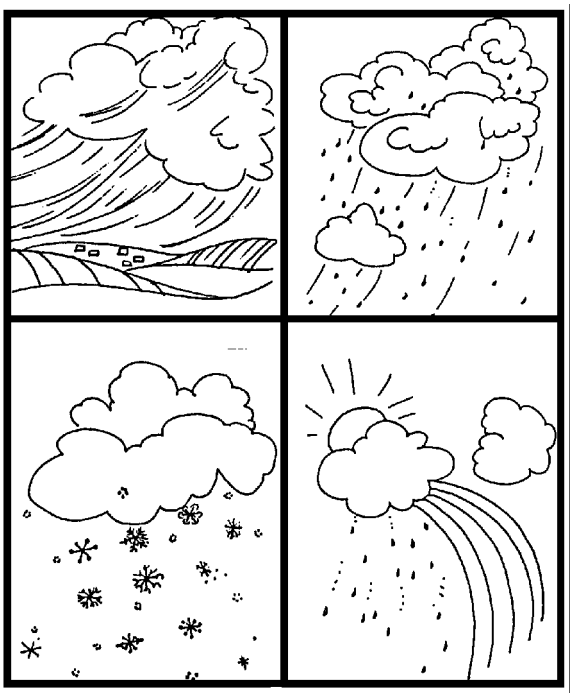
Water Cycle

The Earth's Gift

FOURTH GRADE

WORKBOOK

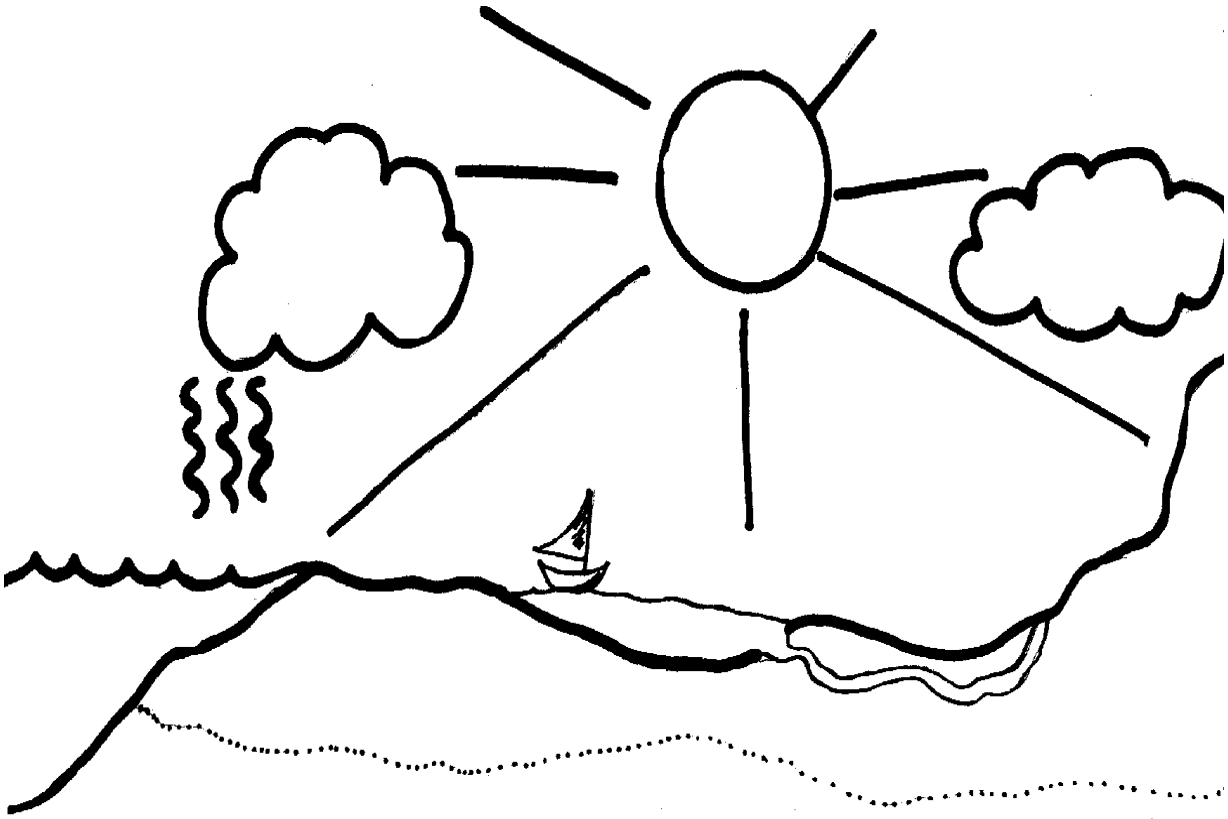


student _____

WATER CYCLE - WATER (4)

TRY AND LOCATE THE PARTS OF THE WATER CYCLE ON THE ABOVE CARTOON. USE THE NUMBERS. DRAW IN ITEMS THAT MIGHT NOT BE DRAWN.

