

Lesson 4 At Home Problem Solutions

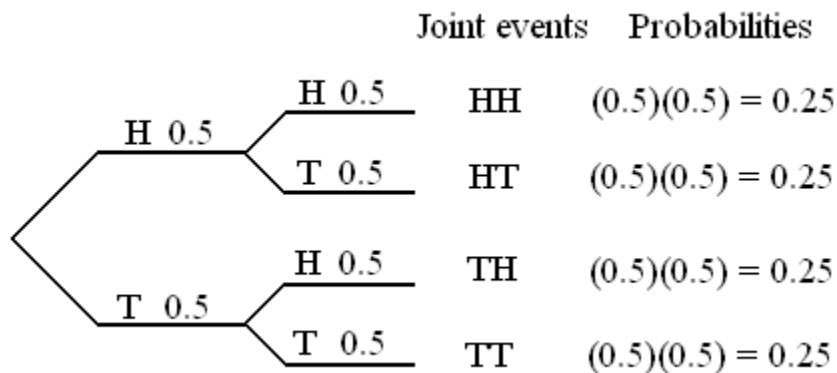
Problem # 4.9

- $P(X \geq 20) = P(20) + P(25) + P(30) + P(40) + P(50) + P(75) + P(100)$
 $= .08 + .05 + .04 + .04 + .03 + .03 + .01 = .28$
- $P(X = 60) = 0$
- $P(X > 50) = P(75) + P(100) = .03 + .01 = .04$
- $P(X > 100) = 0$

Problem #4.10

$P(\text{Losing 6 in a row}) = .5^6 = .0156$

Problem #4.12



- $P(HH) = .25$
- $P(HT) = .25$
- $P(TH) = .25$
- $P(TT) = .25$

Problem # 4.13

- $P(0 \text{ heads}) = P(TT) = .25$
- $P(1 \text{ head}) = P(HT) + P(TH) = .25 + .25 = .50$
- $P(2 \text{ heads}) = P(HH) = .25$
- $P(\text{at least 1 head}) = P(1 \text{ head}) + P(2 \text{ heads}) = .50 + .25 = .75$

Problem # 4.18

Table 1 with $n = 25$ and $p = .3$: $P(X \leq 10) = .9022$

$N=20, p=0.3, P(X > 9) = 0.0654 + 0.0308 + 0.0120 + 0.0039 + 0.0010 + 0.0002$

Problem # 4.19-According to the American Academy of Cosmetic Dentistry, 75% of adults believe that an unattractive smile hurts career success. Suppose that 25 adults are randomly selected. What is the probability that 15 or more of them would agree with the claim?

Table 1 with $n = 15$ and $p = .75$: $P(X > 15) = 1 - P(X \leq 14) = 1 - .0297 = .9703$

According to the American Academy of Cosmetic Dentistry, 75% of adults believe that an unattractive smile hurts career success. Suppose that 15 adults are randomly selected. What is the probability that more than 10 of them would agree with the claim?

$N=15$, $p=0.75$, $x = 10$, more than 10 = 0.6845- double check.

Problem # 4.20

a. Twice in 5 hands $P(X = 2) = \frac{5!}{2!(5-2)!} (.45)^2 (1-.45)^{5-2} = .3369$