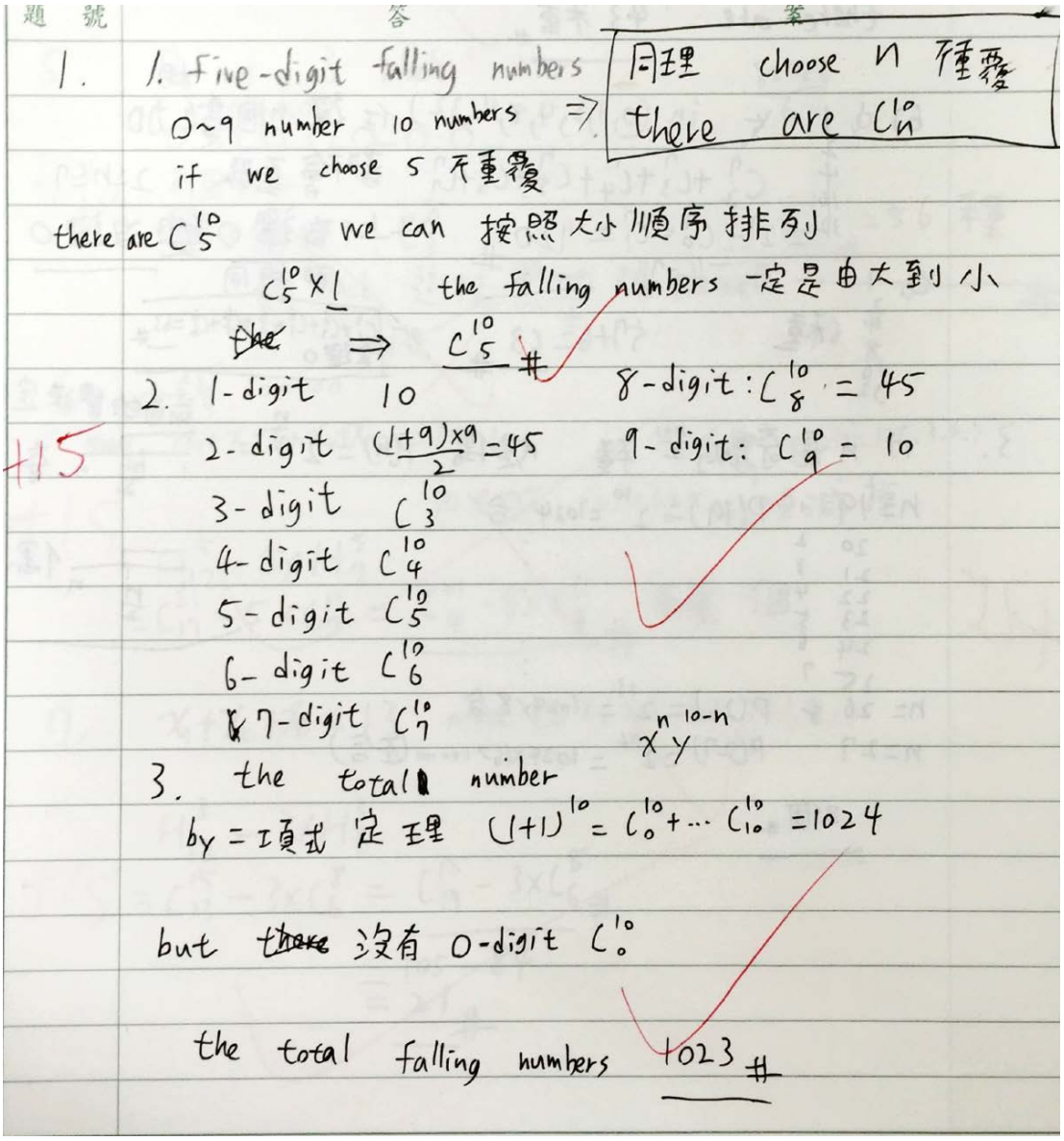
答案僅供參考

第 1 題.