1. EVAPORATION 2. CONDENSATION, 3. CLOUD, 4. PRECIPITATION,
5. PRECIPITATION, 6. SPRING, 7. MARSH, 8. ARTESIAN WATER, 9. WATER TABLE,
10. LAKE, 11. RIVER, 12. OCEAN, 13. GROUNDWATER, 14. RUNOFF,
15. TRANSPIRATION.



WATER CYCLE - WATER (4)

PROBLEM: Why can a pin float in water and how can water rise up a thin tube by itself?

PREDICTION:_____

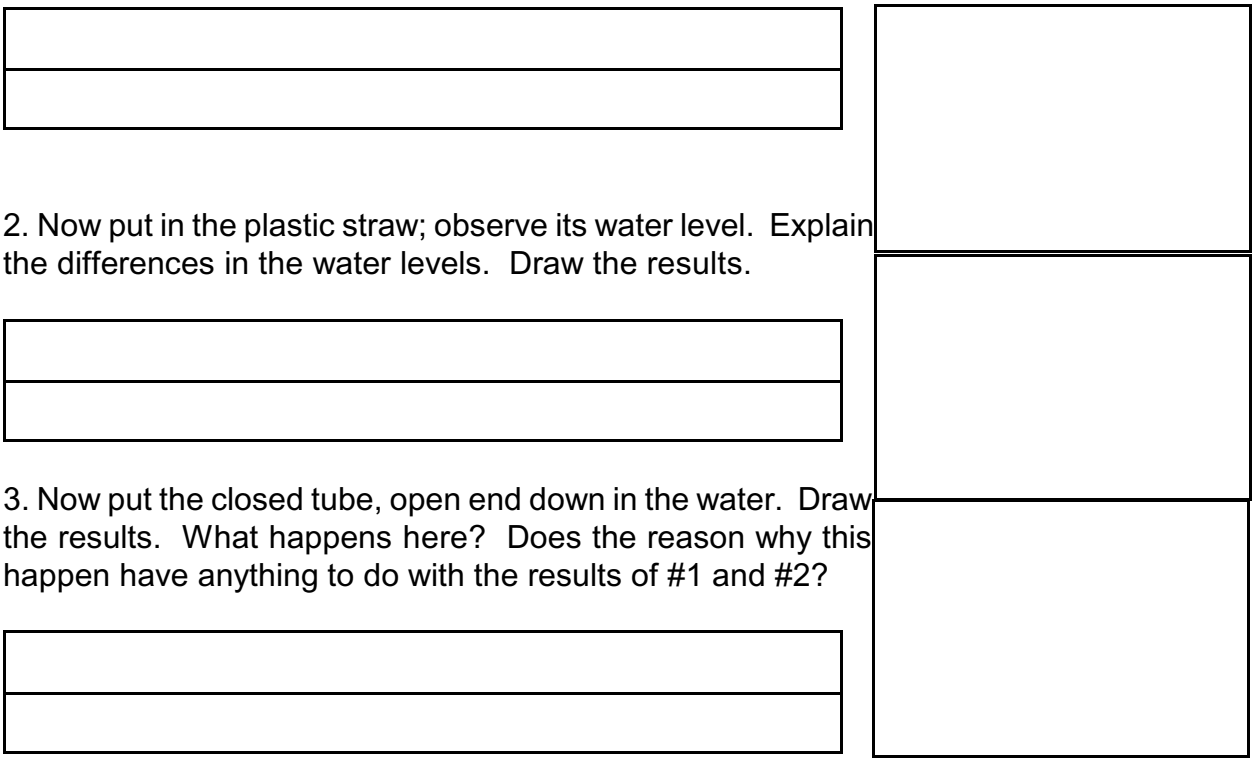
EXPERIMENT I **MATERIALS:** pin, glass of water, paper tissue

PROCEDURE: Try to get the pin to float. Remember the principles of surface tension that your instructor reviewed.
Describe the set-up that allowed the pin to float._____
_____

How did surface tension help the pin float? _____
_____

EXPERIMENT II. **MATERIALS:** clear straw, plexiglass tube, glass capillarity tube, small closed tube, glass of water.

PROCEDURE: Place the plexiglass tube and the glass capillary tube in a glass of water.
1. Predict in which tube the water level will rise highest. Draw the results.

