Examples

Symbols

$$n \text{ choose } x = \binom{n}{x}$$

Children

In a **four-child** family, what are the odds of the following?

$$\text{Total} = 2^4 = 16$$

(a) Three girls and a boy in the family?

$$\frac{4!}{3!1!} = \frac{24}{6} = 4$$

(b) A youngest child in the family who is a girl?

$$1 * 2^3 = 8$$

(c) An oldest child and a youngest child in the family who are both boys

$$1 * 2^2 * 1 = 4$$

Cards

$$\text{Total} = \binom{52}{\text{Number drawn}}$$

When drawing **one card** what are the odds it is a **club** or **jack**?

$$13 + 4 - 1 = 16$$

When drawing **two cards** What are the odds it is a **pair**?

$$13 * \binom{4}{2}$$

Coin

A coin is tossed **six** times. What are the odds of the following?

$$\text{Total} = 2^6 = 64$$

(a) What are the odds the coin lands on heads more than one?

$$1 - \frac{\binom{6}{0} + \binom{6}{1}}{\text{Total}} = 1 - \frac{7}{64}$$

(b) The coin lands on heads exactly 2 times?

$$\binom{6}{2}$$

Defection

Lots of 36. Sample of 8. Any defective = rejection. Contains 2 defective. What are the odds of shipping?

$$\text{Total} = \binom{36}{8}$$

$$\binom{34}{8}$$