

Disjunction
Section

De Groot & Schemmink
(DS) p. 15 #8

ANS 13
1 Aug
19

2

$S = \{A, B, AB, 0\}$ sample space

①

$A = \{A\}$
→
blood really
is A

(not A) = $A^c = \{B, AB, 0\}$

$A_* =$ (blood reacts with
anti-A)
 $= \{A, AB\}$

$B_* =$ (blood
reacts with
anti-B) $= \{B, AB\}$

$A = (A_* \text{ and } B_*^c) = A_* \cap B_*^c$

$B = (B_* \text{ and } A_*^c)$

$O = (A_*^c \text{ and } B_*^c)$

$AB = (A_* \text{ and } B_*)$

DS p. 21
#14

$$P(O) = 0.5$$

$$P(B) = 0.12 \text{ (2)}$$

$$P(A) = 0.34$$

$$P(AB) = 0.04$$

$$P(\text{react with anti-A}) = P(A^+)$$

$$= P(A \text{ or } AB) = P(A) + P(AB)$$

↑ ↑
mutually exclusive

$$- \cancel{P(A \text{ or } AB)}$$

$$= 0.34 + 0.04 = 0.38$$

$$P(AB) = 1 - P(\text{not } AB)$$

$$= 1 - P(A \text{ or } B \text{ or } O)$$

$$= 1 - [P(A) + P(B) + P(O)]$$

$$= 1 - (0.34 + 0.12 + 0.5)$$

$$= 0.04$$

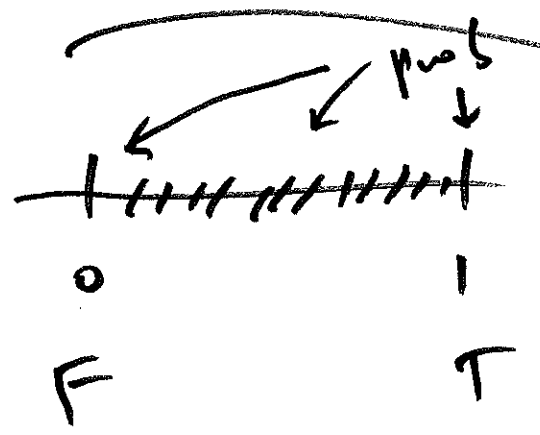
$$P(\text{react with anti-B}) = P(B_+)$$

$$= P(B \text{ or } AB) = P(B) + P(AB) - P(B \text{ and } AB)$$

$$= 0.12 + 0.04 = 0.26$$

probability = numerical
applied logic

E. T. Jaynes : Prob. Theory:
The Logic of Science

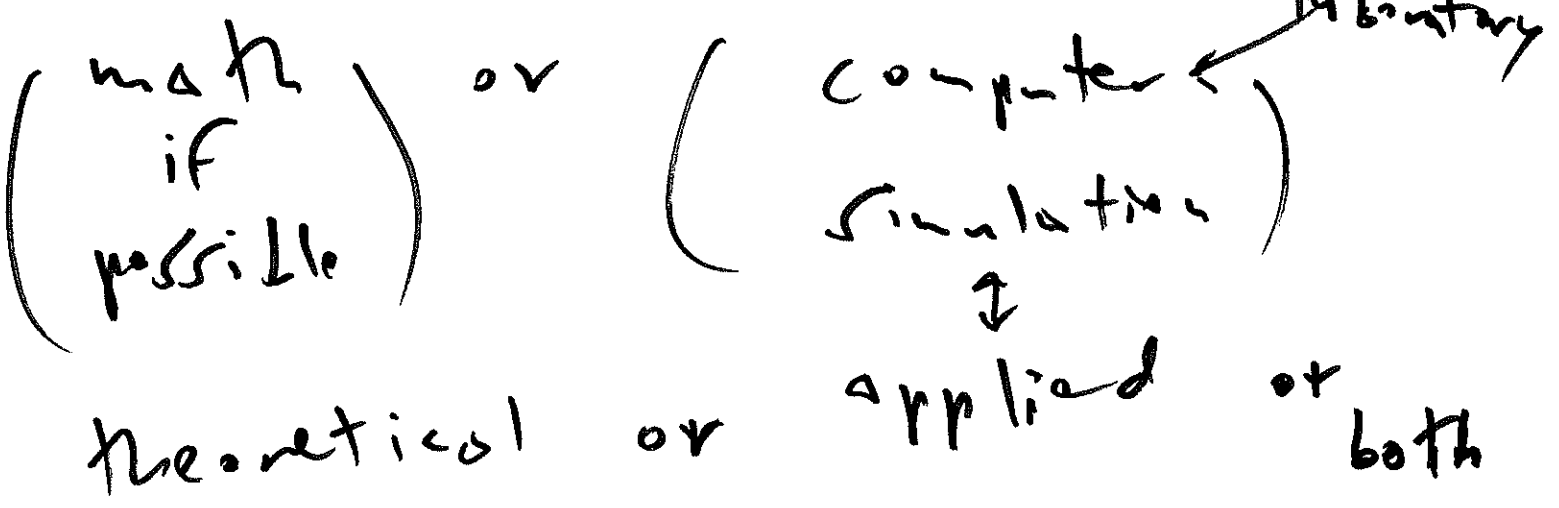


Boyle the core study

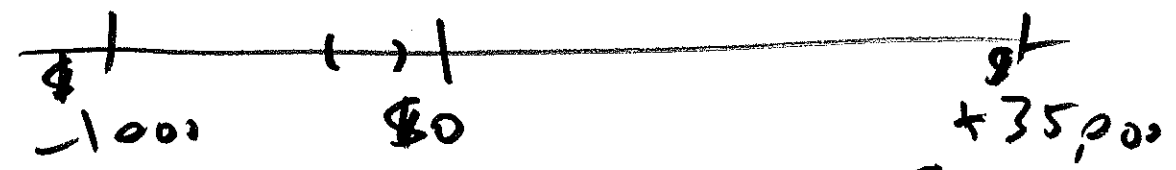
$$P(S > 0) = ?$$

PL coming out ahead after $n = 1,000$
81 bets on single #

2 ways to solve this problem: ⑤



smallest possible S is $-\$1,000$
 biggest $\underline{\hspace{10em}}$ $+\$35,000$



$$\frac{1000}{38} \approx 26$$

$$26 \times 38 = 974$$

$$1000 - 974 = 26$$

$$26 \times 35 = 910$$

$$910 - 26 = 884$$

$$884 - 1 = 883$$

$$28 \text{ miles} = 8 - 18$$

$$26 \times 35 = 910$$

$$+ 974 = 1884$$

$$\underline{\hspace{1em}} - 1 = 1883$$

a possible $S = -64$
 $(35 - (-1)) = 36$

⑥

simulation
estimate
of

$$P(\hat{\beta} > \beta_0) = \frac{\# \text{ positive } \hat{\beta}}{M}$$
