



**MathsNET**

A joined up approach to  
teaching and learning  
mathematics

# Independent random variables

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- What does it mean when we say that two events are independent?
- What does it mean when we say that two random variables are independent?
- If the random variables  $X$  and  $Y$  are NOT independent is the following equality guaranteed to never hold  $P(X = 1 \wedge Y = 2) = P(X = 1)P(Y = 2)$ ? Explain your reasoning.
- Is the probability of getting a 3 when I roll a dice independent of the probability of getting a 2 on the same roll? Explain your reasoning.



- Given the following equation  $P(X = x|Y = a \wedge Z = b) = P(X = x|Y = a)$  what can you conclude about the independence of the random variables  $X$ ,  $Y$  and  $Z$ .