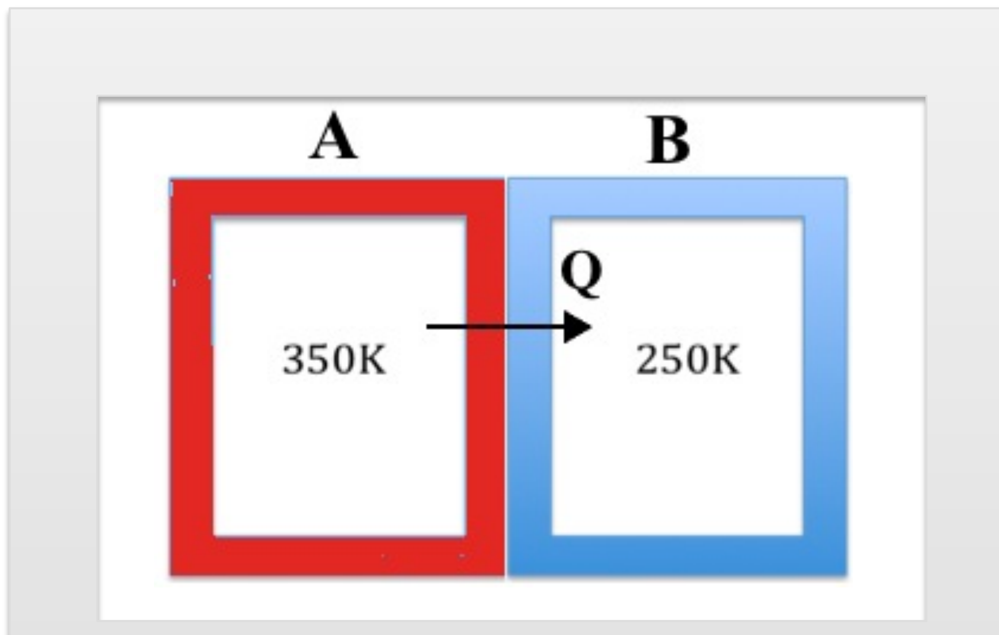
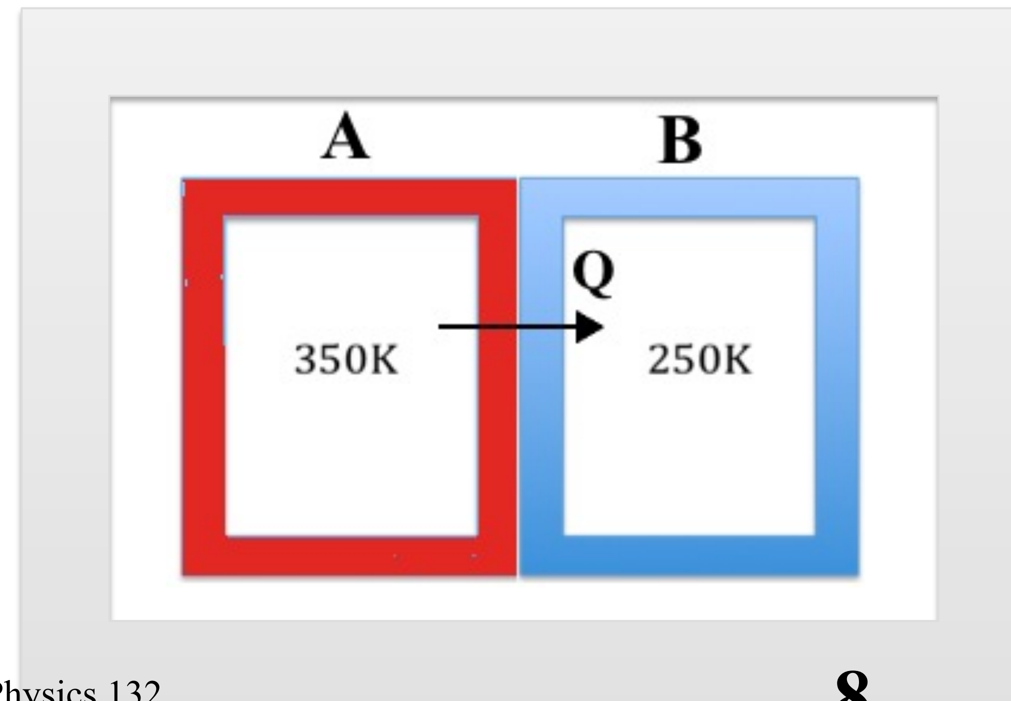
A small amount of heat Q flows out of a hot system A (350K) into a cold system B (250K). Which of the following correctly describes the signs of the entropy changes that result? (The systems are thermally isolated from the rest of the universe.)

