A seam on an aircraft requires 25 rivets. We are interested in the probability that a given rivet is defective. We know that the probability that *at least one rivet is defective* is 0.2. It is easier to work with the complement of this event: the probability that *none of the rivets is defective* is $1 - 0.2 = 0.8$.

Let A_i be the event that the i^{th} rivet is *not defective.* We are told that the events $A_1, A_2, \ldots, A_{25}$ are mutually independent and that each occurs with the same probability. Let q be that probability (so $q = \mathrm{P}(A_1) = \mathrm{P}(A_2) = \cdots = \mathrm{P}(A_{25})$). Hence the probability that *none of the rivets is defective* is

$$\begin{aligned} \mathrm{P}(A_1 \cap A_2 \cap \cdots \cap A_{25}) &= \mathrm{P}(A_1)\,\mathrm{P}(A_2) \ldots \mathrm{P}(A_{25}) \quad \text{(from independence)} \\ &= q^{25} \quad \text{(because } \mathrm{P}(A_i) = q \text{ for each } i\text{).} \end{aligned}$$

By hypothesis, then, we have $q^{25} = 0.8$. Thus

$$q = (0.8)^{\frac{1}{25}} \approx 0.9911.$$

Therefore the probability that a given rivet *is defective* is $\boxed{1 - q \approx 0.0089.}$