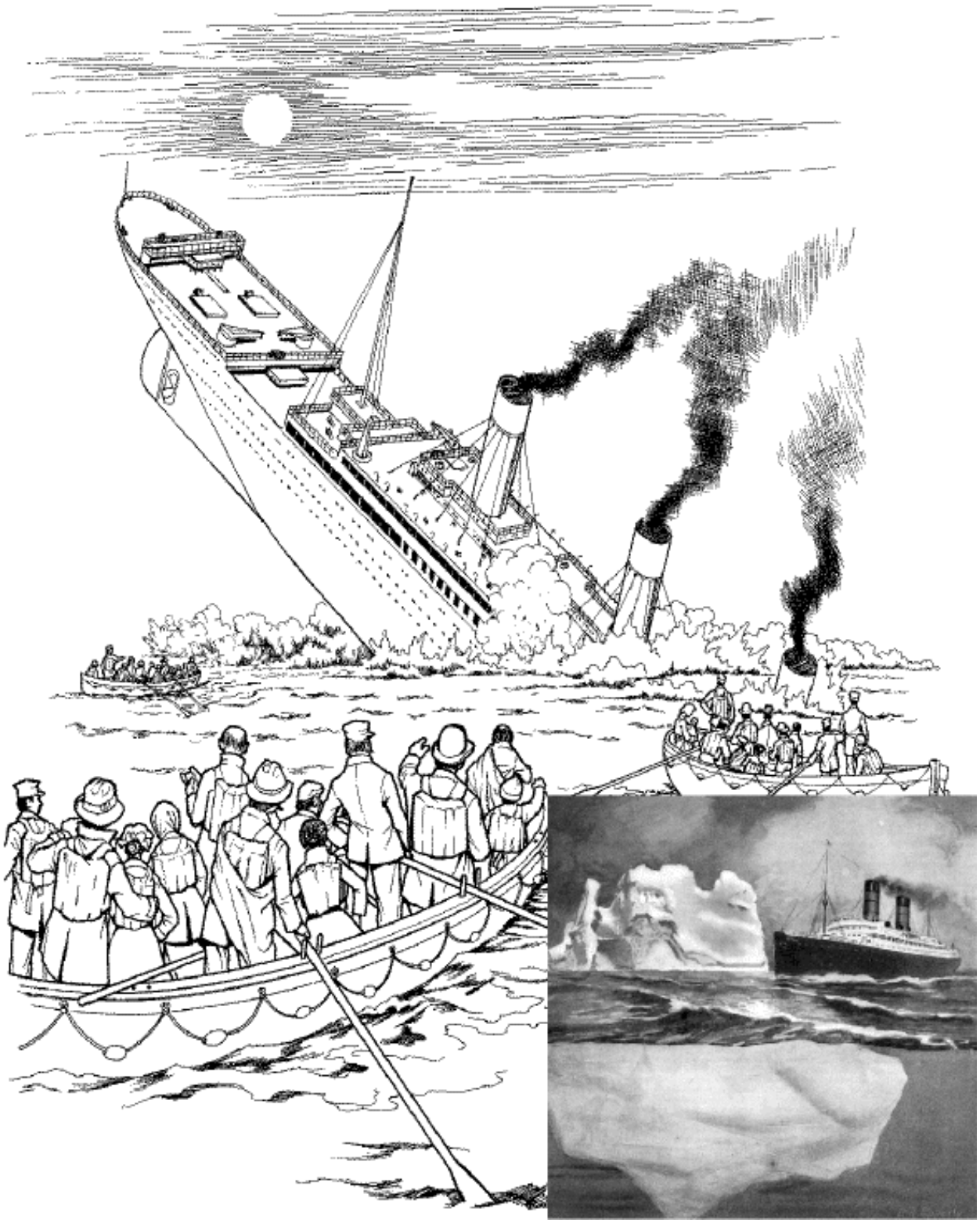


2. Now put in the plastic straw; observe its water level. Explain the differences in the water levels. Draw the results.

3. Now put the closed tube, open end down in the water. Draw the results. What happens here? Does the reason why this happen have anything to do with the results of #1 and #2?

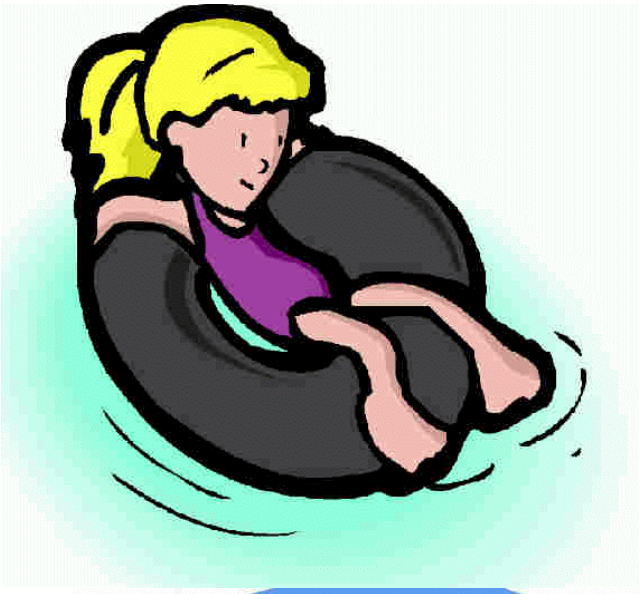
CONCLUSION:

WATER CYCLE - WATER (4)



WATER CYCLE - OCEANS (4)

Explain what is floating on what in the following pictures.



