

Please use the following resources to learn about heat transfer.

Watch this Video: <https://youtu.be/Akd7MMRKDwc>

Answer these questions:

- Which has faster moving molecules: a low temperature object or a high temperature object?
- Why does the iceberg have more thermal energy than the tea kettle?
- Why do we feel colder on a cold day with wind than we do on a cold day without wind?



Activity: Follow these directions to experiment with heat transfer.

You will need:

<ul style="list-style-type: none"> • 4 Ice Cubes • 1 Flat glass surface (ex. a pyrex pan) 	<ul style="list-style-type: none"> • 1 Flat plastic surface (ex. a tupperware container) • 1 Flat fabric surface (ex. a shirt) 	<ul style="list-style-type: none"> • 1 Flat aluminum surface (ex. aluminum foil folded into 4 layers) • 4 trays or towels for drips (optional)
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1. **IMPORTANT: Make sure the 4 flat surfaces you choose have been stored at room temperature. If any of your items were stored in a hot or cold area (ex. in a basement, near a heater) put them in a room temperature area for at least 2 hours.**
2. Place the 4 flat surfaces on the trays or towels to catch the water from the ice cubes, if needed.
3. With your hand, touch each surface and notice how hot or cold they feel. Rank the four materials by which you think has the highest temperature.
4. Predict: Upon which of the four surfaces would an ice cube melt the fastest? The slowest?
5. Place an ice cube on each of the 4 surfaces.
6. Let the ice cubes sit on the surfaces for 5 minutes.
7. At the end of 5 minutes, compare the 4 ice cubes. Rank them by least melted to most melted.

Hint: These four materials had the same *temperature*! Why did they feel differently? Why does the ice melt at different rates?

Make observations & use Claims, Evidence, and Reasoning!

1. **Claim:** Heat is different from temperature.

- **Evidence:**

- **Reasoning:**

2. **Claim:** The four materials had different thermal conductivity -- thermal conductivity is a material's ability to transfer thermal energy by touching.

- **Evidence:**

- **Reasoning:**