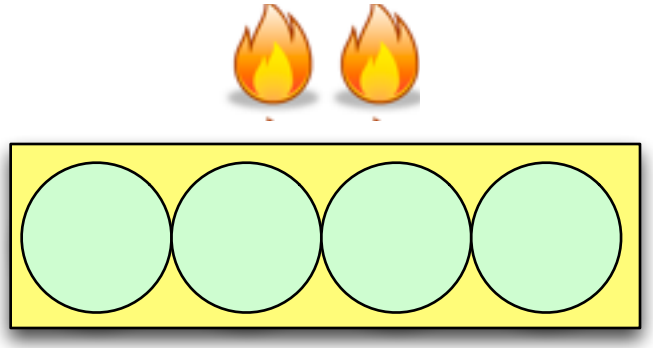
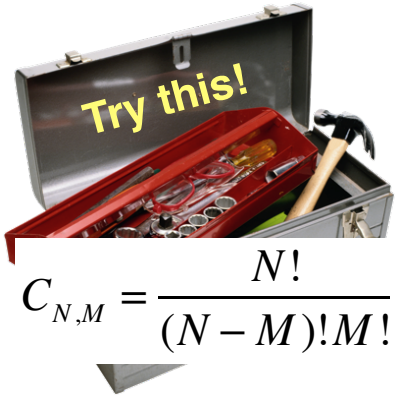
Suppose I have a block of matter with 4 two-state "Degrees of Freedom" (bins in which to place energy that can only hold 1 energy packet).

I have 2 packets of thermal energy.
How many ways are there
to distribute 2 packets?
(i.e., How many microstates are there?)

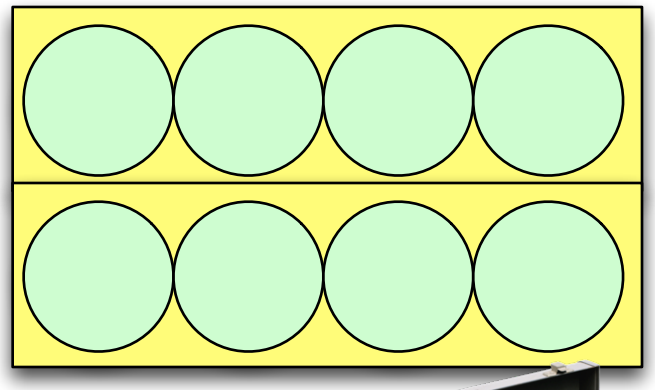




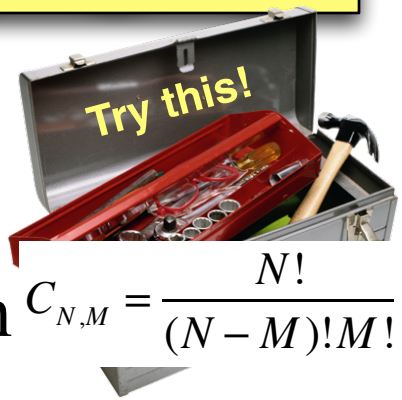
$$C_{N,M} = \frac{N!}{(N-M)!M!}$$

Suppose I have two blocks of matter, each with 4 two-state "Degrees of Freedom" (bins in which to place energy that can only hold 1 energy packet).

I have 2 packets of thermal energy. How many ways are there to distribute 2 packets among both blocks compared to the number of ways to distribute 2 packets to one block?



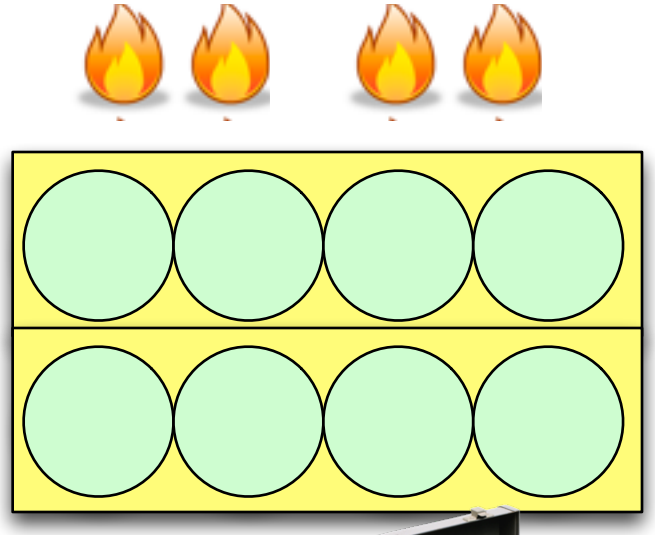
1. Twice as high
2. Four times as high
3. Eight times as high
4. More than eight times as high
5. Not enough information



$$C_{N,M} = \frac{N!}{(N-M)!M!}$$

Suppose I have two blocks of matter, each with 4 two-state "Degrees of Freedom" (bins in which to place energy that can only hold 1 energy packet).

I have 4 packets of thermal energy. How many ways are there to distribute the 2 packets to each block compared to the number of ways to distribute the 4 packets to one block ?



1. Twice as many
2. Four times as many
3. Sixteen times as many
4. More than sixteen times as many
5. There is not enough information to tell

$$C_{N,M} = \frac{N!}{(N-M)!M!}$$