Thermal Energy

UNIT QUESTION:

Why do things change temperature?

Chapter Questions:

1. *What is happening when the air in the school gets warmer?*
2. *What causes the air molecules inside the school to speed up?*
3. *Which heating system will warm the school more?*
4. *Why wasn't the water pasteurized?*

Key Concepts:

1. Things are made of molecules (or other types of atom groups).
2. When a thing gets hotter, its molecules are moving faster and have more kinetic energy.
3. When a thing gets colder, its molecules are moving slower and have less kinetic energy.
4. Temperature is a measure of the average kinetic energy of the molecules of a thing.
5. When two things are in contact, their molecules collide, and kinetic energy transfers from the faster-moving molecules to the slower-moving molecules.
6. Energy isn't created or destroyed. Therefore, as energy transfers, it increases in one part of the system as it decreases in another part of the system. The total energy of a system doesn't change.
7. The molecules of a system will transfer energy until the system reaches a stable state known as equilibrium, in which all of the molecules are moving at about the same speed.
8. For things at the same temperature, the thing with more molecules has more total kinetic energy (thermal energy) than the thing with fewer molecules.
9. At equilibrium, the average kinetic energy (temperature) of the molecules in the system is the total kinetic energy (thermal energy) evenly divided by the number of molecules in the system.
10. When a thing gains or loses energy, the energy gained or lost is divided among all the molecules of the thing.