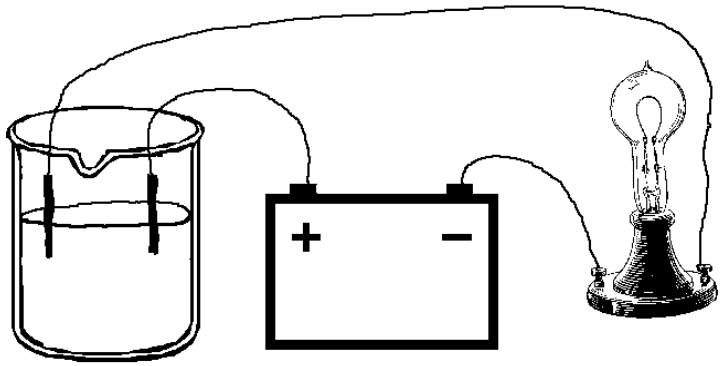
WATER CYCLE - OCEANS (4)

PROBLEM: Does salt water act differently than fresh water?

PREDICTION:_____

MATERIALS: 3 beakers, water, salt, electric circuit set-up with light bulb.

PROCEDURE: Fill each beaker with 250 ml of water. In one beaker add 1/2 ml of salt and stir (until salt dissolves); in another beaker add 1 ml of salt and stir. Test each liquid to see if it can light up the light bulb and complete an electric circuit. Make sure you clean the electrodes when going from one beaker of salt solution to the next. See how much salt you can put in before there is not difference in the light bulb. Follow the diagram below. Record what happens on the space provided.



RECORD: voltage used _____ voltage of bulb _____

	distilled water	tap water	1/2 ml salt				1 ml salt
experiment							
class results							

CONCLUSION: Can you explain the results of this experiment?

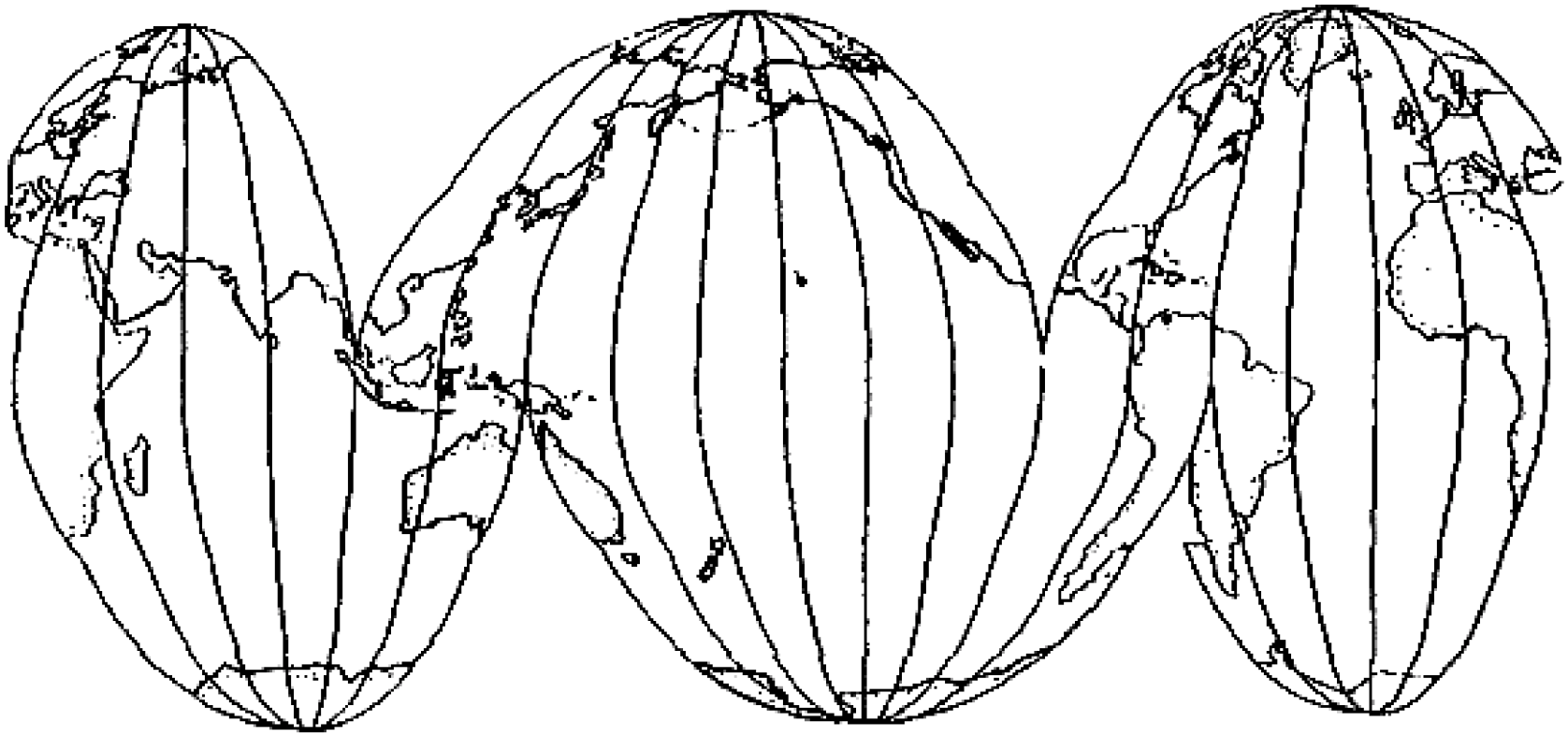
_____

_____

WATER CYCLE - OCEANS (4)

1. Guess what percent of the world is made up of oceans? _____
2. LABEL: Pacific Ocean, Atlantic Ocean, Arctic Ocean, Indian Ocean, South America, Europe, Antarctica, Africa, Australia, China, Russia, United States
3. Why does the map look different than most maps you have seen?

