1. Rebecca and Veronica throw darts. Rebecca hits the target with probability 0.5 and Veronica hits the target with probability 0.7. Suppose that Rebecca and Veronica both independently throw a dart and that the target is hit. What is the probability that Veronica hits the target?
Answers

1. Let \( R = \{\text{Rebecca hits the target}\} \) and \( V = \{\text{Veronica hits the target}\} \). Then

\[
\mathbb{P}(V|R \cup V) = \frac{\mathbb{P}(V)}{\mathbb{P}(R \cup V)} = \frac{\mathbb{P}(V)}{\mathbb{P}(R) + \mathbb{P}(V) - \mathbb{P}(R \cap V)} = \frac{\mathbb{P}(V)}{\mathbb{P}(R) + \mathbb{P}(V) - \mathbb{P}(R)\mathbb{P}(V)} = \frac{0.7}{0.5 + 0.7 - (0.5)(0.7)}.
\]