

Statistics

Note Title

8/6/2007

Summation / Sigma

$$3 \sum_{k=1}^4 k^2 = 1^2 + 2^2 + 3^2 + 4^2 = 3(30) = 90$$

Mean	Median	Mode	range	population std dev
\bar{x}	Med	most frequent	max-min	σ_x

ON GC → STAT, Edit
STAT, CALC, 1-Var Stat L₁, L₂

\bar{x} = mean
 σ_x = popn std dev

Scatter plots → Stat, Edit

L ₁	L ₂
x's	y's

→ 2nd Stat Plot
Plot1 ON

→ Zoom Stat (9)

regressions Diagnostics ON (CATALOG) for r^2

r = correlation coefficient



$r = -1$



$r = 0$



$r = .8$



$r = +1$

- 4) LinReg
- 5) QuadReg
- 0) ExpReg
- A) PwrReg

Y_1 (VARS, Y-VARS, Function)
 Y_2

Probability

$$P = \frac{\# \text{ success}}{\text{total \#}}$$

$$P = 0$$

impossible

$$P = 1$$

always happens

$${}^n C_r = \binom{n}{r}$$

MATH > PRB

want

$$P(\text{out of 3 kids exactly 2 B + 1 G}) =$$

$${}^3 C_2$$

$$\left(\frac{1}{2}\right) \left(\frac{1}{2}\right)$$

total

more at least 2

$$P(2) + P(3) \dots$$

less at most 2

$$P(0) + P(1) + P(2)$$

ex// 5 rolls of die

total

P(exactly 3 4s on die):

$$p^{33}/2$$

$${}^5 C_3 \left(\frac{1}{6}\right)^3 \left(\frac{5}{6}\right)^2 =$$

$$\frac{250}{7776}$$

$$\frac{125}{3888}$$

$$\frac{10}{1} \cdot \frac{1}{216} \cdot \frac{25}{36}$$

Binomial Expansion $(a+b)^4$ ~~$a^4 + b^4$~~

$$(a+b)(a+b)(a+b)(a+b)$$

$${}^4C_0 a^4 b^0 + {}^4C_1 a^3 b^1 + {}^4C_2 a^2 b^2 + {}^4C_3 a^1 b^3 + {}^4C_4 a^0 b^4$$

(ex) $(x+y)^3 = {}^3C_0 x^3 + {}^3C_1 x^2 y + {}^3C_2 x y^2 + {}^3C_3 y^3$

$$(2x - y)^3 = {}^3C_0 (2x)^3 + {}^3C_1 (2x)^2 (-y) + {}^3C_2 (2x) (-y)^2 + {}^3C_3 (-y)^3$$

$$8x^3 - 12x^2y + 6xy^2 - y^3$$

3rd term of $(4a - 2b)^n = {}^nC_2 (4a)^{n-2} (-2b)^2$

↑ 1 less