_____



WATER CYCLE - ATMOSPHERE (4)

PROBLEM: Do different substances heat up and cool down at different rates?

PREDICTION: _____
_____

MATERIALS: soil, dark sand, light sand, water, salt water, thermometers, styrofoam cups, cafeteria trays, clock, sunlight (or heat lamps)

PROCEDURE:
1. Fill each of the cups 1/2 full with the materials listed below.
2. Place a thermometer into a cup 1/2 full of each of the materials listed. (Try to make sure each one is the same distance below the surface) and place all of your group cups on a tray.
3. Record the starting temperature of each of the materials in your data table.
4. Place your tray in the sunlight (heat lamp) for 10 minutes and record the temperature in your data table.
5. Bring the trays inside (turn off the heat lamp) and let them cool for 10 minutes before your record the temperatures.

DATA TABLE

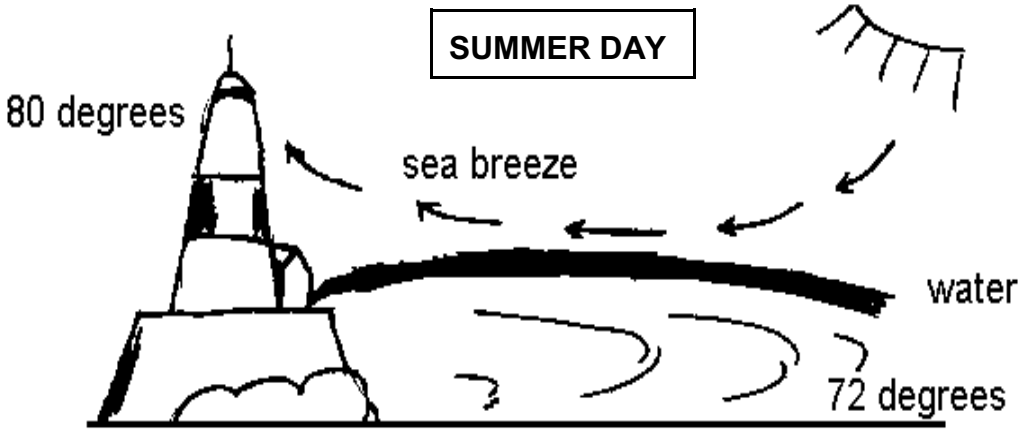
	starting temperature	after 10 min. heating	after 10 min. cooling
soil			
dark sand			
light sand			
water			
salt water			

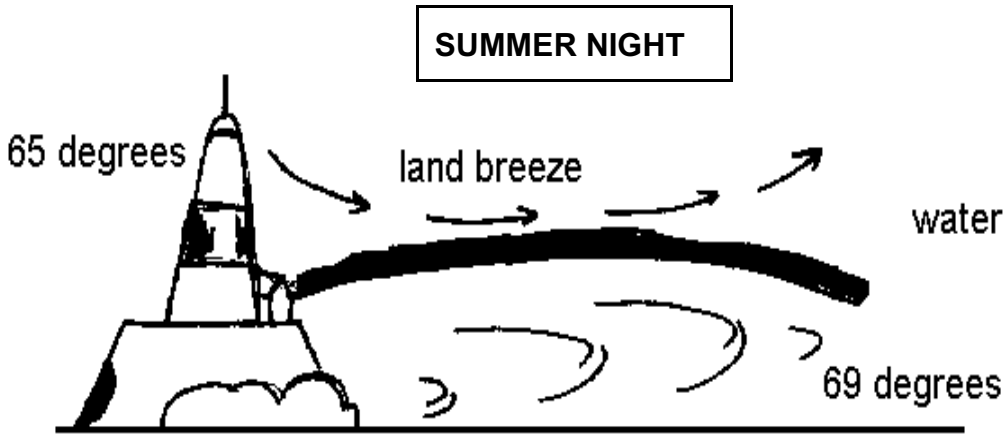
CONCLUSION:

1. Which one heated the fastest? _____ slowest? _____
2. Which one cooled the fastest? _____ slowest? _____
3. What happens to the air above a substance as it heats up?
_____
4. What would happen if a substance that heated up fast was next to a substance that heated very slow? _____

