

Energy Cube Model 2 Data Table

Part 1: The difference between average kinetic energy, total kinetic energy, and temperature.

1. For each trial, set up your molecules with the amount of average kinetic energy indicated. Be sure to use all 32 of your cubes.
2. Fill in the remaining columns of the data table.
3. Repeat steps 1–2 for the next trial.

Trial	Object	Average KE (temperature)	Total KE (thermal energy)	What is the state of the system? (choose one option from below)
1	Object A larger: 6 molecules	4kJ		<input type="checkbox"/> The system is at equilibrium because the objects are the same temperature. <input type="checkbox"/> The system is not at equilibrium because Object A is colder than Object B. <input type="checkbox"/> The system is not at equilibrium because Object B is colder than Object A.
	Object B smaller: 2 molecules	4kJ		
2	Object A larger: 6 molecules	3kJ		<input type="checkbox"/> The system is at equilibrium because the objects are the same temperature. <input type="checkbox"/> The system is not at equilibrium because Object A is colder than Object B. <input type="checkbox"/> The system is not at equilibrium because Object B is colder than Object A.
	Object B smaller: 2 molecules	7kJ		
3	Object A larger: 6 molecules	5kJ		<input type="checkbox"/> The system is at equilibrium because the objects are the same temperature. <input type="checkbox"/> The system is not at equilibrium because Object A is colder than Object B. <input type="checkbox"/> The system is not at equilibrium because Object B is colder than Object A.
	Object B smaller: 2 molecules	1kJ		

Part 2: What happens when a warmer object comes in contact with a colder object?

1. Set up the energy cubes according to the starting KE numbers indicated in the data table for Trial 1. Make sure to use all 32 of your energy cubes.
2. Imagine that Object A and Object B have been pushed into contact.
3. Transfer kinetic energy until the system is at equilibrium.
4. With your partner, complete the the last two columns of the Part 2 data table below.
5. Repeat steps 1–4 for Trial 2.

Trial	Object	Starting average KE (temperature)	Starting total KE (thermal energy)	Ending average KE (temperature)	Ending total KE (thermal energy)
1	Object A (warmer) larger: 6 molecules	5kJ	30kJ		
	Object B (colder) smaller: 2 molecules	1kJ	2kJ		
2	Object A (colder) larger: 6 molecules	1kJ	6kJ		
	Object B (warmer) smaller: 2 molecules	13kJ	26kJ		