

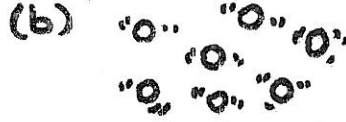
# Thermal Energy vs Temperature

13

Name \_\_\_\_\_

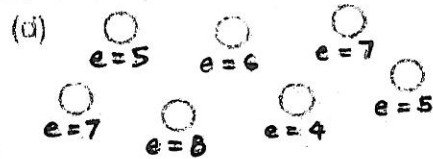
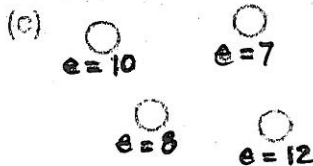
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Imagine we could see the particles in air. Below are two diagrams of what the air might look like:



- Does the air in diagrams (a) and (b) have the same temperature? \_\_\_\_\_
- How can you tell? \_\_\_\_\_
- In which diagram do you think the temperature of the air is greater? \_\_\_\_\_

Below are two more diagrams of air. Imagine this time that we have been able to measure the energy ( $e$ ) of each particle (the amount is given)



- Explain how you could calculate the **thermal energy** of the air in each diagram. \_\_\_\_\_
- Use the method you described above to **calculate the thermal energy** of the air in diagrams (c) and (d). **Show your work.**  
 Diagram (c) \_\_\_\_\_ Diagram (d) \_\_\_\_\_
- Explain how you could calculate the **temperature** of the air in diagrams (c) and (d). \_\_\_\_\_
- Use the method you described above to **calculate the temperature** of the air in diagrams (c) and (d). **Show your work.**  
 Diagram (c) \_\_\_\_\_ Diagram (d) \_\_\_\_\_
- Which diagram showed air with the greatest:
  - thermal energy** \_\_\_\_\_
  - temperature** \_\_\_\_\_

**SUMMARY:** Explain how temperature is different from thermal energy.