

**In-Video Quiz Questions for  
Unit 2: Part 2 – (3) Bayesian Inference**

**(01:04) – slide 3, after “And what is that probability with a 12-sided die?”**

1. What is the probability of rolling  $\geq 4$  with a 6-sided die? What about with a 12-sided die? What is the probability of rolling  $\geq 4$  with a 6-sided die? What about with a 12-sided die?

- (a) 6-sided:  $3/4$ ; 12-sided:  $1/2$
- (b) 6-sided:  $1/3$ ; 12-sided:  $2/3$
- (c) 6-sided:  $1/3$ ; 12-sided:  $3/4$
- (d) 6-sided:  $1/2$ ; 12-sided:  $3/4$
- (e) 6-sided:  $2/3$ ; 12-sided:  $1/3$

**(01:55) – slide 12, after “The six-sided or the 12-sided die?”**

2. Say you're playing a game where the goal is to roll  $\geq 4$ . If you could get your pick, which die would you prefer to play this game with?

- (a) 6-sided
- (b) 12-sided

**(5:25) – slide 9, after “and the second hypothesis is that the good die is on the left.”**

3. Before we collect any data, you have no idea if I am holding the good die (12-sided) on the right hand or the left hand. Then, what are the probabilities associated with the following hypotheses?

H1: good die on the Right (bad die on the Left)

H2: good die on the Left (bad die on the Right)

- (a)  $P(H1: \text{good die on the Right}) = 0.33$  ;  $P(H1: \text{good die on the Left}) = 0.67$
- (b)  $P(H1: \text{good die on the Right}) = 0.5$  ;  $P(H1: \text{good die on the Left}) = 0.5$

(c)  $P(H1: \text{good die on the Right}) = 0$  ;  $P(H1: \text{good die on the Left}) = 1$

(d)  $P(H1: \text{good die on the Right}) = 0.25$  ;  $P(H1: \text{good die on the Left}) = 0.75$

**(7:23) – slide 12, after “But first, let's try to think whether the new probability for H1 the first hypothesis should still be 0.5, less than 0.5, or more than 0.5.”**

4. You chose the right hand, and you won (rolled a number  $\geq 4$ ). Having observed this data point how, if at all, do the probabilities you assign to the same set of hypotheses change?

H1: good die on the Right (bad die on the Left)

H2: good die on the Left (bad die on the Right)

(a)  $P(H1: \text{good die on the Right}) = 0.5$  ;  $P(H1: \text{good die on the Left}) = 0.5$

(b)  $P(H1: \text{good die on the Right}) = \text{more than } 0.5$  ;  $P(H1: \text{good die on the Left}) = \text{less than } 0.5$

(c)  $P(H1: \text{good die on the Right}) = \text{less than } 0.5$  ;  $P(H1: \text{good die on the Left}) = \text{more than } 0.5$

**Answers:**

1. d
2. b
3. b
4. b