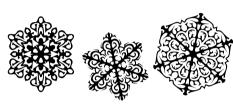


After many days on the river, Derring started doing tricks and, of course, fell out of the umbrella.



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is why snowflakes are six sided. molecules form is a hexagon, and this The shape of the crystal that water

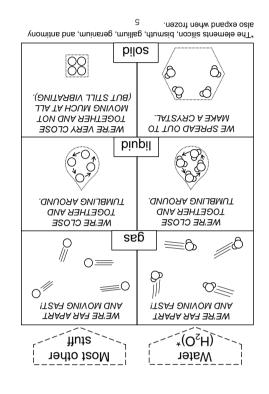


is why ice expands when frozen. atructure, they have to spread out. This perfectly matched. To make this lattice their positive and negative sides are line up in a crystal structure so that When water freezes, the molecules



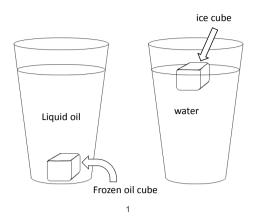
# SCIENCE MOM'S Guide to WATER Part 4





Ice floats in liquid water, but the OPPOSITE happens for most other substances!

To see the "regular" way solids behave, place a frozen cube of oil into a cup of liquid oil. It will sink straight to the bottom.



### WHAT IF ICE DIDN'T FLOAT?\*

IF ICE SANK, ALL THE OCEANS AND LAKES WOULD FREEZE FROM THE BOTTOM UP! THEN THAT FROZEN WATER WOULD REFLECT RADIATION FROM THE SUN.

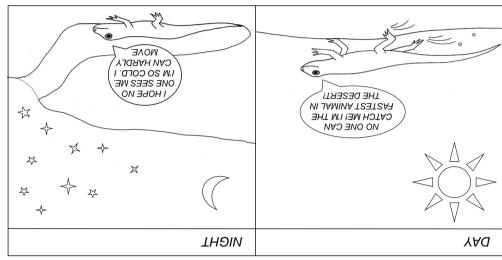
MAKING THE PLANET TOO COLD FOR LIQUID WATER. **WELCOME** TO EARTH AN ICE PLANET

IF ICE SANK, WE WOULD LOSE THE REFLECTIVE FLOATING SEA ICE AT THE POLES! THEN THE PLANET WOULD HEAT UP SO MUCH THAT NEW ICE WOULDN'T



\*Scientists don't agree on what would happen.

### Turn down the temperature, and you turn down the speed. MOLECULES BEHAVE THE SAME WAY.



reptiles: They move tast when they're warm, and are sluggish and slow when cold. To understand how liquids turn into solids, it helps to remember something about

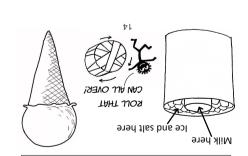
### 1. Frost Wedging

### Materials:

- Water
- Plaster of Paris or gypsum
- Oil 2 identical
- Balloons
- containers
- Freezer

### Method:

- a) Fill one balloon with water and one balloon with oil (optional).
- b) Prepare containers for plaster, for example, by cutting a small cardboard container in half.
- c) Place balloons in containers.
- d) Mix plaster & water according to directions and pour it in the containers around the balloons.
- e) Let dry and then freeze. Remove containers and observe.



(IsnoitqO) .eetunim small can in the freezer for 20 g) Scrape down sides and set the them another 10 minutes. f) Seal the cans again and roll Refresh the ice and salt. water from the large can. forming on the sides. Drain the and scrape down the ice cream e) Carefully remove the small can for 10 minutes. and roll the can across the floor

d) Seal a lid onto the large can

# WORK WELL. JUST CUT 'EM IN HALF. THE OIL BALLOON BEHOLD THE POWER DIDN'T CHANGE THE OF WATER! IT CRACKED PLASTER AT ALL.

SOUP CARTONS

YOU CAN USE PLASTIC BAGS INSTEAD. RECIPE, AND IF YOU DON'T HAVE CANS \* YOU CAN SUBSTITUTE ANY ICE CREAM

can with ice and the salt. c) Fill the space around the small place it in the large can. b) Seal the small can well and in the small can. together and place the mixture a) Mix ingredients for ice cream

- $\bullet$  2 metal cans of different sizes
  - 1/2 c rock salt and ice
  - 1 to 2 Tbsp cocoa powder
  - 7 to 10 fresh pitted dates
  - 1 can lite coconut milk

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4. Ice Cream in a Can

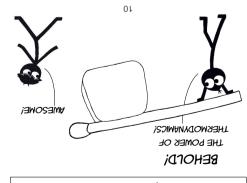
### 2. Magic Slushy Materials:

- · Bottles of carbonated soda
- Freezer
- Cup and spoon

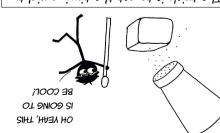
### Method:

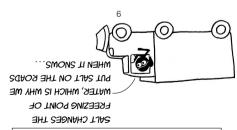
- a) Place the bottle of soda in the freezer for 3 hours. (YOU MAY WANT TO PLACE SEVERAL IN THE FREEZER AND TAKE THEM OUT AT 30 MINUTE INTERVALS ONCE THEY'VE BEEN IN THE FREEZER FOR AN HOUR. THE CORRECT TIME TO REACH THE "SUPER COOLED" STATE WILL VARY BY FREEZER.)
- b) Remove soda and be careful not to bump or jar it too hard. Open lid slowly and pour soda into an ice-cold cup. If it is super-cooled, it will freeze into a slushy as it is poured.





or too late, then it won't work. if you try to pick up the ice too early The trick is to get the timing right:





d) Lift the ice!

c) Wait for about 15 seconds.

b) Sprinkle with salt.

place it on top of the ice cube. a) Get the yarn or wood wet and

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- Matches, toothpicks, or yarn
  - Salt
  - ice cnpes

Water Materials:

3. Lift Ice with Salt

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