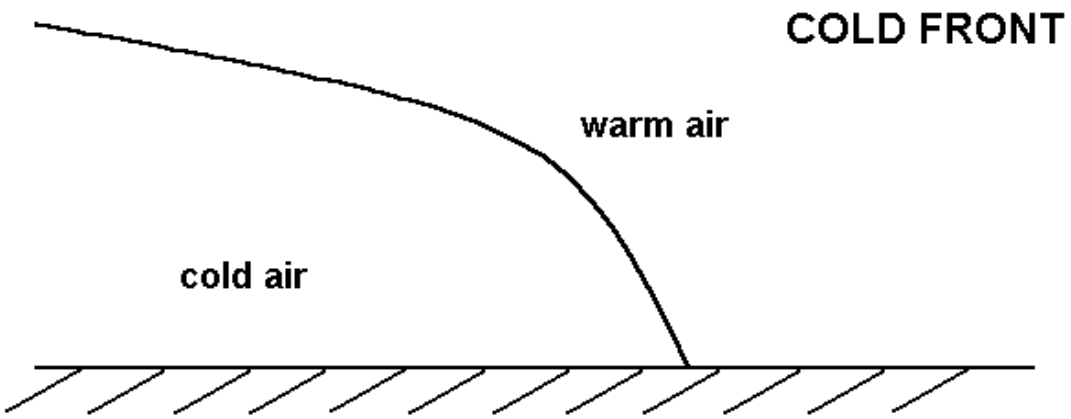
WATER CYCLE - ATMOSPHERE (4)
POST

HERE ARE THE FACTS! DURING A SUMMER DAY, WIND BLOWS FROM THE WATER TO LAND; DURING THE NIGHT, WIND BLOWS FROM THE LAND TO WATER. WHY DO YOU THINK THIS HAPPENS IF THE CONDITIONS IN THE PICTURE ABOVE EXIST?

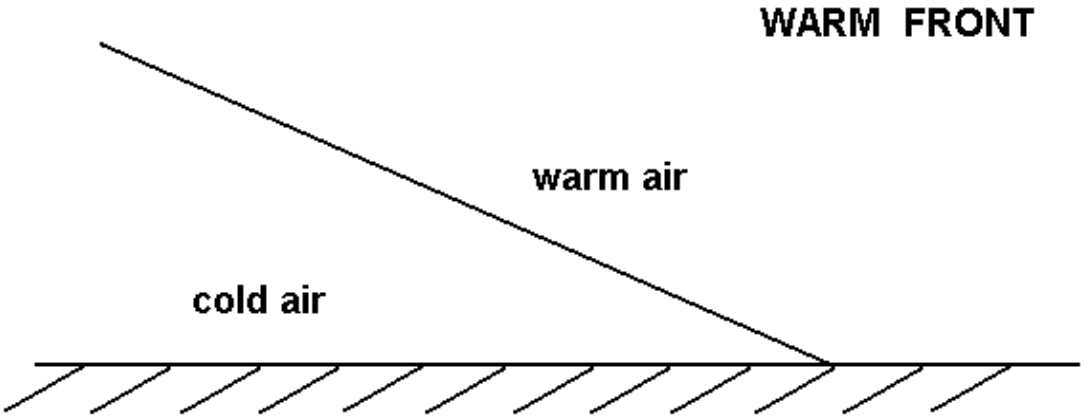




_____
_____
_____
_____
_____
_____



Thickening cumulus clouds warn of the coming cold front, where cold polar air cuts in sharply beneath the warm, moist tropical air. The cold front slopes much more steeply than the warm front, and strong updrafts can stir up violent storms. Huge cumulonimbus many build up all along the front, bring heavy rain and sometimes thunderstorms as it passes over.



Warm, moist air from the tropics slides over a wedge of cold polar air. As the warm air moves over the cold air. Wispy cirrus clouds form and a milky veil of cirrostratus clouds can be seen. Above the base of the front, clouds thicken first with altostratus above great, gray nimbostratus clouds. A rain storm falls in the cold sector beneath the front.

WATER CYCLE - WEATHER (4)

PROBLEM: What do satellite pictures tell us about the weather?

PREDICTION: _____

PROCEDURE: Study and compare the satellite photo maps and answer the questions below. Use maps of the United States reference to help you find specific locations.

