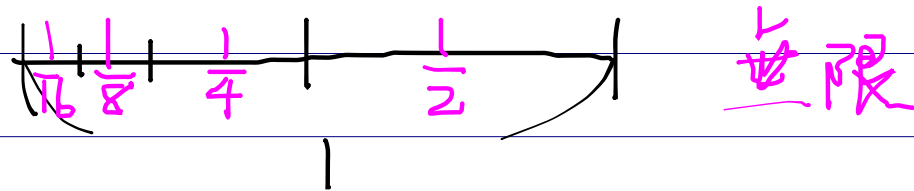


2012-11-02 離散數學

1. 實體世界中. 是否有東西 (如體積. 質量) 與自然數 1-1

△ 一些假定:

1. 粒子要有多小就有多小。



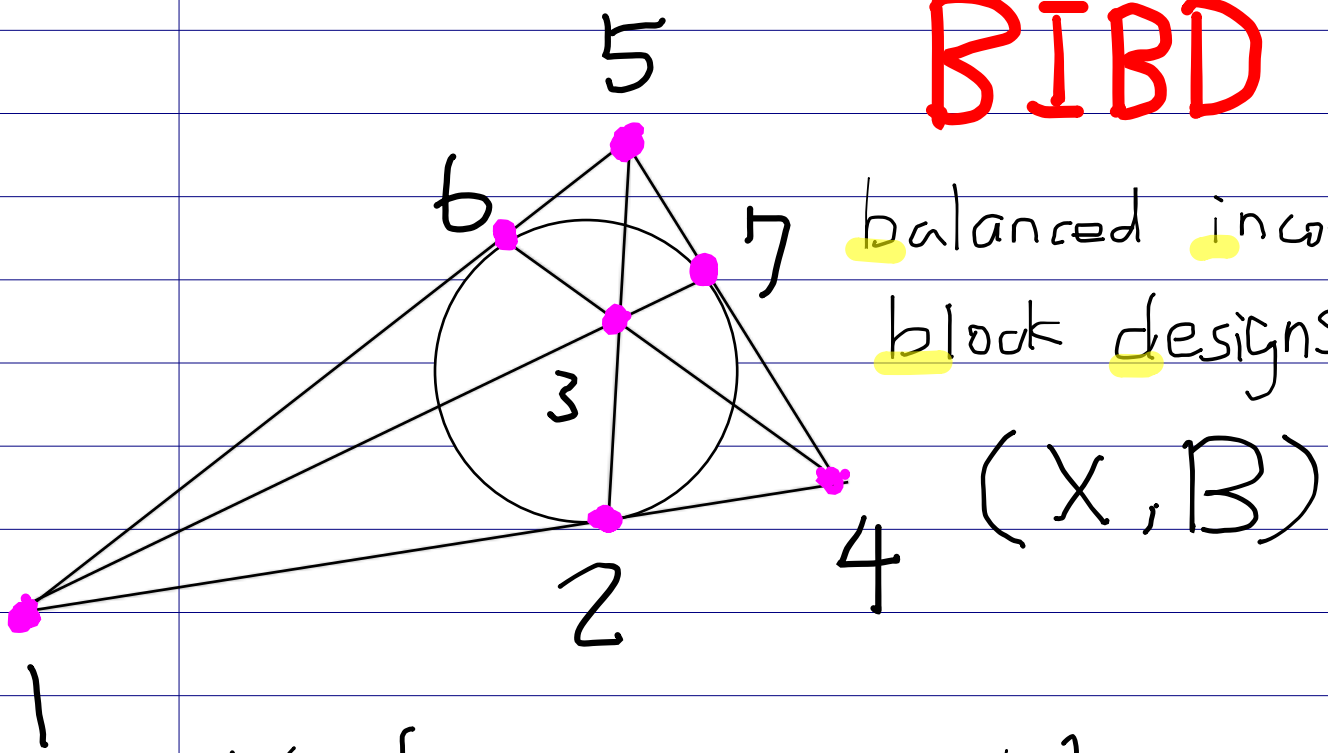
$$1 = \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \dots$$

2. 體積和質量(永遠)都不可能小於某一數值

3. 目前在某一數值以上. 將來不定 (暫時. 有限. 變動中)

Simple

BIBD



balanced incomplete
block designs

(X, B)

$$X = \{1, 2, 3, 4, 5, 6, 7\}$$

$$v = |X| = 7 \quad \text{點數}$$

$$b = |B| = 7 \quad \text{線數} \quad B = \{B_1, B_2, \dots, B_7\}$$

$$r = 3 \quad \text{每點出現在 } r \text{ 條線}$$

$$k = 3 \quad \text{每條線 } k \text{ 個數}$$

$$\lambda = 1 \quad \text{任意兩點恰好出現在 } \lambda \text{ 條線}$$

$$B_1 = \{1, 2, 4\} \quad B_2 = \{2, 3, 5\} \quad B_3 = \{3, 4, 6\}$$

$$B_4 = \{4, 5, 7\} \quad B_5 = \{5, 6, 1\} \quad B_6 = \{6, 7, 2\}$$

$$B_7 = \{7, 1, 3\}$$

$$\binom{X}{k} = \left\{ \begin{array}{c} \{x_1, x_2, \dots, x_k\} \\ \vdots \end{array} \right\}$$

Complete design

$$b = \binom{v}{k} = \frac{v!}{k!(v-k)!}$$

$$r = \binom{v-1}{k-1}$$

(v, k, λ) 就可叫

(v, b, r, k, λ)

$$\lambda = \binom{v-2}{k-2}$$

算數

$$bk = vr$$

每個點出現的

線數

$$\lambda(v-1) = r(k-1)$$

其中 (43.7.1) 不存在

v, k, λ

1 西條線
個數

線數

Order defined by $n = r - \lambda$

The complement

$$\lambda' = \lambda + b - 2r \quad \text{作業!}$$

Fisher inequality

$$b \geq v$$

Symmetric BIBDs

$$\because bk = vr \quad \lambda(v-1) = r(k-1)$$

若 $b=v$ 則 $k=r$

$$\lambda(v-1) = k(k-1)$$