Thought Experiment Name: _____

| Number of **Marbles** (*marbles represent **particles** in an object/substance*) | Kinetic energy of each marble (in energy units) | **Average** kinetic energy of marbles (represents **temperature)** | **Total** kinetic energy of marbles (represents **thermal energy**) |
|---|---|---|---|
| 10 | 4, 4, 6, 5, 4, 7, 3, 4, 5, 4 | | |
| 20 | 4, 4, 6, 5, 4, 7, 3, 4, 5, 4, 8, 4, 4, 7, 4, 7, 3, 2, 3, 4 | | |

1. How does the average kinetic energy data in the 2 sets of particles compare?

2. How does the total kinetic energy data in the 2 sets of particles compare?

3. Why does the set of 20 particles moving across the floor represent more thermal energy than the set of 10 particles, even though the average kinetic energy of both sets of particles is the same?

4. How do you think the thermal energy of a set of 40 particles would compare to the thermal energy of the 10- particle and 20- particle sets if they all have the same average kinetic energy?

5. In the Lab from 3.2, Experiment 2 looked at Beaker C and Beaker D. C had 400mL of warm water and D only had 200mL. How is the marble model like Beakers C and D?

6. Why do you think Beaker C melted more ice than Beaker D?