

## Using random variables to estimate $\pi$

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Gareth Tribello  
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In the blockly exercise you learnt about how we can arrive at an estimate of  $\pi$  by generating pairs of uniform random variables. For your portfolio you could write a python notebook that can be used to estimate  $\pi$  using the technique that you learnt. At variance with what you did for the blockly exercise generate a large number of random variables when you write your code (at least 10,000). Discuss the sources of error in your calculation and make sure that you give suitable confidence limits on the value of  $\pi$  that you extract from your calculation.