1. $\Delta S_A > 0$ and $\Delta S_B > 0$
2. $\Delta S_A < 0$ and $\Delta S_B > 0$
3. $\Delta S_A > 0$ and $\Delta S_B < 0$
4. $\Delta S_A < 0$ and $\Delta S_B < 0$
5. $\Delta S_A = 0$ and $\Delta S_B = 0$
6. Something else



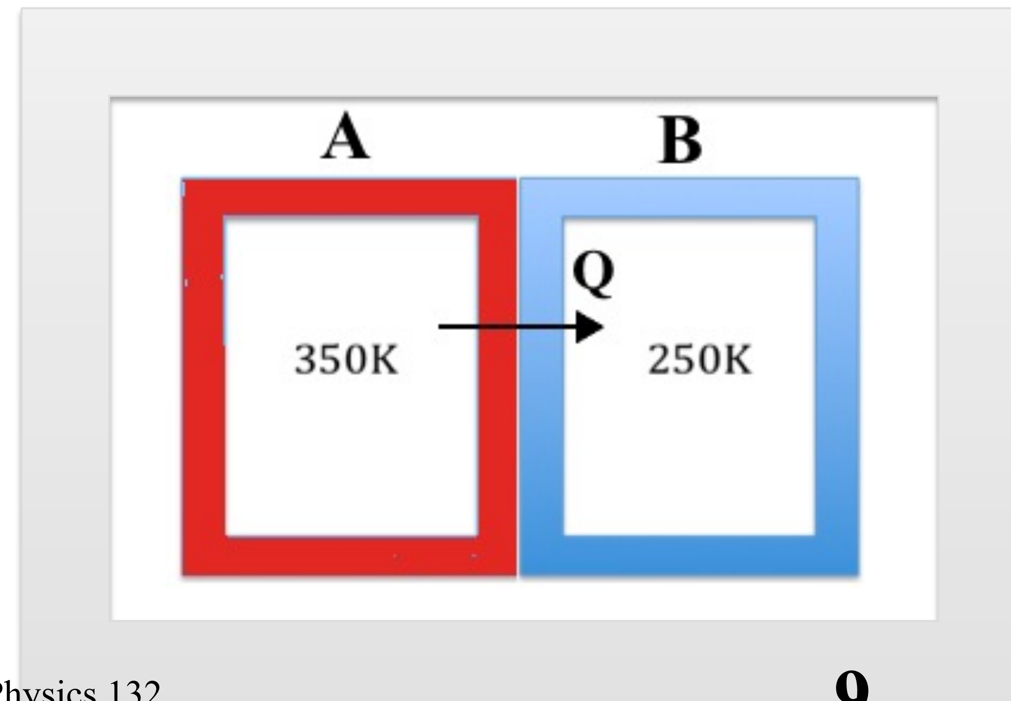
A small amount of heat Q flows out of a hot system A (350K) into a cold system B (250K). Which of the following correctly describes the entropy changes that result? (The systems are thermally isolated from the rest of the universe.)

