



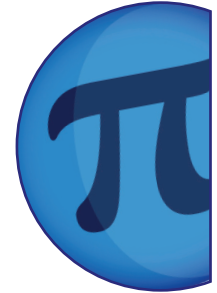


# Logic: Bayesian Robots

NAME: .....

CLASS: .....

DATE: .....



## Core

1) The six sides of a die are numbered 1, 2, 3, 4, 5 and 6. Calculate the probability that the number rolled is:

- a) even and less than 4
- b) greater than 2 and odd
- c) greater than 2 and less than 4
- d) less than 6 and odd
- e) greater than 2 and prime
- f) greater than 5 and odd

2) A die is thrown twice. Calculate the probability that:

- a) two even numbers are obtained
- b) the same two numbers are obtained.

3) A bag contains three red balls and seven yellow balls. Two balls are taken from the bag.

What is the probability that they are:

- a) both yellow?
- b) both red?
- c) one is red and one is yellow?

4) During the month of January, an estimate for the probability of rain on any day is 0.7 if it rained the previous day, and 0.4 if it did not rain the previous day. Find the probability that a wet day is followed by:

- a) two more wet days
- b) two dry days
- c) a dry then a wet day
- d) three more wet days

5) The probability that Sue will go to Mexico in the winter and to France in the summer is 0.3. The probability that she will go to Mexico in the winter is 0.7. Find the probability that she will go to France this summer, given that she just returned from her winter vacation in Mexico.





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## ANSWERS

### Basic

- 1) a)  $\frac{1}{6}$     b)  $\frac{1}{6}$     c)  $\frac{1}{2}$     d) 0    e)  $\frac{1}{2}$     f)  $\frac{1}{3}$
- 2) a)  $\frac{1}{5}$     b)  $\frac{4}{11}$     c)  $\frac{3}{8}$     d)  $\frac{5}{13}$     e)  $\frac{1}{2}$     f)  $\frac{4}{11}$
- 3) a)  $\frac{1}{6}$     b)  $\frac{1}{3}$     c)  $\frac{1}{6}$     d)  $\frac{1}{2}$     e)  $\frac{1}{3}$     f) 0
- 4) a)  $\frac{1}{4}$     b)  $\frac{1}{6}$
- 5) a)  $\frac{7}{15}$     b)  $\frac{1}{15}$     c)  $\frac{7}{15}$

### Core

- 1) a)  $\frac{1}{6}$     b)  $\frac{1}{3}$     c)  $\frac{1}{6}$     d)  $\frac{1}{2}$     e)  $\frac{1}{3}$     f) 0
- 2) a)  $\frac{1}{4}$     b)  $\frac{1}{6}$
- 3) a)  $\frac{7}{15}$     b)  $\frac{1}{15}$     c)  $\frac{7}{15}$
- 4) a) 0.49    b) 0.18    c) 0.12    d) 0.343
- 5)  $\frac{3}{7}$

### Advanced

- 1) a)  $\frac{7}{15}$     b)  $\frac{1}{15}$     c)  $\frac{7}{15}$
- 2) a) 0.49    b) 0.18    c) 0.12    d) 0.343
- 3)  $\frac{3}{7}$
- 4) a) 0.36    b) 0.0576