1. Which part of the United States is shown in the photo maps?
(North, East, South, West)

_____

2. How many states are shown on 12/7-8/97 satellite photo map? List them.

_____
_____
_____

3. On which satellite map is North Carolina the most cloudy?

_____

4. On which photo map can you best see New Orleans in Louisiana?

_____

5. On which photo map is Georgia the least cloudy? _____

6. What kind of clouds are over the Atlantic Ocean on 12/8/97?

_____

7. Are the white patches over the Appalachia in South Carolina (12/8/97) clouds or snow? How do you know? _____

_____

8. On which satellite photo does the cloud cover seem to be coming from the west? Explain why.

_____
_____

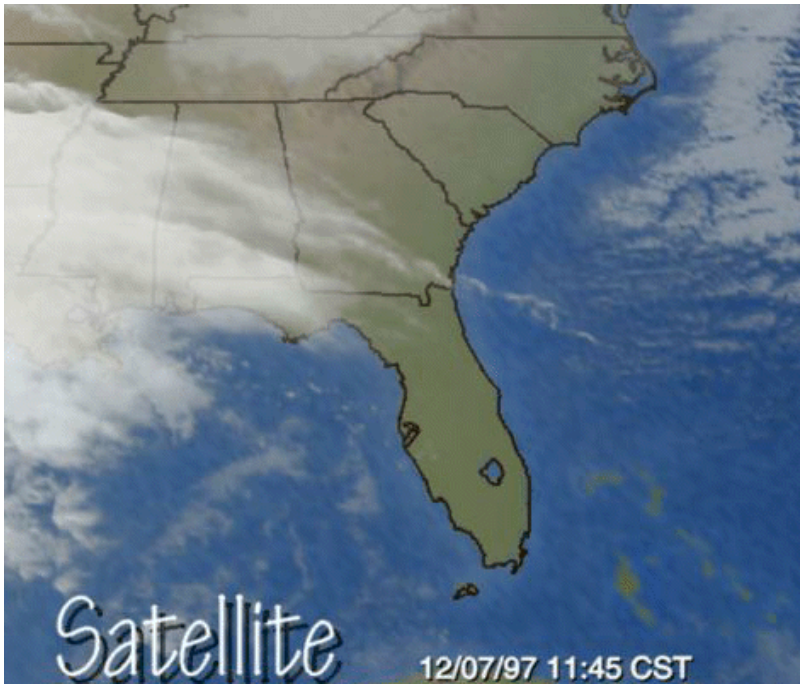
9. Look at the blank maps of the southeast. Create your own sky coverage map from the information given on the satellite photos. Label states, Gulf of Mexico, and Atlantic Ocean.

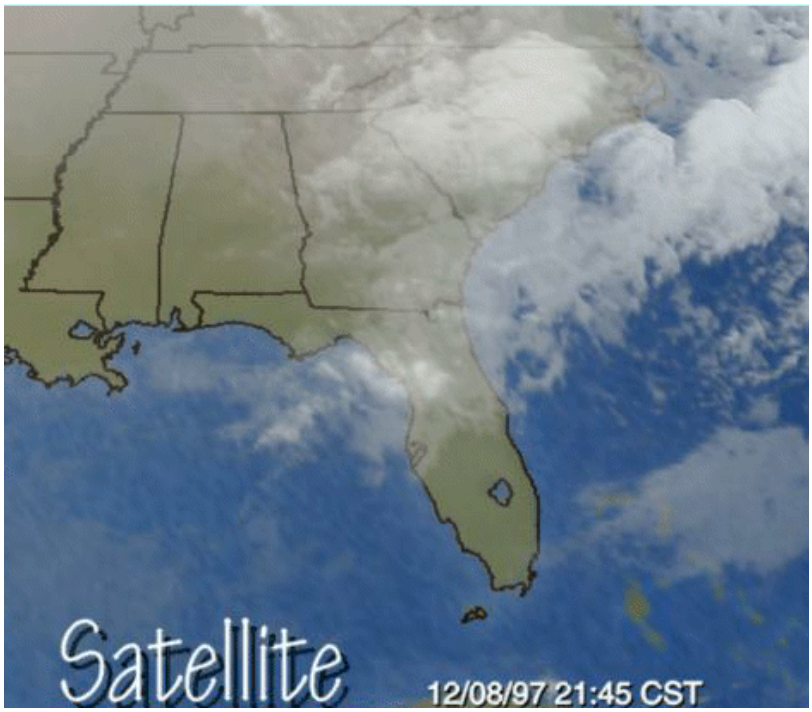
CONCLUSIONS: Can you predict the cloud cover for 12/9/97 with the information given on the photos labeled,"Cloud Cover Southeastern United States"?

