

Nama: Prames Ray Lapiam

NPM: 140810210059 - A

Materi: Matematika Diskrit

Hal 414

7. a. 1 preceds A  $\rightarrow \{1, 2, 3, A\}$ kasus 7 digit ke 1 =  $3 \cdot 2 \cdot 1 = 6$ " " ke 2 =  $2 \cdot 2 \cdot 1 = 4$ " " ke 3 =  $2 \cdot 1 \cdot 1 = 2$ 

12

Probabilitas = 12 / total kemungkinan

$$= 12 / 24 = \frac{1}{2}$$

b. A preceds 1  $\rightarrow \{1, 2, 3, A\}$ 

Sebagaimana soal a, karena

masing-masing memiliki jumlah yang sama sehingga probabilitasnya adalah  $\frac{1}{2}$ c. A preceds (1 & 2)  $\rightarrow \{1, 2, 3, 4\}$ kasus A digit ke 1 =  $3 \cdot 2 \cdot 1 = 6$ ke 2 =  $1 \cdot 2 \cdot 1 = 2$ 

8

Probabilitas = 8 / total kemungkinan

$$= 8 / 24 = \frac{1}{3}$$

d. A preceds 1, 2, 3

kasus dimana A harus di digit

ke-1, sehingga =  $3 \cdot 2 \cdot 1 = 6$ 

Probabilitas = 6 / total kemungkinan

$$= 6 / 24 = \frac{1}{4}$$

e. 4 preceds 3, 2 preceds 1

kasus A digit ke 1, 2 digit ke 2 =  $2 \cdot 1 = 2$ 2 digit ke 3 =  $1 \cdot 1 = 1$ kasus A digit ke 2, 2 digit ke 1 =  $2 \cdot 1 = 2$ ke 3, 2 digit ke 1 =  $1 \cdot 1 = 1$ 

6

Probabilitas = 6 / total kemungkinan

$$= 6 / 24 = \frac{1}{4}$$

Hal 415

11.  $P(E) = 0,7$  dan  $P(F) = 0,5$ 

$$P(E \cup F) \geq P(E) = 0,7$$

$$P(E \cap F) = P(F) \geq 0,2$$

Probabilitas terbesar = 1  $\rightarrow P(E \cup F) \leq 1$ 

$$P(E \cup F) = P(E) + P(F) - P(E \cap F)$$

$$1 \geq 0,7 + 0,5 - P(E \cap F)$$

$$P(E \cap F) \geq 1,2 - 1$$

$$\geq 0,2 \quad // \text{ Terbukti}$$

12.  $P(E) = 0,8$  dan  $P(F) = 0,6$ 

$$P(E \cup F) \geq 0,8 \rightarrow P(E \cup F) \geq P(E) = 0,8$$

$$P(E \cap F) \geq 0,4 \rightarrow P(E \cap F) \geq P(F) = 0,6$$

Probabilitas terbesar = 1  $\rightarrow P(E \cup F) \leq 1$ 

$$P(E \cup F) = P(E) + P(F) - P(E \cap F)$$

$$1 \geq 0,8 + 0,6 - P(E \cap F)$$

$$P(E \cap F) \geq 1,4 - 1$$

$$\geq 0,4 \quad // \text{ Terbukti}$$

Hal 416

28. Probability boy = 0,51  $\rightarrow$  Childs = 5a. 3 boys  $\rightarrow$  Gunakan distribusi binomial

$$R(x, n) = \frac{n!}{(n-x)! x!} \cdot p^x \cdot q^{n-x}$$

$$(n-x)! x!$$

$$3 \text{ boys} = P_3^5$$

$$= \frac{5!}{2!3!} \cdot (0,51)^3 \cdot (0,49)^2$$

$$= 10 \cdot 0,132651 \cdot 0,2401$$

$$= 0,3165 \approx 0,32$$

$$2. P(E) = \frac{2}{3}, P(F) = \frac{3}{4}, P(E|F) = \frac{5}{8}$$

$$P(E|F) = P(F|E) P(E)$$

$$P(F)$$

$$= \frac{5/8 \cdot 2/3}{3/4}$$

$$3/4$$

$$= 5/9 \approx 0,56$$

b. Min 1 boys

$$0 \text{ boys} = 1 \cdot (0,51)^0 \cdot (0,49)^5$$

$$= 1 \cdot 1 \cdot 0,0282475$$

$$\text{Sehingga } 1 - 0,0282475 \approx 0,97$$

$$13. P(E|F_1) = \frac{1}{8}$$

$$P(F_1) = \frac{1}{4}$$

$$P(E|F_2) = \frac{1}{4}$$

$$P(F_2) = \frac{1}{4}$$

$$P(E|F_3) = \frac{1}{6}$$

$$P(F_3) = \frac{1}{2}$$

$$P(F_1|E) = \frac{P(E|F_1) P(F_1)}{\sum_1^3 P(E|F_i) P(F_i) + \dots}$$

$$= \frac{1/8 \cdot 1/4}{1/8 \cdot 1/4 + 1/4 \cdot 1/4 + 1/2 \cdot 1/2}$$

$$= \frac{1/32}{3/16} = 0,17647$$

$$\approx 0,18$$

c. Min 1 girl

$$0 \text{ girl} = 1 \cdot (0,51)^5 \cdot (0,49)^0$$

$$= 1 \cdot 0,03450$$

$$\text{Sehingga } 1 - 0,03450 \approx 0,97$$

$$= 3/17 = 0,17647$$

$$\approx 0,18$$

d. Semua boys / girl

$$5 \text{ boys} \rightarrow 0 \text{ girl} = 0,03450$$

$$14. P(E|F_1) = \frac{2}{7}$$

$$P(F_1) = \frac{1}{6}$$

$$5 \text{ girl} \rightarrow 0 \text{ boys} = 0,0282475$$

$$P(E|F_2) = \frac{3}{8}$$

$$P(F_2) = \frac{1}{2}$$

$$P \approx 0,063$$

$$P(E|F_3) = \frac{1}{2}$$

$$P(F_3) = \frac{1}{3}$$

$$P(F_2|E) = \frac{P(E|F_2) P(F_2)}{P(E|F_1) P(F_1) + P(E|F_2) P(F_2) + \dots}$$

$$= \frac{3/8 \cdot 1/2}{2/7 \cdot 1/6 + 3/8 \cdot 1/2 + 1/2 \cdot 1/3}$$

$$= \frac{3/16}{7/15} = 0,466667$$

$$\approx 0,46$$

Hal 424

$$1. P(E) = \frac{1}{3}, P(F) = \frac{1}{2}$$

$$P(E|F) = \frac{2}{5}$$

Teorema Bayes

$$P(F|E) = \frac{P(E|F) \cdot P(F)}{P(E|F) P(F) + P(E|F) P(F)}$$

$$= \frac{P(E|F) P(F)}{P(E)}$$

$$P(F)$$

$$= \frac{2/5 \cdot 1/2}{1/3}$$

$$1/3$$

$$= \frac{3/5}{1} = 0,6$$