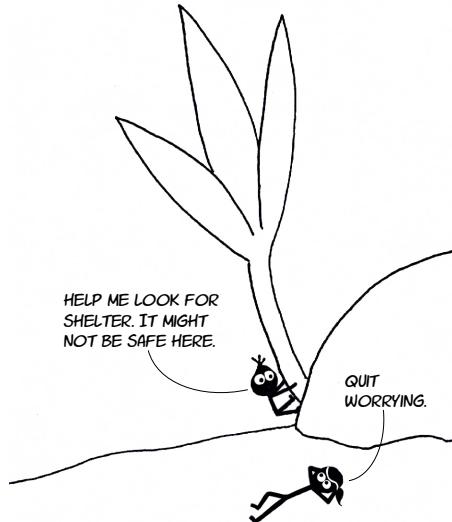


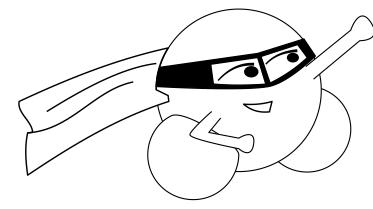
## SCIENCE MOM

JENNYBALLIF.COM  
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# SCIENCE MOM'S Guide to WATER, Part 7



If you add the same amount of heat to water and sand, the sand will heat up FIVE times more than the water. It's almost as if water has a super power to be resistant to changes in temperature.



The ability of water to absorb a lot of heat before changing temperature is known as having a "high specific heat capacity." This attribute of water regulates the temperature of our planet, helps us cool down when we sweat, and much more.

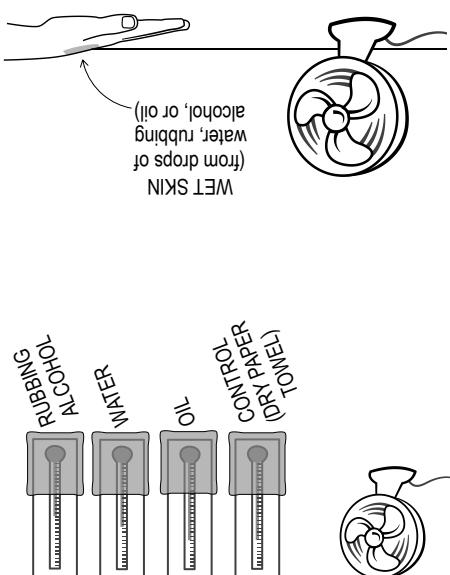
SPECIFIC HEAT CAPACITY = THE AMOUNT OF HEAT ONE GRAM ABSORBS OR LOSES TO CHANGE TEMPERATURE BY 1 DEGREES CELSIUS. WATER HAS A SPECIFIC HEAT OF 1 CALORIE (OR 4.18 JOULES)

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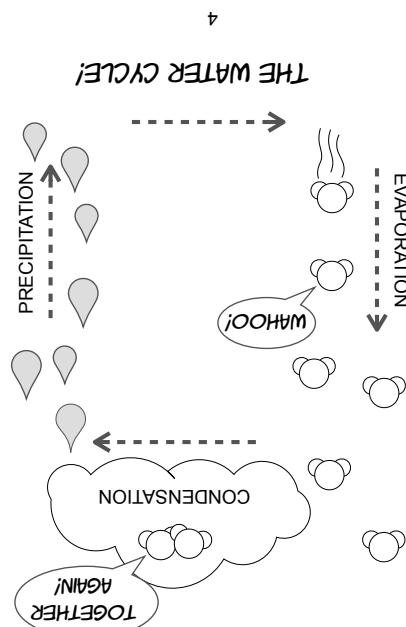
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- Method:**
- Put a small bit of water on the top of your hand.
  - Place your hand in front of the fan so that the wind is flowing over it for at least 20 seconds.
  - Make note of how much colder the wet part of your skin feels.
  - Over time, notice that the skin is flowing fan so that the wind is flowing over it for at least 20 seconds.
  - Repeat with the rubbing alcohol and oil.
  - Optional variation: place paper towels soaked in different liquids over the thermometer. Observe the change in temperature over 5 to 10 minutes.
- Materials:**
- Water
  - Rubbing Alcohol (optional)
  - Oil
  - A fan
  - Thermometers

### 1. Evaporation Sensation



Water's high specific heat also plays a big role in how sand and water change temperature. Have you ever gotten out of a shower or bath and noticed how cold you feel while you're wet? That's because it takes a lot of energy for water to change from liquid to gas. As the water evaporates, it pulls heat from your body. Water's high specific heat also plays a big role in how sand and water change temperature. Have you ever gotten out of a shower or bath and noticed how cold you feel while you're wet? That's because it takes a lot of energy for water to change from liquid to gas. As the water evaporates, it pulls heat from your body.

