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XII TKJ 2

No.
Date

Peluang Suatu Kejadian

Peluang suatu kejadian dapat terjadi dengan a cara dari keseluruhan s cara (ruang sampel = S) dengan kemungkinan yang sama. peluang kejadian A dapat ditentukan

$$P(A) = \frac{n(a)}{n(S)} \rightarrow \begin{matrix} \text{Banyak kejadian a.} \\ \text{Banyak Ruang Sampel} \end{matrix}$$

Contoh:

1) Sebuah dadu di lempar undi 1X tentukan peluang munculnya angka prima.

$S = \{1, 2, 3, 4, 5, 6\}$

$a = \{2, 3, 5\}$

$$P(A) = \frac{n(a)}{n(S)} = \frac{3}{6} = \frac{1}{2}$$

2 Dalam sebuah kantong terdapat 3 kelereng merah 4 kelereng biru dan 5 kelereng putih. akan diambil 2 kelereng serangus. peluang ~~tercatat~~ terambil kelereng putih

a. 07 kelereng putih $(n = 5, r = 2)$

$$C^n_r : C^5_2 = \frac{5!}{2!(5-2)!} = \frac{5!}{2!\,3!} = \frac{5 \cdot 4 \cdot 3!}{2!\,3!} = 10$$

a. ruang sampel (merah = 3, biru = 4, Putih = 5)

$$C^n_r = C^{12}_2 = \frac{12!}{2!(12-2)!} = \frac{12!}{2!\cdot 10!} = \frac{12 \cdot 11 \cdot 10!}{2!\cdot 10!} = 66$$

07 $P(A) = \frac{n(A)}{n(S)} = \frac{10}{66} = \frac{5}{33}$

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3. Dalam sebuah kolam pemancingan terdapat 20 ikan lele 15 ikan gurame. 15 ikan tawes. jika andi memancing dalam kolam itu. tentukan berapa peluang Andi mendapatkan ~~ikan~~

a) 2 ikan lele

o) ikan lele $(n=20 \cdot r=2)$

$$C^n_r = C^{20}_2 = \frac{20!}{2!(20-2)!} = \frac{20!}{2!\,18!} = \frac{{}^{10}\cancel{20}.19!\cancel{18!}}{\cancel{2!}\,\cancel{18!}} = 190$$

o) Ruang sampel $(lele=20, gurame=15, tawa 15)$

$$C^n_r = C^{50}_2 = \frac{50!}{2!(50-2)!} = \frac{50!}{2!\,48!} = \frac{{}^{25}\cancel{50}.49\,\cancel{48!}}{\cancel{2!}\,\cancel{48!}} = 1225$$

o) $P(A) = \frac{n(A)}{n(S)} = \frac{190}{1225} = \frac{38}{245}$

b) 3 ikan gurame

o) ikan gurame $(n=15 \cdot r=3)$

$$C^n_r = C^{15}_3 = \frac{15!}{3!(15-3)!} = \frac{{}^{5}\cancel{15}.\cancel{14}.13.\cancel{12!}}{\cancel{3}.\cancel{2}.1.\cancel{12!}} = 455$$

a) ruang sampel $(lele=20, gurame=15, tawa 15)$

$$C^n_r = C^{50}_3 = \frac{50!}{3!(50-3)!} = \frac{50!}{3!\,47!} = \frac{{}^{5}50.49.{}^{4}\cancel{8}.\cancel{47!}}{3.\cancel{2}.14.\cancel{7!}} = 19.600$$

$$P(A) = \frac{n(A)}{n(S)} = \frac{455}{19.600} = \frac{13}{560}$$

c) 1 ikan lele, 1 ikan gurame dan 1 ikan tawa

o) ikan lele $(lele = 20)$

$$C^n_r = C^{20}_1 = \frac{20!}{1!(20-1)!} = \frac{20!}{1!.19!} = \frac{20.19!}{1!.19!} = 20$$

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a) ikan gurame (gurame = 15)

$C^n_r = C^{15}_1 = \frac{15!}{1!(15-1)!} = \frac{15.14!}{1.14!} = 15$

b) Ruang sampel (lele = 20, gurame = 15, tawas 15) 8

$C^n_r = C^{50}_3 = \frac{50!}{3!(50-3)!} = \frac{50!}{3!\,47!} = \frac{50.49.48.47!}{3.2.1\ 47!} = 19.600$

$P(A) = \frac{n(A)}{n(S)} = \frac{C^{20}_1 . C^{15}_1 C^{15}_1}{C^{50}_3} = \frac{20 \times 15 \times 15}{19600} = \frac{4500}{19.600} = \frac{45}{196}$

Dari satu set kartu bride diambil 2 buah kartu secara acak tentukan peluang bahwa yang diambil :

a) 1 kartu AS. dan 1 kartu king

b.) 1 kartu bernomor 2 dan 1 kartu bernomor 10

c) 2 kartu Diamon

d. 2 kartu Heart

e) 2 kartu Oven

= AS, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K

= AS. 2, 3, 4, 5, 6, 7, 8, 9, 10, J. Q, K

= AS. 2, 3. 4. 5. 6. 7. 8. 9. 10. J. Q K

= AS. 2. 3. 4. 5. 6. 7. 8. 9. 10. J. Q. K

a dan b) 1 kartu as dan 1 kartu king

$C^4_1 = \frac{4!}{1!(4-1)!} = \frac{4!}{1!.3!} = \frac{4.3!}{1!.3!} = 4$

ruang sampel

diambil 2 kartu

$C^{52}_2 = \frac{52!}{2!(52-2)!} = \frac{52.51.50!}{2!.50!} = 1326$

P(AS dan Hati) = $\frac{C_1^9 \cdot C_1^4}{C_2^{52}} = \frac{4 \times 4}{1326} = \frac{16}{1326}$

$= \frac{8}{663}$

b) 1 kartu bernomor 2 dan 1 kartu bernomor 10

$C_1^4 = \frac{4!}{1!(4-1)!} = \frac{4!}{1!3!} = \frac{4 \cdot 3!}{1! \cdot 3!} = 4$

$C_1^4 = \frac{4!}{1!(4-1)!} = \frac{4!}{1! \cdot 3!} = \frac{4 \cdot 3!}{1! \, 3!} = 4$

Ruang Sampel

$C_2^{52} = \frac{52!}{2!(52-2)!} = \frac{52 \cdot 51 \cdot 50!}{2! \cdot 50!} = 1.326$

P (1 nomor 2 dan 1 nomor 10) = $\frac{C_1^4 C_1^4}{C_2^{52}} = \frac{4 \times 4}{1326} = \frac{16}{1326}$

c) 2 kartu diamond

$= \frac{8}{663}$

a) Diambil 2 kartu dari 13 kartu diamond

$C_2^{13} = \frac{13!}{2!(13-2)!} = \frac{13!}{2! \, 11!} = \frac{13 \cdot 12 \cdot 11!}{2! \cdot 11!} = 78$

a) Ruang sampel

$C_2^{52} = \frac{5!}{2!(52-2)!} = \frac{52!}{2! \cdot 50!} = \frac{52 \cdot 51 \cdot 50!}{2! \, 50!} = 1326$

P (2 diamond) = $\frac{C_2^{13}}{C_2^{52}} = \frac{78}{1326} = \frac{1}{17}$