SCIENCE NOTEBOOK

FOSS

WEATHER AND WATER

6TH GRADE

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WEATHER AND WATER

6TH GRADE

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Class Weather Chart

Location:

Date/ time	Temp. (°C)	Temp. (°F)	Air pressure (mb)	Relative humidity (%)	Other observations (wind, visibility)

Class Weather Chart

Location:

Date/ time	Temp. (°C)	Temp. (°F)	Air pressure (mb)	Relative humidity (%)	Other observations (wind, visibility)

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Weather and Water Course
Investigation 1: What Is Weather?
No. 1—Notebook Master

Focus Question What is weather?	Focus Question What is weather?

Air Investigation

While exploring air with a syringe, write at least three observations and at least three questions.

Observations

Questions

Air Investigation

While exploring air with a syringe, write at least three observations and at least three questions.

Observations

Questions

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Weather and Water Course
Investigation 1: What Is Weather?
No. 2—Notebook Master

Focus Question What is air?	Focus Question What is air?

Earth's Atmosphere

1. What is the atmosphere?

2. What gases make up the atmosphere?

3. What layer of the atmosphere do you think is of greatest interest to meteorologists? Why do you think so?

4. Describe how the amount of air changes as you travel up through Earth's atmosphere.

5. Describe how the composition of gases changes as you travel up through Earth's atmosphere.

6. Describe how the temperature changes as you travel up through Earth's atmosphere.

Earth's Atmosphere

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Weather and Water Course
Investigation 1: What Is Weather?
No. 3—Notebook Master

Focus Question What is the atmosphere?	Focus Question What is the atmosphere?

Pressure in a Jar

Part 1: Prediction

1. Predict what will happen to the water in the clear tube when the jar is squeezed.

Part 2: Explore the jar

2. Construct a bottle-in-a-jar pressure indicator. Give it a squeeze. What happens?

3. Why do you think it behaves that way? Think about particles in your explanation.

4. If you reduced the air pressure in the jar, what would happen to the level of water in the clear tube? Why? Think about particles.

5. On the next page in your notebook, draw the bottle-in-a-jar pressure indicator before and after adding pressure. Use arrows and labels in your diagram.

Pressure in a Jar

Part 1: Prediction

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2. Construct a bottle-in-a-jar pressure indicator. Give it a squeeze. What happens?

3. Why do you think it behaves that way? Think about particles in your explanation.

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5. On the next page in your notebook, draw the bottle-in-a-jar pressure indicator before and after adding pressure. Use arrows and labels in your diagram.

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Weather and Water Course
Investigation 2: Air Pressure and Wind
No. 4—Notebook Master

"What Is Air Pressure?" Questions

Answer these questions after reading the article "What Is Air Pressure?"

1. When you drive down a mountain, what makes your ears experience those interesting and sometimes uncomfortable sensations?

2. Why doesn't air pressure crush an empty soft-drink can as you drive down a mountain?

3. Why doesn't air pressure crush an empty soft-drink can that is sitting on a table in your house?

4. If a meteorologist says that the air pressure is getting lower, what would you expect to see happen to Torricelli's mercury barometer?

5. If Torricelli had drilled a little hole at the top of the glass tube holding his mercury column, what would have happened to his barometer?

"What Is Air Pressure?" Questions

Answer these questions after reading the article "What Is Air Pressure?"

1. When you drive down a mountain, what makes your ears experience those interesting and sometimes uncomfortable sensations?

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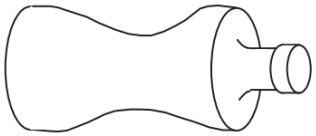
Weather and Water Course
Investigation 2: Air Pressure and Wind
No. 5—Notebook Master

Response Sheet—Investigation 2

A student and his friends hiked up to a fire tower at an elevation of 2,445 m. On top of the mountain, the student drank the last of his water. He put the cap back on the plastic bottle, tossed it in his day pack, and forgot about it.

When the student returned home and unpacked his stuff, he found his water bottle. It looked like this.



The student thought,

I must have sat on my water bottle, or something, to squash it like that.

