORNADOS OVER LAST 50 YEARS, OVER THE NEXT YEAR ...

$\lambda = \frac{120}{50}$ PER YEAR

$t = 1$

$\mu = \frac{120}{50} =$