題號 答案

1. 1. five-digit falling numbers ⇒ 同理 choose n 種發 there are C_n^{10}

0~9 number 10 numbers

if we choose 5 不重發

there are C_5^{10} we can 按照大小順序排列

$C_5^{10} \times 1$ the falling numbers 一定是由大到小

~~the~~ ⇒ C_5^{10} #

2. 1-digit 10 8-digit: $C_8^{10} = 45$

+15 2-digit $\frac{(1+9)\times 9}{2} = 45$ 9-digit: $C_9^{10} = 10$

3-digit C_3^{10}

4-digit C_4^{10}

5-digit C_5^{10}

6-digit C_6^{10}

~~7~~-digit C_7^{10} $x^n y^{10-n}$

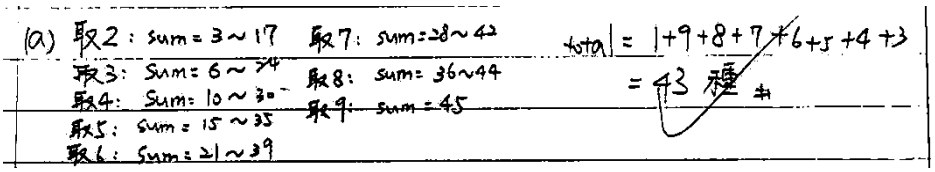
3. the total number

by 二項式定理 $(1+1)^{10} = C_0^{10} + \cdots C_{10}^{10} = 1024$

but ~~there~~ 沒有 0-digit C_0^{10}

the total falling numbers 1023 #

第 2 題.