When he unscrewed the cap, he heard a hissing sound, and the bottle slowly returned to its proper shape. What do you think happened to his bottle? Can you explain his squashed bottle and the hissing sound? Use diagrams to help you explain.

Response Sheet—Investigation 2

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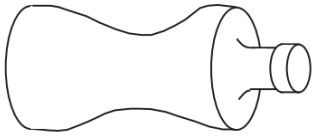

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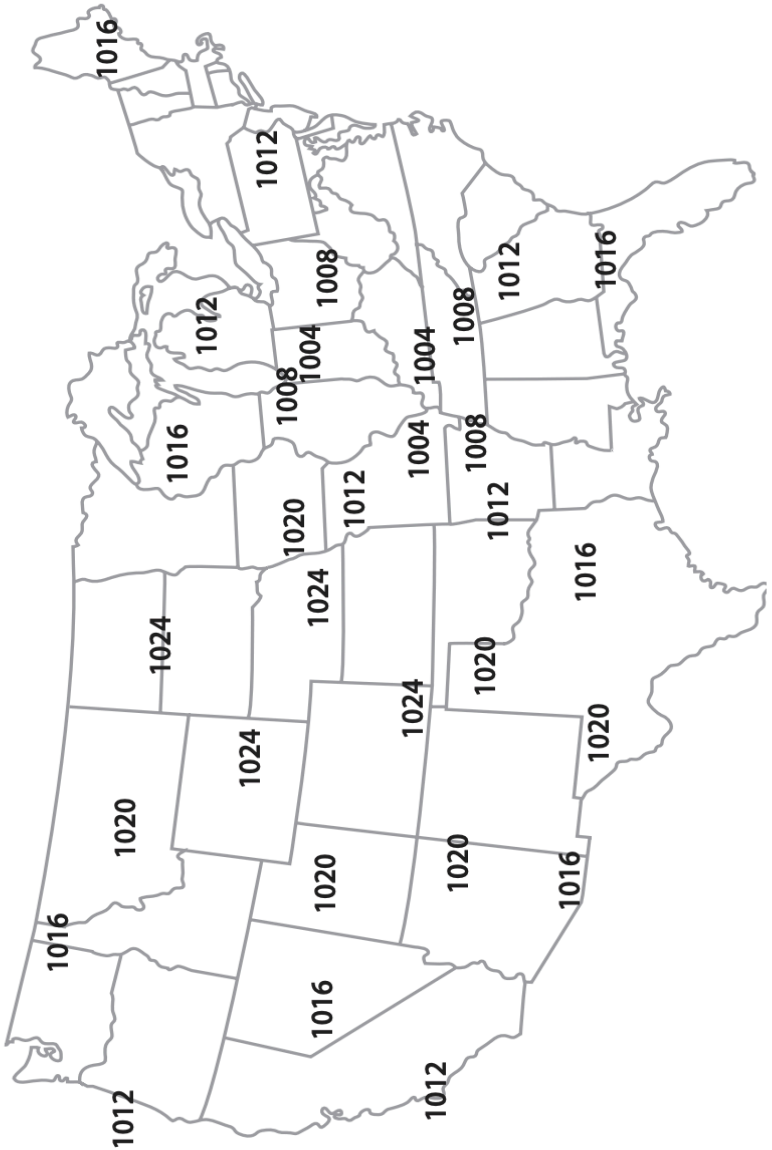
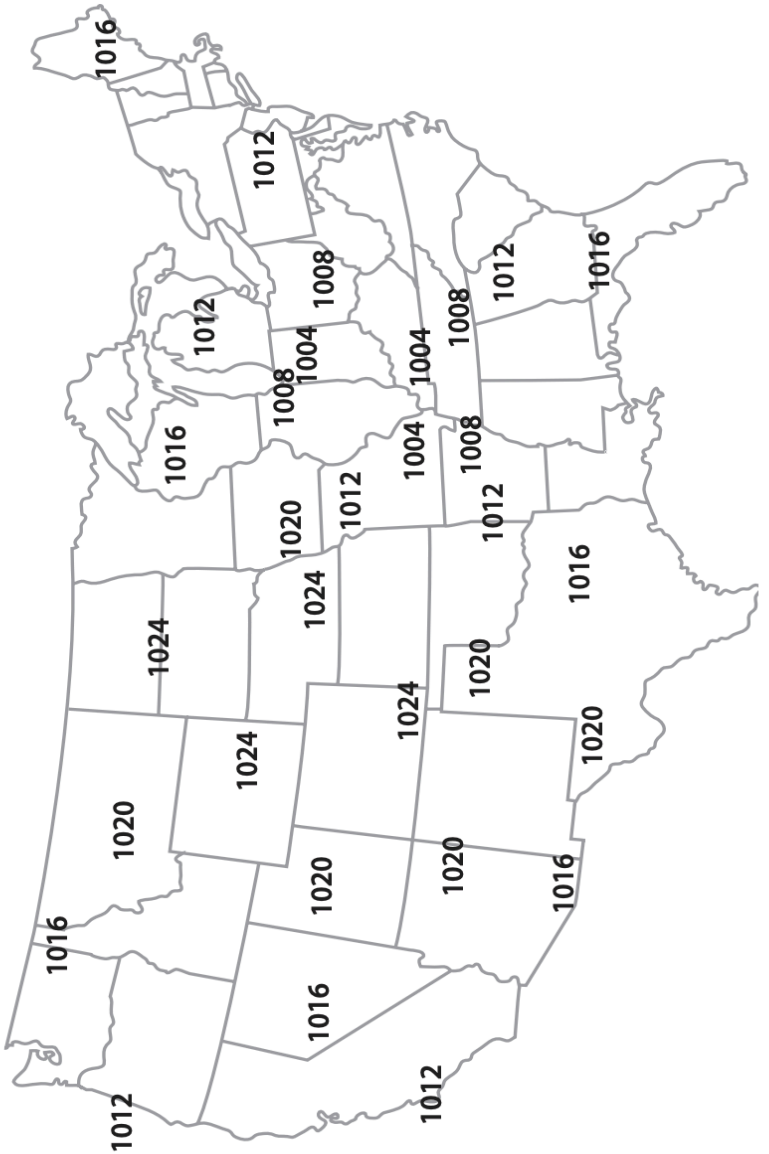
Weather and Water Course
Investigation 2: Air Pressure and Wind
No. 6—Notebook Master

