Shoum p. 45 , ex. 3.6

ex.28 A coin is weighted (كعيار) so that heads is twice as likely to appear as tails, find p(T) and p(H).

قطعة نقود تم استعدارها كعيار
فاذا ظهرت صورة واحدة H
فانها تعادل كتابتين حيث
احتمال الصورة واضعاف الكتابة

$p(H) = 2p(T)$.

let $p(T) = p$ then

$p(H) = 2p$.

we have $\sum_{i=1}^{n} p(x_i) = 1$. then.

دائماً ① تفرض العلاقة

② نجعل مجموع الاحتمالات = 1

③ نجد قيمة p .

④ نعوض لايجاد الاحتمالات في العلاقة.

$p(H) + p(T) = 1$.

$2p + p = 1$

$3p = 1$

$\boxed{p = \frac{1}{3}}$

$P(H) = 2P$.

we have $\sum_{i=1}^{n} P(x_i) = 1$. then

$P(H) + P(T) = 1$.

$2P + P = 1$

$3P = 1$

$$\boxed{P = \frac{1}{3}}$$

then $P(T) = \frac{1}{3}$

and $P(H) = \frac{2}{3}$.

دائماً ① تحقق العلاقة

② نجعل مجموع الاحتمالات = 1

③ نجد قيمة ص .

④ نعوض لإيجاد الاحتمالات في العلاقة

P. 41. ex. 3.6 — Shoum.

Ex. 29

Three hourse A, B and C are in a race, A is atwice likely to win as B and B is atwice likely to win as C. What are their respective prob. of wining. ((means find $P(A)$, $P(B)$ and $P(C)$.)).

we have $P(A) = 2P(B) \rightarrow P(B) = 2P(C)$ then.

Let $P(C) = \boxed{p}$

then $P(B) = \boxed{2p}$

and $P(A) = 2P(B) = 2(2p) = \boxed{4p}$

Know the sum of prob. must be 1. hence.

$$P(A) + P(B) + P(C) = 1.$$

$$\Rightarrow \quad 4p + 2p + p = 1$$

$$7p = 1$$

$$\boxed{p = \frac{1}{7}}.$$

then $P(C) = \frac{1}{7}$, $P(B) = \frac{2}{7}$ and $P(A) = \frac{4}{7}$

$$7p = 1$$

$$\boxed{p = \frac{1}{7}}.$$

then $p(C) = \frac{1}{7}$, $p(B) = \frac{2}{7}$ and $p(A) = \frac{4}{7}$.

Q.P// what is the prob. that B or C wins, if B and C mutually exclusive events.

$$p(B \cup C) = p(B) + p(C) - p(B \cap C).$$

$$= \frac{2}{7} + \frac{1}{7} - 0.$$

$$= \boxed{\frac{3}{7}}$$

سؤال الدور الاول سنة 2004. .4

The letters bbbKKKmm are arranged in a row. what is the probability of (a) two b's come together.

(b) no two b's come together

(c) no two b's come together and the last letter b.

$$n(S) = \frac{8!}{3!\,3!\,2!} = \frac{8\cdot 7\cdot 6\cdot 5\cdot 4\cdot 3!}{3!\cdot 3\cdot 2\cdot 1\cdot 2\cdot 1} = \boxed{560}$$

عدد طرق ترتيب الاحرف من الكلمة.

[a] Let A: The event that we get arrangments have two b's come together.

1 + 6

[bb] b KKK mm

2! 3! 2!

$$n(A) = \frac{7!}{2!\,3!\,2!} = 210.$$

$$= \frac{n(A)}{} = \frac{210}{} = \boxed{0.375}$$

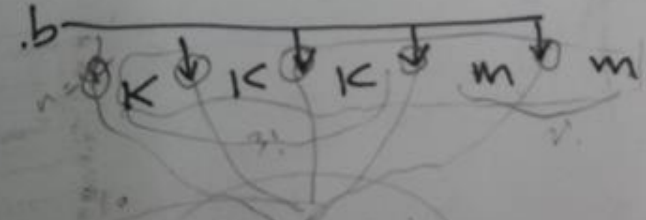
$$n(A) = \frac{7!}{2!\,3!\,2!} = 210.$$

$$\Rightarrow P(A) = \frac{n(A)}{n(S)} = \frac{210}{5760} = \boxed{0.375}.$$

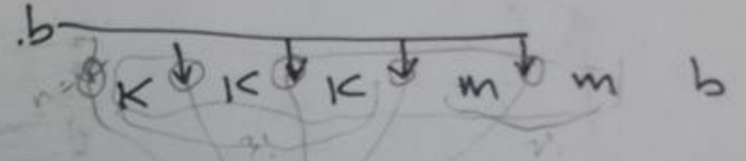
[b] A^c is the complement of A.

