Conditional Probability Formula without a Two-way Table:

$$P(A \mid B) = \frac{P(A \text{ and } B)}{P(B)}$$

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1. Andrea is a very good student. The probability that she studies and passes her mathematics test is $\frac{17}{20}$. If the probability that Andrea studies is $\frac{15}{16}$, find the probability that Andrea passes her mathematics test, given that she has studied.

2. The probability that Janice smokes is $\frac{3}{10}$. The probability that she smokes and develops lung cancer is $\frac{4}{15}$. Find the probability that Janice develops lung cancer, given that she smokes.

3. The probability that Sue will go to Mexico in the winter and to France in the summer is 0.40. The probability that she will go to France this summer, given that she just returned from her winter vacation in Mexico is .67. Find the probability that she will go to Mexico.

4. In Europe, 88% of all households have a television. 51% of all households have a television and a VCR. What is the probability that a household has a VCR given that it has a television?

5. In Georgia, the probability that a house has a garage is 84%. The probability that a house has a backyard given that it has a garage is 77%. What is the probability that a house has a garage and a backyard?

6. The probability that it is Friday and that a student is absent is 0.03. Since there are 5 school days in a week, the probability that it is Friday is 0.2. What is the probability that a student is absent given that today is Friday?