Focus Question How does pressure affect air?	Focus Question How does pressure affect air?

Surface Air-Pressure Map



Surface Air-Pressure Map



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Weather and Water Course
Investigation 2: Air Pressure and Wind
No. 7—Notebook Master

Focus Question What happens when two areas of air have different pressures?	Focus Question What happens when two areas of air have different pressures?

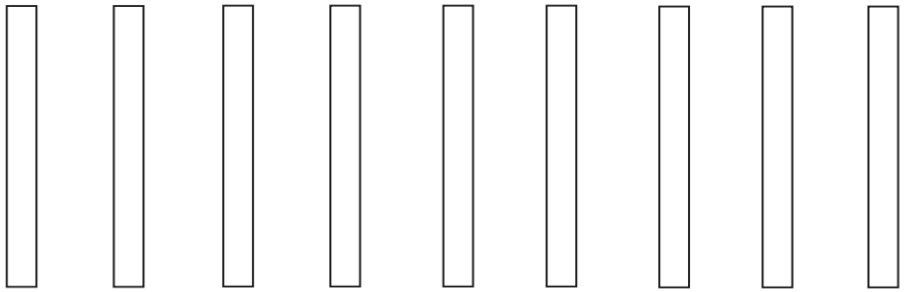
Liquid Layers

WARNING — This set contains chemicals that may be harmful if misused. Read cautions on individual containers carefully. Not to be used by children except under adult supervision.

Part 1: Layer salt solutions.

Find the sequence of colored salt solutions that will form clear layers.

1. Using the pipette, put a few drops of a colored solution into the straw. Try to layer a second color on top of the first color.
2. Use colored pencils to keep track of your results in the straws below. Circle the color combinations that produce layers.
3. Use the information to predict the order that will produce four colored layers.



Part 2: Explain salt-solution layering.

What do you think caused the salt solutions to layer in this way?

Part 3: Record liquid information.