(a) 取2: sum = 3~17 取7: sum = 28~42

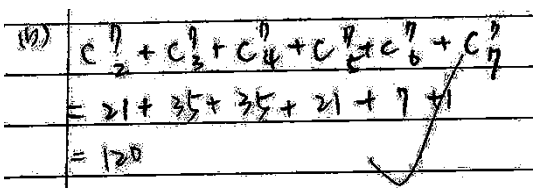
取3: sum = 6~24 取8: sum = 36~44

取4: sum = 10~30 取9: sum = 45

取5: sum = 15~35

取6: sum = 21~39

total = 1+9+8+7+6+5+4+3 = 43 種 #

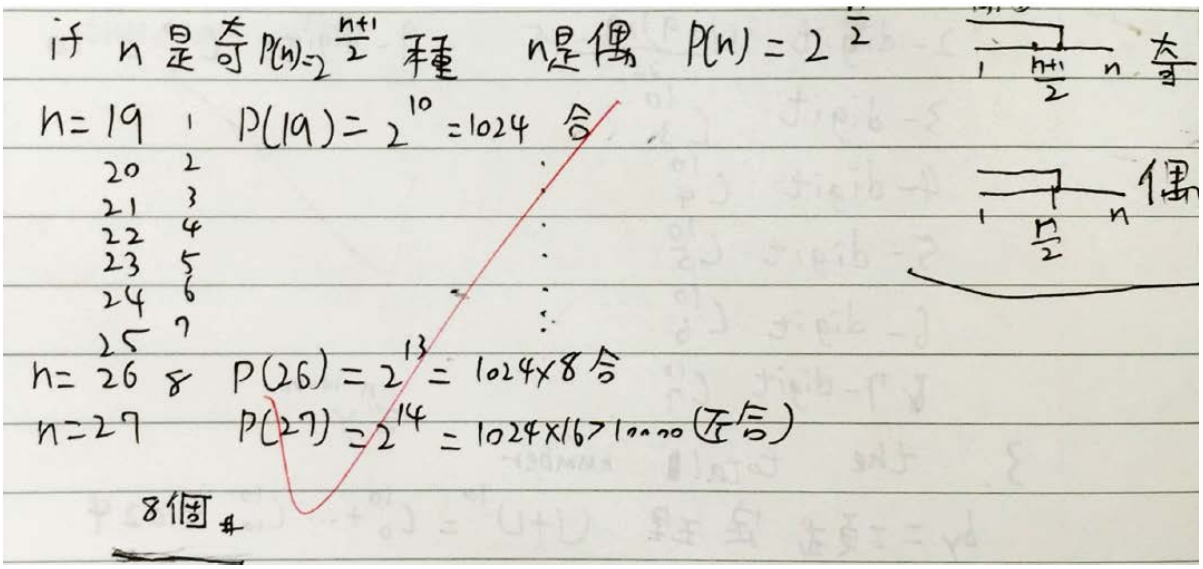


(b) $C_2^7 + C_3^7 + C_4^7 + C_5^7 + C_6^7 + C_7^7$

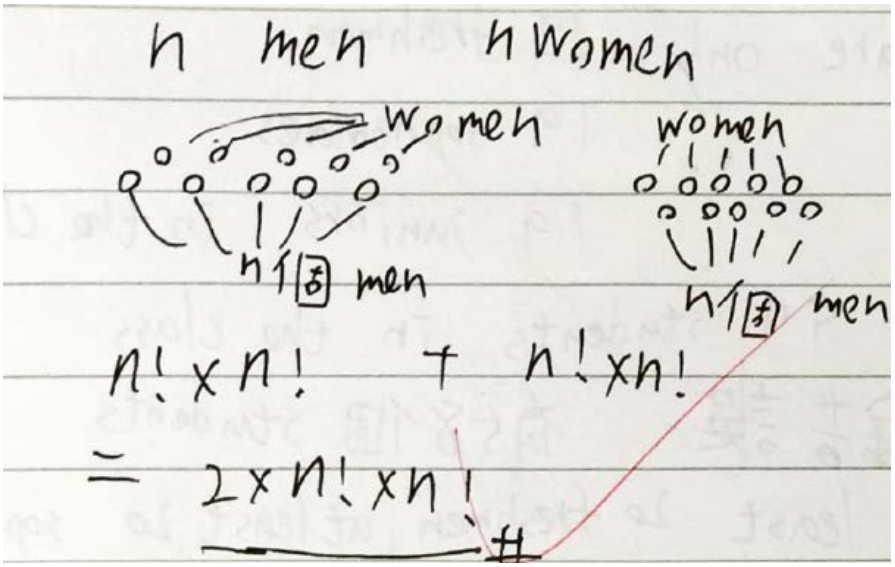
= 21 + 35 + 35 + 21 + 7 + 1

= 120

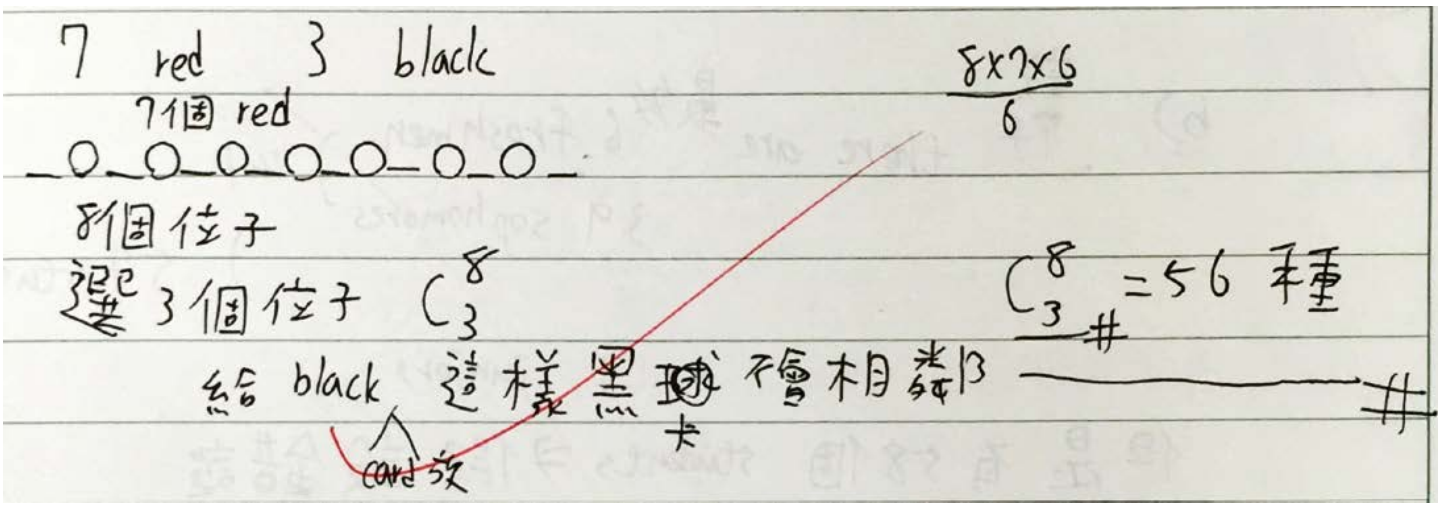
第3題.


