



## Why

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## Result

**Prop. 1.** *Let  $A_1, \dots, A_n$  be a partition of a set of outcomes  $A$ . Let  $\mathbf{P}$  be an event probability function for some probability mass function. Let  $B \subset A$  an event. Then*

$$\mathbf{P}(B) = \sum_{i=1}^n \mathbf{P}(B \cap A_i).^2$$

This result is often known as the *law of total probability*.

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<sup>1</sup>Future editions will include.

<sup>2</sup>Future editions will include an account.