_____
_____
_____
_____

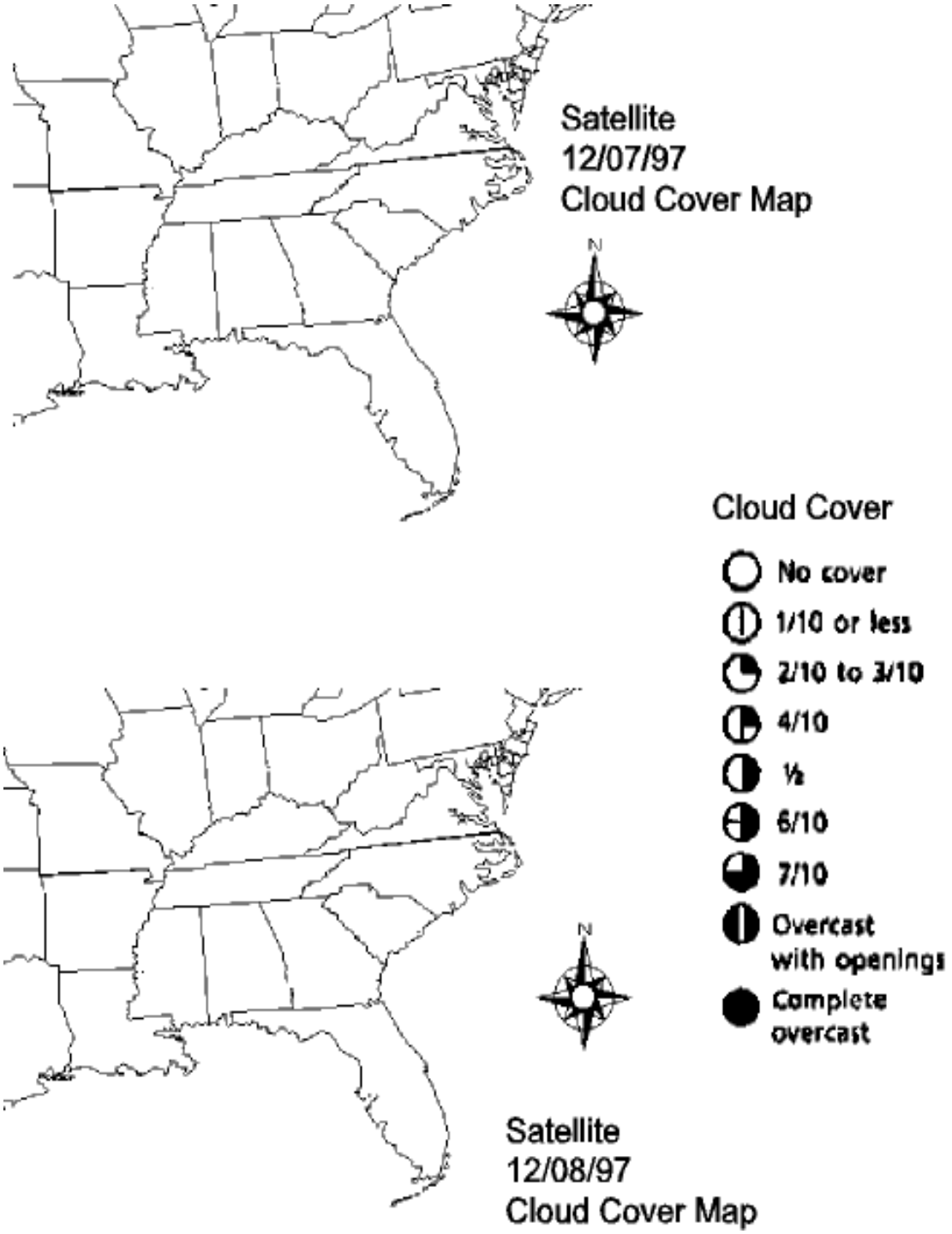
WATER CYCLE - WEATHER (4) LAB

CLOUD COVER SOUTHEASTERN UNITED STATES





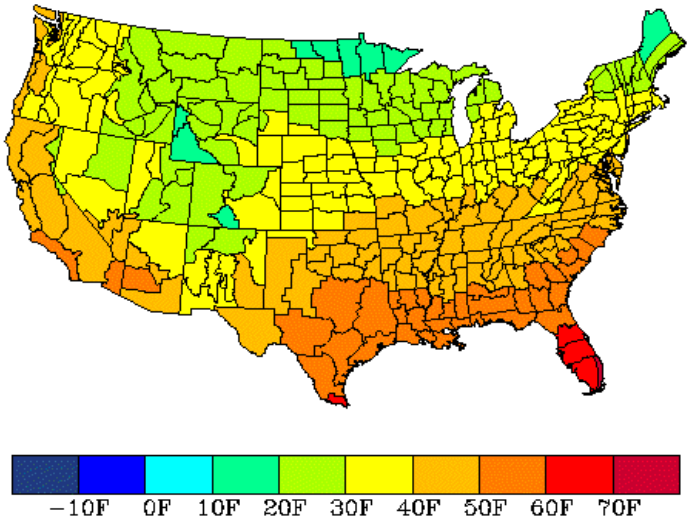
WATER CYCLE - WEATHER (4)



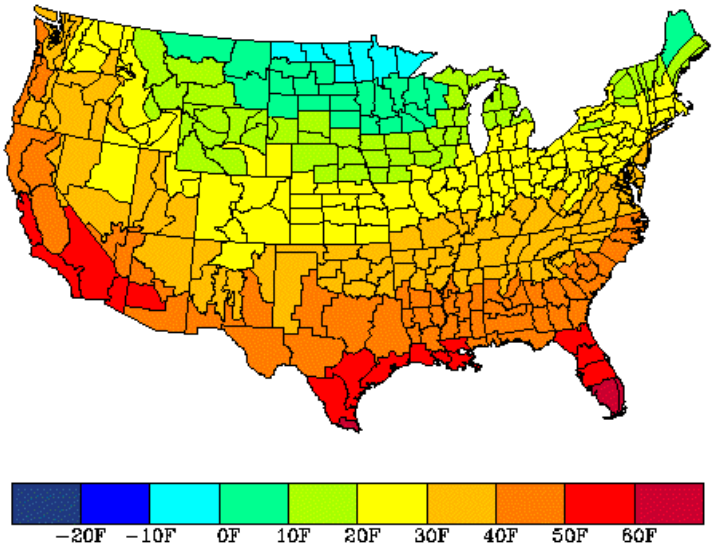
WATER CYCLE - WEATHER (4) POST

http://www.cdc.noaa.gov/USclimate/USclimdivs.html

Temperatures Jan 1990



Temperatures Jan 1996



Can you interpret if the temperatures are getting hotter from January, 1990 to January, 1996? What states were warmer? Which states were colder? Which states remained the same temperature? Do you have enough information to make a generalized statement.
