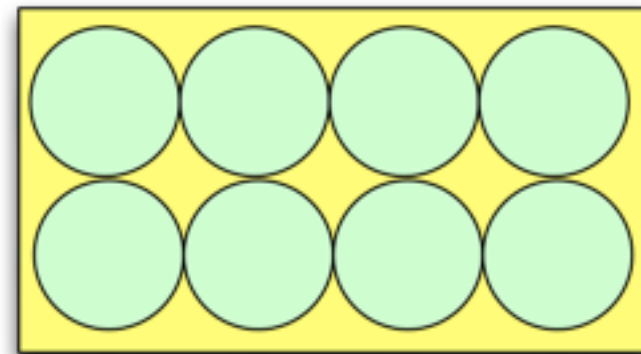Suppose I have a block of matter with 8 two-state "Degrees of Freedom" (bins in which to place energy that can only hold 1 energy packet).

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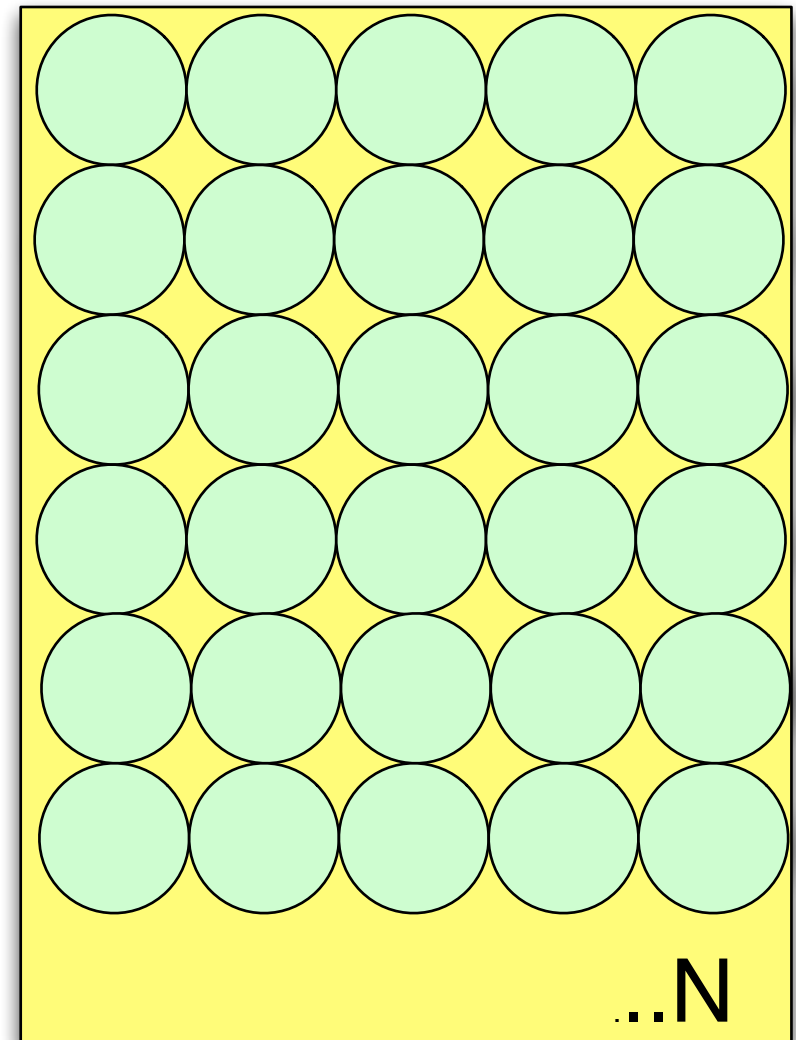to distribute 2 packets?
(i.e., How many microstates
are there?)

1. 16   6. 32
2. 15   7. 28
3. 8   8. Something else
4. 64   9. It cannot be determined
5. 56

Suppose I have a block of matter with N 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?

1. $2N$
2. $2N-1$
3. N^2
4. $N(N-1)$
5. $N^2/2$
6. $N(N-1)/2$

7. Something else
8. It cannot be determined

...N

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.
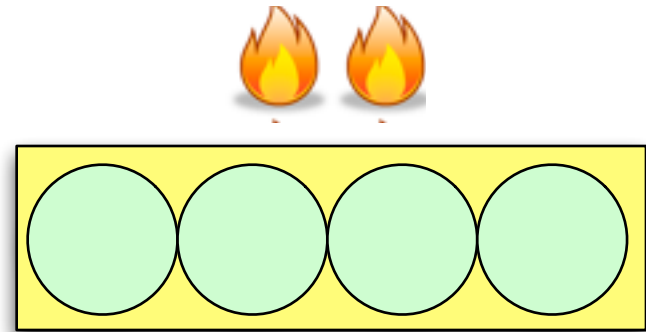How many ways are there
to distribute 2 packets?
*(i.e., How many microstates
are there?)*

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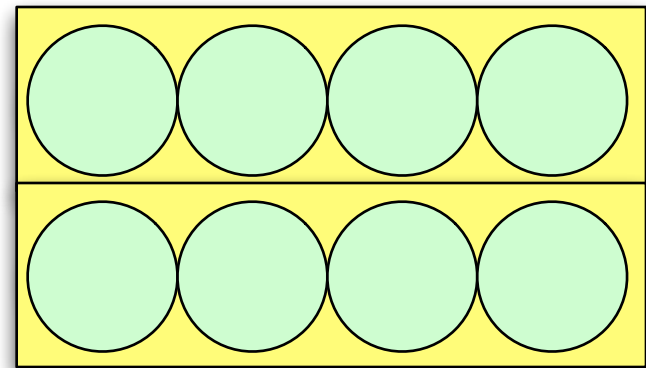
1. Twice as high
2. Four times as high
3. Eight times as high
4. More than eight times as high
5. Not enough information