Multiple Blood Typing

According to Craig Medical online (www.craigmedical.com), the overall statistical distribution of blood type plus Rh factor in the general population is as follows:

<table>
<thead>
<tr>
<th>Blood Type</th>
<th>Rh factor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>O</td>
<td>38%</td>
<td>7%</td>
</tr>
<tr>
<td>A</td>
<td>34%</td>
<td>6%</td>
</tr>
<tr>
<td>B</td>
<td>9%</td>
<td>2%</td>
</tr>
<tr>
<td>AB</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>84%</td>
<td>16%</td>
</tr>
</tbody>
</table>

1. Determine the probability that a randomly selected person from the general population will have type B blood, given that you already know the person has Rh negative blood.

Conditional Probability

The **conditional probability** of an event $F$ in relationship to event $E$ is the probability that event $F$ occurs after event $E$ has already occurred. The notation is $P(F|E)$ and is read, “the probability of event $F$ given event $E.”

According to the book, the following formula is used to determine conditional probabilities.

**Conditional Probability Rule**

If $E$ and $F$ are two events, then

$$P(F \mid E) = \frac{P(E \text{ and } F)}{P(E)}$$

The probability of event $F$ occurs, given the occurrence of event $E$, is found by dividing the probability that both events occurred by the probability that the first event has occurred.

2. Explain how the formula applies in your answer to item 1.