Practice Problems: Thermal Energy, Temperature, Heat

1. What is the difference between Thermal Energy and Heat?

Thermal Energy = #particles × KE

Heat = change or transfer of thermal energy

2. What is temperature a measure of?

The average KE of particles in an object.

3. We have a 2 kg block of steel and a 1 kg block of steel, both at 21°C. Which one has more thermal energy and why?

The 2 kg block because it has more particles.

4. True or False: Temperature is not dependent on number of particles in an object. Explain

True. Temperature is the average KE of particles in an object. So a 2kg block and 1kg block have the same temperature.

5. Convert the following temperatures to Celsius:

a. 100 K: -173 C

b. 273 K: 0 C

c. 212 F: 100C

d. 88 F: 31 C

6. Convert the following temperatures to Kelvin

a. 100 C: 373 K

b. – 50 C: 223 K

c. 0 C: 273 K

d. 300 F: 422 K