

Ms-Cunning

Lab # | Energy from the Sun: Rate of Melting

Date: Sept. 9

Name & Partners: whole class

**Purpose:** To test to see if the sun's energy heats up and melts ice cubes at the same rate

**Hypothesis:** I predict that the ice cube will melt the fastest on concrete and the asphalt surface and the slowest on the grass surface.

**Materials:**

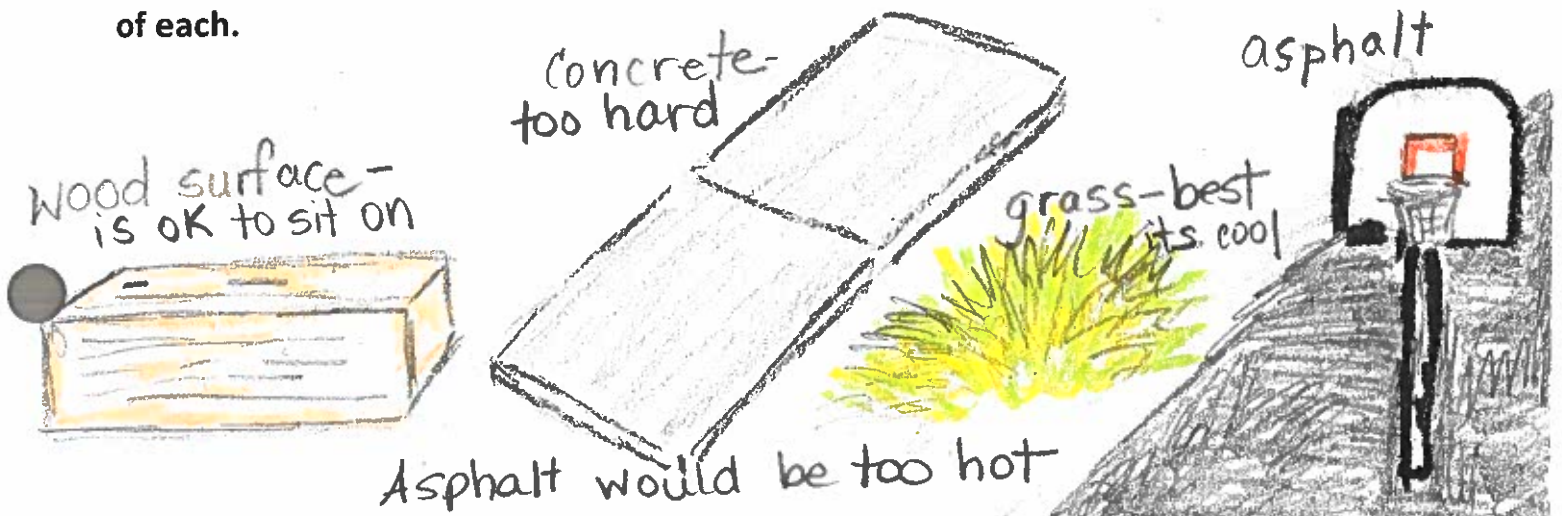
- 5 ice cubes
- 1 cup
- 4 surfaces: wood, concrete, asphalt & grass
- lab report
- stop watches
- pencil

**Procedure:**

1. time how long it takes using a stop watch for an ice cube to melt at room temperature (20-23°C).
2. Observe the properties of each surface and predict which will absorb the sun's heat energy the most.
3. Answer communication questions to help support your hypothesis.
4. Write your predictions of what surfaces the ice cube will melt rapidly.
5. Place an ice cube on each surface: grass, wood, asphalt and concrete and time each sample using a stop watch
6. Wait and record the observations and time for each.
7. Refer back to your hypothesis, refute or confirm if it was correct and explain why.

**Communication:**

On a hot summer day, where would you prefer to sit in the afternoon on the grass, in a sandbox, on a concrete sidewalk, on a wood deck or an asphalt basketball court? Explain your choice. Which location do you think would be the worst and why? **Draw a picture of each.**



Explain why the average temperature in a desert (near the equator) would be higher than the average temperature on a mountain in Canada?



A desert at the equator has constant sunlight from the earth's tilt, mountains are higher altitude, so cooler.

**Observations:**

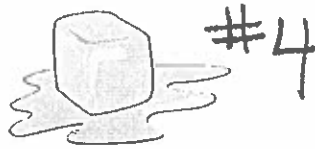
Chart your observations on a table:

| Surface          | Temperature | Rate of Melting in minutes and seconds |
|------------------|-------------|--|
| room temperature | 22°C        | 1 hour 10 minutes or 70 min.           |
| grass            | 28°C        | 40+ minutes                            |
| concrete         | 28°C        | 12 minutes 50 seconds 12.50            |
| asphalt          | 28°C        | 10 minutes 20 seconds 10.20            |
| wood             | 28°C        | 39 minutes 10 seconds 39.10            |

**Explain:** which surface had the most rapid rate of melting the ice cube:



wood



grass



asphalt



concrete

At 28°C, wood can withstand heat, but is a rough surface so it can absorb heat too. Dark wood melts ice cubes faster.

At 28°C, the ice cube was sheltered. The surface is not level grass remains cool

At 28°C, asphalt melted quickly. Asphalt surfaces absorb the sun's energy because its black.

At 28°C, concrete absorbs heat because it is a flat surface and dark grey. Concrete is used for sidewalks to withstand weather.

**Conclusion:** My prediction was partly correct. The ice cubes on the asphalt melted before the concrete. The wood and grass ice cubes melted last.