

## **SCIENCE 7**

### **The Particle Theory of Matter and Thermal Expansion**

#### **Activity's Key Terms:**

- A) **Thermal expansion** – increase in volume due to heat transfer.
- B) **Heat** – the transfer of energy from point A to point B.
- C) **Mass** – The amount of matter in a given substance.
- D) **Matter** – Anything that takes up space and is made of particles.
- E) **Volume** – The amount of space an object takes up.

#### **Points of interest:**

- 1.) A marshmallow is made up of tiny **particles**, it has **matter**.
- 2.) Particles have spaces between them. The particles of an unheated marshmallow are relatively close together.
- 3.) The marshmallow particles are constantly moving (vibrating).
- 4.) When **heat** is added to a marshmallow its particles move faster and away from each other. This moving away of the particles causes the marshmallow to expand. This process is called “**thermal expansion**”.
- 5.) During thermal expansion, the marshmallow gets bigger in size; increases in **volume**, but does not change its **mass**.

#### **Activity:**

- 1.) Weigh and record a marshmallow before it has been heated in a microwave.
- 2.) Draw a real size representation of the marshmallow.
- 3.) Place the marshmallow in a microwave for 30 second.
- 4.) Observe and record any change(s) during the 30 seconds
- 5.) Repeat steps 1 and 2 with the heated marshmallow.
- 6.) Comment on your findings.
- 7.) Eat the marshmallow and enjoy its flavor (hee, hee).

**Activity Pictorial Representation:**

Draw a picture of a marshmallow before and after it has been heated in a microwave.

| <b><u>Marshmallow Before Heating</u></b> | <b><u>Marshmallow After Heating</u></b> |
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**Future Observation Activity:**

- Suggest an activity to demonstrate “thermal contraction”.

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