Color	Mass	Volume

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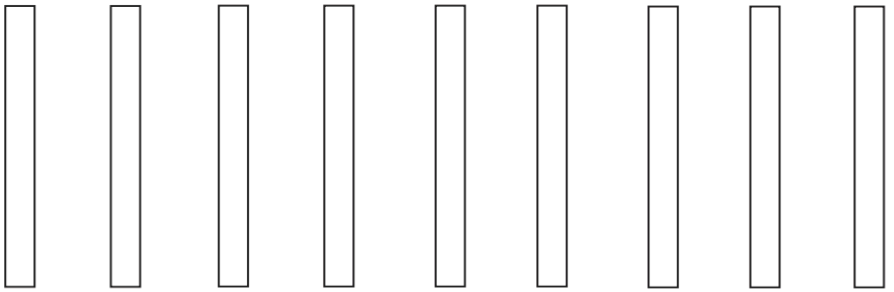

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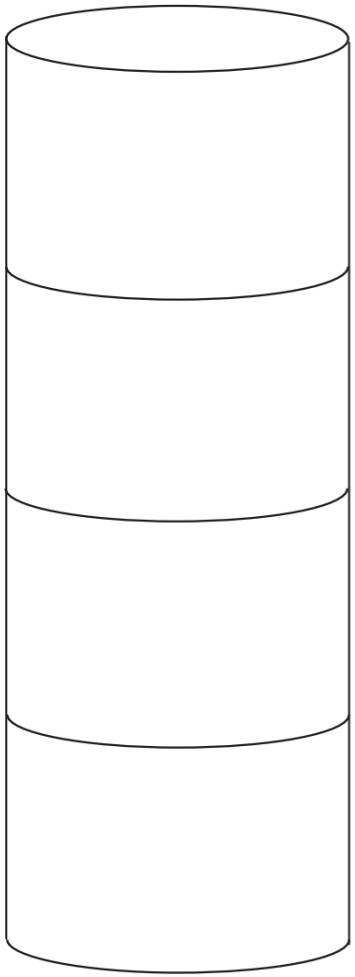
Investigation 3: Convection
No. 8—Notebook Master

Straw Column



Label each layer with the amount of salt:

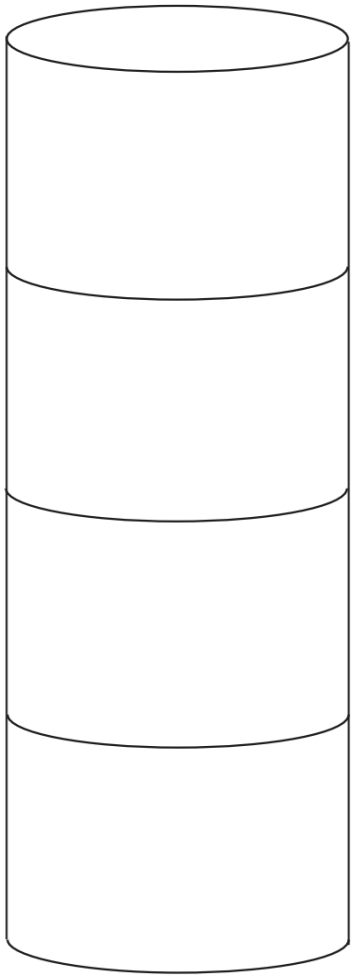
Most salt

Some salt

Little salt

No salt

Straw Column



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Investigation 3: Convection
No. 9—Notebook Master

Calculating Density of Layers

Write the equation for calculating density here.

Transfer the mass and volume data from the board into the table below. Calculate the density of the four solutions. Show your math work. Then solve the density problem at the bottom of the page.

Color	Mass	Volume	Density
Red			
Green			
Yellow			
Blue			

Two students mixed up a new salt solution and put in blue and red food coloring to make it purple. They weighed 35 mL of the solution and found its mass to be 41 g. Where would the purple layer form if it were used with the four solutions above? Show your math.

The density of the purple solution is _____.

The purple solution would form a layer _____

_____.

Calculating Density of Layers

Write the equation for calculating density here.

Transfer the mass and volume data from the board into the table below. Calculate the density of the four solutions. Show your math work. Then solve the density problem at the bottom of the page.