if n是奇 P(n)=2^((n+1)/2) 種 n是偶 P(n)=2^(n/2)
n=19 : P(19)=2^10=1024 合
20 2
21 3
22 4
23 5
24 6
25 7
n=26 8 P(26)=2^13=1024×8 合
n=27 P(27)=2^14=1024×16>10000 (不合)
8個 #
奇
偶

第4題.

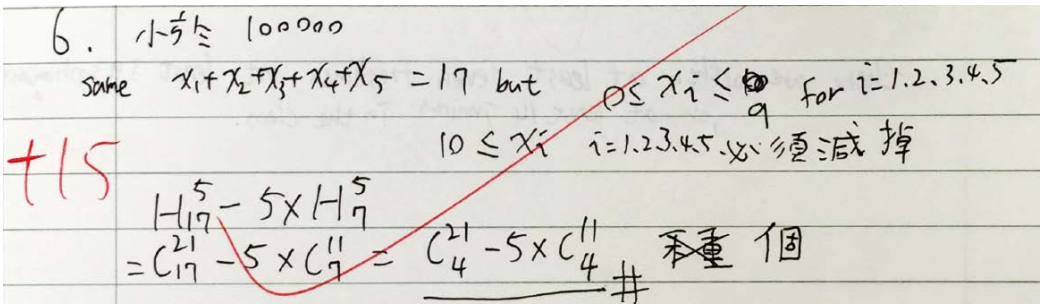

n men n women
women
n個 men
women
n個 men
n!×n! + n!×n!
= 2×n!×n! #

第5題.

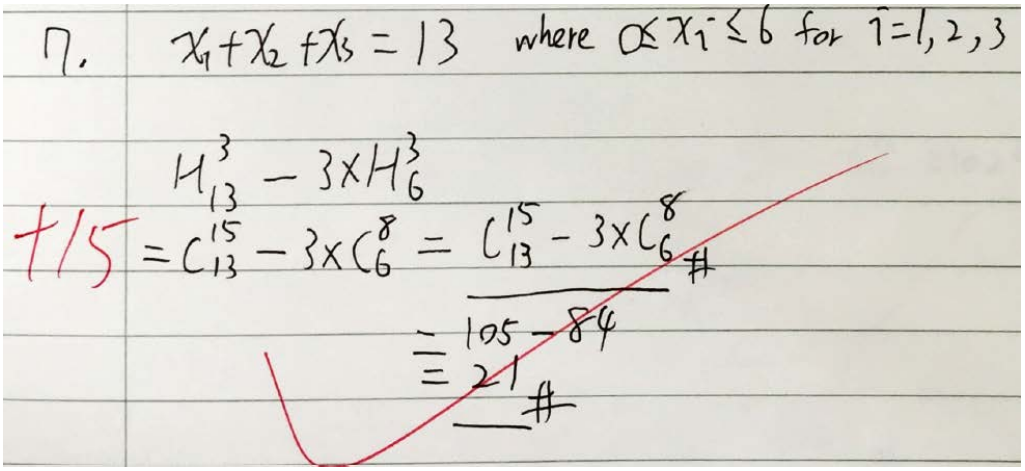

7 red 3 black
7個 red
8個位子
選3個位子 C(8,3)
給 black 這樣黑球不會相對
card 改
8×7×6 / 6
C(8,3) = 56 種 #

答案僅供參考

第 6 題.



第 7 題.



第 8 題.