$$P(A^c) = 1 - P(A) = 1 - 0.375 = \boxed{0.625}$$

[c] Let B: the event that we get arrangments have
two b's come together and the last letter



[C] Let B: the event that we get arrangments have no two b's come together and the last letter is b.



ط لا يكون سوى

معنا n يكون بين

k و k ا, k و m

ا, m و m .

أو مجموعات لذلك فإن

فنثبت b . C_1^1 .

ونختار من خمس طرق 2 للتوزيع منهم C_2^5 .

وعدد طرق توزيع المتغير هو $\frac{n!}{n_1!\,n_2!}$

KKKmm

KmmKK

KKmmK

mmKKK.

وهكذا نستمر .

$$n(B) = \frac{5!}{3!\,2!} \cdot C_2^5 \cdot C_1^1 = 100.$$

$$\Rightarrow P(B) = \frac{100}{560}$$

$\frac{5!}{2!\,3!} = 10$

$\frac{5 \times 4 \times 3}{2 \times 1 \times 3}$

The letters h h m m m j j are arranged in a row. What is the probability of: [a] no two m's come together.

[b] no two m's come together and the last letter is m.

[c] two m come together

h h m m m j j

$$n.o.w = \frac{7!}{3!\,2!\,2!} = \frac{7!}{2!\,2!\,3!} = \boxed{210}$$

[a] Let A: No two m's come together

h h h j j m m m

$$n(A) = C_3^5 = \frac{5!}{3!\,2!} = \frac{5 \cdot 4 \cdot 3!}{3! \cdot 2!} = \boxed{10}$$

$$\therefore p(A) = \frac{n(A)}{n.o.w} = \frac{10}{210} = \frac{1}{21}$$

(a) Let A: No two m's come together.

h h j j

$$n(A) = C_3^5 = \frac{5!}{3!\,2!} = \frac{5 \cdot 4 \cdot 3!}{3! \cdot 2 \cdot 1} = \boxed{10}$$

$$\therefore P(A) = \frac{n(A)}{n(S)} = \frac{10}{210} = \frac{1}{21}$$

(b) Let B: No two m's come together and the last letter

C_2^4 C_1^1

h h j j m

$$n(B) = \left(C_2^4 \cdot C_1^1\right)\left(\frac{4!}{2!\,2!}\right) = 36$$

$$P(B) = \frac{36}{210}$$

$$n(B) = \frac{4!}{2!\,2!} \cdot C_2^4 \cdot C_1^1 = 6 \cdot 6 = 36$$

(i)

(2)

No two m's come together and the last letters is m.

(2)

C_2^4 C_1^1

O h O h O j O j m

$n(B) = C_2^4 \cdot C_1^1 \cdot \frac{4!}{2!\,2!} = 36$

$P(B) = \frac{36}{210}$

$n(B) = \frac{4!}{2!\,2!} \cdot C_2^4 \cdot C_1^1 = 6 \cdot 6 = 36$

ترتيب بقية الاحرف

$P(B) = \frac{36}{210}$

hhjj

hhjj
jjhh
hjjh
jhhj
hjhj
jhjh

$\frac{4!}{2!\,2!} = 6$

$C_2^4 \cdot C_1^1$

$\frac{4!}{2!\,2!} \cdot C_2^4 \cdot C_1^1$

C

mm hhjj

2! 2! 2!

n = 2! 2! 2!
= 2×2×2 = 8

$n(C) = \frac{6!}{2!\,2!\,2!} = 90$

$P(C) = \frac{n(C)}{n(S)} = \frac{90}{210}$