

1. A target on a test firing range consists of a bull's-eye with two concentric rings around it. A projectile is fired at the target. The probability that it hits the bull's-eye is 0.10, the probability that it hits the inner ring is 0.25, and the probability that it hits the outer ring is 0.45. What is the probability that the projectile hits the target? What is the probability that it misses the target?

A.

$$P(\text{Target}) = P(\text{Bull's-Eye}) + P(\text{Inner ring}) + P(\text{Outer ring})$$

$$= 0.1 + 0.25 + 0.45 = 0.8$$

$$P(\text{missing}) = 1 - P(\text{target})$$

$$= 1 - 0.8 = 0.2$$

2. In a process that manufactures aluminum, the probability that a can has a flaw on its side is 0.02, the probability that a can has a flaw on the top is 0.03, and the probability that a can has a flaw on both the side and the top is 0.01. What is the probability that a randomly chosen can have a flaw? What is the probability that it has no flaw?

A. We know,

$$P(A \cap B) = P(A) + P(B) - P(A \cup B)$$

So,

$$P(\text{Side or Top}) = P(\text{side}) + P(\text{Top}) - P(\text{side and Top})$$

$$= 0.02 + 0.03 - 0.01$$

$$= 0.04$$

$$P(\text{No flaw}) = 1 - 0.04 = 0.96$$