1. $|\Delta S_A| > |\Delta S_B|$
2. $|\Delta S_B| > |\Delta S_A|$
3. $|\Delta S_A| = |\Delta S_B|$
4. It cannot be determined from the information given



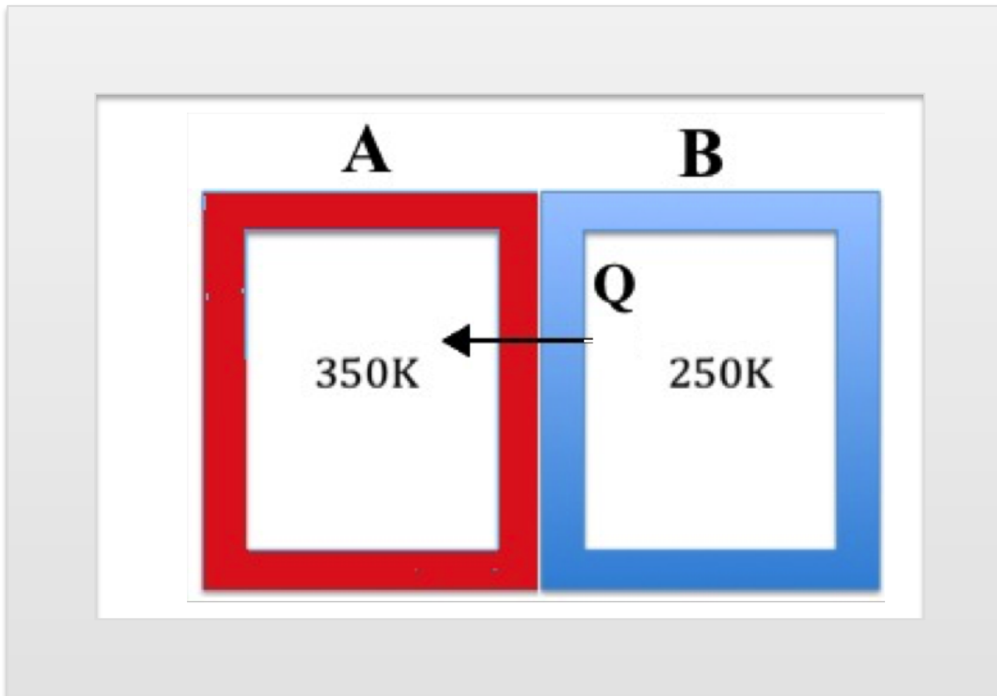
A small amount of heat Q flows out of a hot system A (350K) into a cold system B (250K). (The systems are thermally isolated from the rest of the universe.) Could this occur spontaneously?

1. Yes
2. No
3. Yes if you put a heat pump between the two and plug it in. (So system is no longer isolated from the rest of the universe.)
4. It cannot be determined from the information given



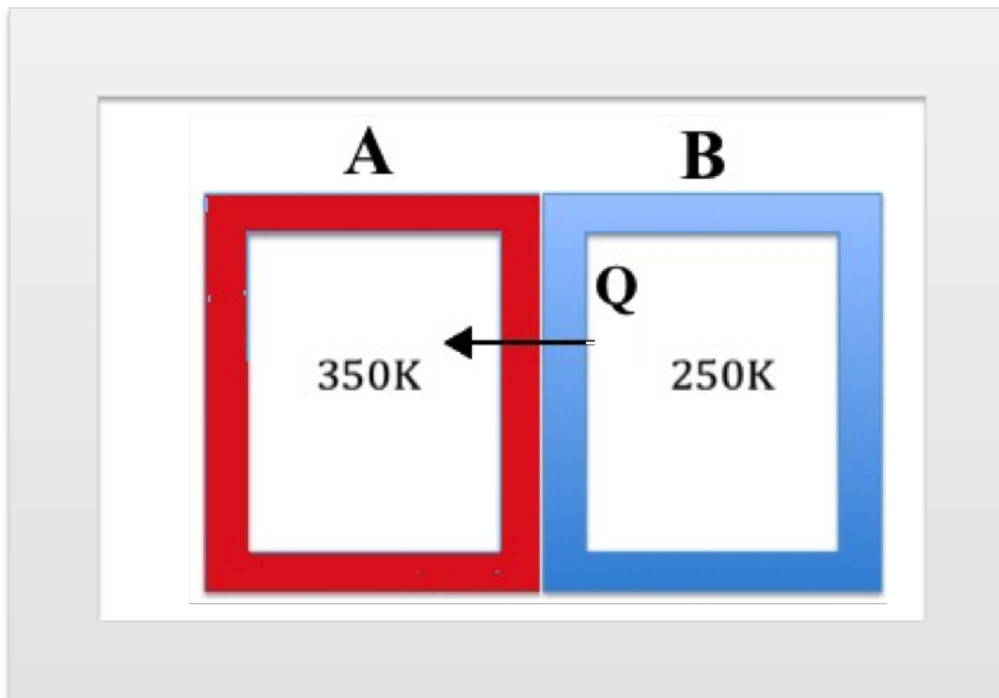
A small amount of heat Q flows out of a cold system B (250K) into a hot system A (350K). Which of the following correctly describes the entropy changes of the system that result?