## 2. Water Cycle in a Jar

### Materials:

- Clear jar or cup
- Ice
- Hot water
- Plate

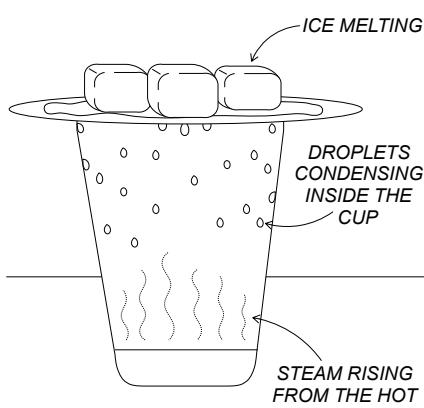
### Method:

- Place a small amount of hot water in the cup or jar.
- Cover the cup or jar with a plate and place ice on top of the plate.
- Observe the water droplets condensing on the sides of the cup and underneath the plate.

HAVE YOU EVER SEEN WATER CONDENSE ON THE OUTSIDE OF AN ICE-COLD DRINK? THE MORE HUMID IT IS, THE WETTER THE CUP WILL BE.

THAT'S WHY COASTERS WERE INVENTED!

### ALL THREE STATES OF WATER TOGETHER IN ONE COOL PLACE:



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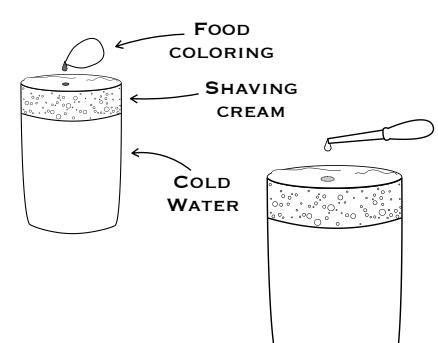
## 3. Rain in a Jar

### Materials:

- Clear jar or cup
- Food coloring
- Shaving cream
- Dropper

### Method:

- Fill the jar most of the way full with warm water.
- Add shaving cream and smooth it out so the shaving cream completely covers the water.
- Add 5 to 7 drops of food coloring on top of the shaving cream.
- Observe for a few moments. If desired, use a water dropper to add 3 to 4 drops of water on top of the spot(s) of food coloring.
- Observe the jar and watch as the food coloring moves down and into the water.



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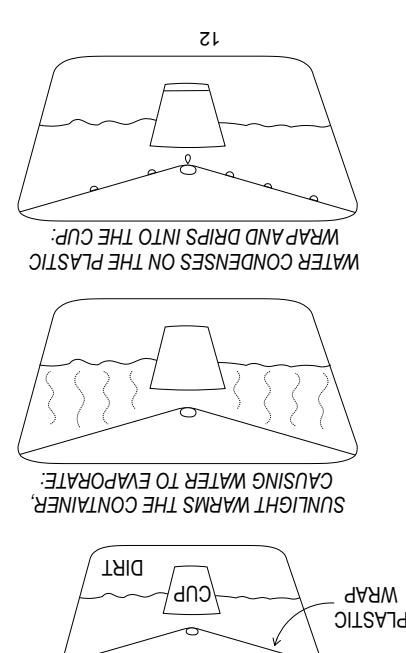
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- Method:**
- Put a few spoonfuls of water into one balloon, and tie a knot at the ends.
  - Blow up each balloon and tie a knot at the ends.
  - Light the candle. NOTE: ALWAYS HAVE ADULT SUPERVISION WHEN USING FIRE. A BIRTHDAY CAKE CANDELS IS NOT THE BEST CHOICE FOR YOU WANT A CANDLE THAT WILL STAY UPRIGHT.
  - Hold each balloon over the flame so that it just barely touches the flame.
  - Secure the plastic wrap so that it is airtight. Use tape if needed.
  - Place the container in direct sunlight and leave outside overnight.
- Materials:**
- Balloons
  - Candle
  - Water

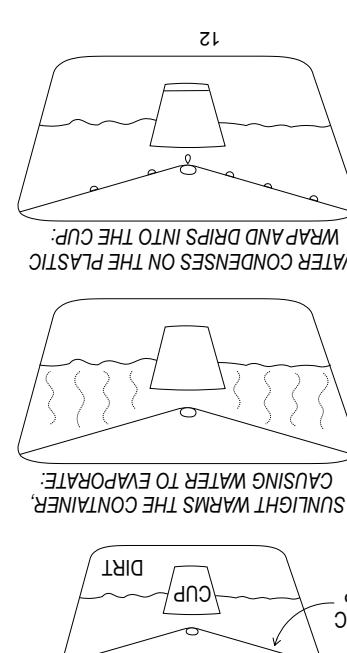
### 5. Pop-proof balloon

- Method:**
- Wrap dirt into the large bowl or container.
  - Put the small cup in the center of the large bowl.
  - Cover the bowl with a loose layer of plastic wrap and place a small rock or other object in the center so the plastic wrap has a low point.
  - Secure the plastic wrap so that it is airtight. Use tape if needed.
  - Place the container in direct sunlight and leave outside overnight.
- Materials:**
- Dirt
  - A small pebble
  - Plastic wrap
  - Large bowl



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- Method:**
- Place damp dirt into the large bowl or container.
  - Put the small cup in the center of the large bowl.
  - Cover the bowl with a loose layer of plastic wrap and place a small rock or other object in the center so the plastic wrap has a low point.
  - Secure the plastic wrap so that it is airtight. Use tape if needed.
  - Place the container in direct sunlight and leave outside overnight.
- Materials:**
- Dirt
  - A small pebble
  - Plastic wrap
  - Large bowl

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