1. $|\Delta S_A| > |\Delta S_B|$
2. $|\Delta S_B| > |\Delta S_A|$
3. $|\Delta S_A| = |\Delta S_B|$
4. It cannot be determined from the information given



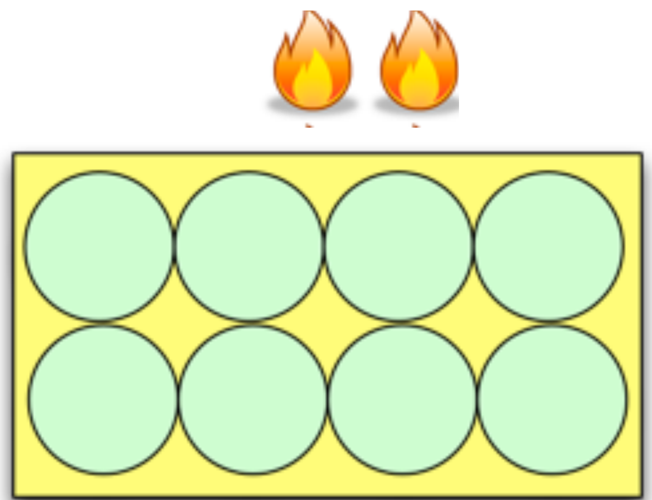
A small amount of heat Q flows out of a cold system B (250K) into a hot system A (350K). Could this occur spontaneously?

1. Yes
2. No
3. Yes if you put a heat pump between the two and plug it in. (So the system is no longer isolated from the rest of the universe.)
4. It cannot be determined from the information given



Suppose I have a block of that has 8 open "Degrees of Freedom" (bins in which to place energy that can only hold any number of energy packets).

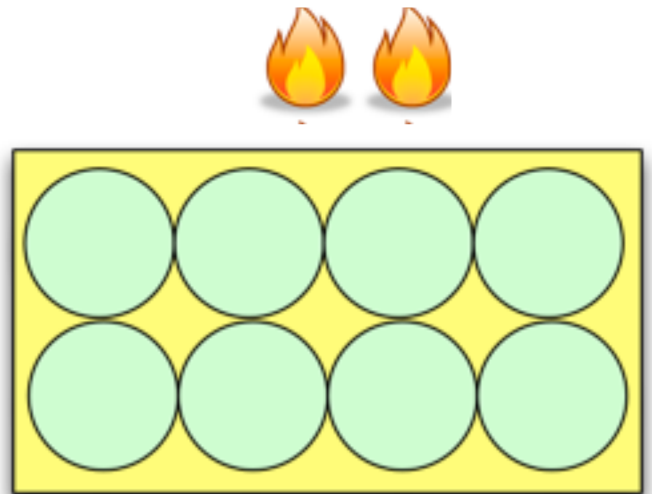
I have 2 packets of thermal energy.
How many ways are there to distribute 2 packets?
(i.e., How many microstates are there?)



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

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

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