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The purple solution would form a layer _____

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Investigation 3: Convection
No. 10—Notebook Master

Density Practice

1. A teacher had a container of tap water, a container of salt water, and several materials. She challenged her students to determine if the materials would float or sink in the two containers of water.

Fill in the blanks in the chart below.

Material	Mass	Volume	Density
Water	20.0 g	20 mL	
Salt water	58.3 g	50 mL	
Block	1 g	1 cm^3	
Beeswax		2 cm^3	0.89 g/cm^3
Marble	4.9 g		2.6 g/cm^3
Die	3.8 g	3 .38 cm^3	
Plastic foam	1.9 g	22.4 cm^3	
Olive oil		15 mL	0.92 g/cm^3

2. Predict whether the materials below will float (F) or sink (S) in the tap water and the salt water.

Material	Water	Salt water
Block		
Beeswax		
Marble		
Die		
Plastic foam		
Olive oil		

3. How is density used to determine whether a material will float or sink in a liquid?

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Investigation 3: Convection
No. 11—Notebook Master

Response Sheet—Investigation 3

A student wanted to make a toy for his little sister. The toy would have colorful liquid and solid items inside, and would look pretty when you shake it.

He had some little plastic stars and leaves. His plan was to put the stars and leaves in a jar and fill it with liquid. When you shake the jar, everything swirls around together. Then the stars slowly float to the surface, and the leaves settle to the bottom.

The student mixed up 500 mL of salt solution. He weighed it and found its mass to be 585 g. Will his shake-up toy work the way he wants it to if he uses this salt solution? Why or why not?

Remember, 1 mL = 1 cm^3.

Show your math.

Object or material	Density
Stars	1.12 g/cm^3
Leaves	1.25 g/cm^3
Salt solution	

Response Sheet—Investigation 3

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Investigation 3: Convection
No. 12—Notebook Master

Focus Question What is the relationship between layering of fluids and density?	Focus Question What is the relationship between layering of fluids and density?

Layering Hot and Cold Water

Challenge

Create a layer of red hot water and a layer of blue cold water in your vial of plain water.

Prediction

Predict and draw the order of layers in a successfully layered vial in the diagram on the right.

Prediction

Conduct the investigation

1. Draw and label your successful layers.
2. Which color is most dense?
3. Which color is least dense?

Actual

4. What happened after the layered vial set for 5 minutes? Explain.

After 5 minutes

5. What do you think would happen if you put the layered vial in a cup with 2 cm of hot water? Explain.

6. Explain the relationship between temperature and density.

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Prediction

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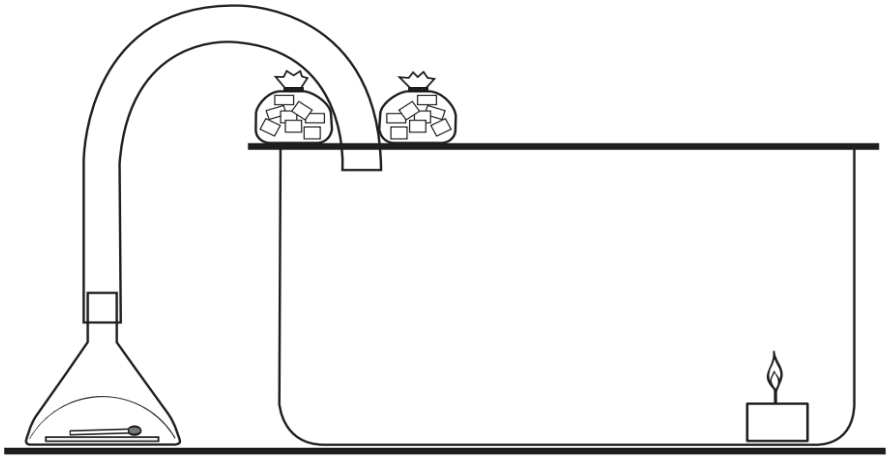
No. 13—Notebook Master

Focus Question How does heat affect density of fluids?	Focus Question How does heat affect density of fluids?

Convection Chamber

Part 1: Draw what you observed in the convection chamber.



Part 2: Think about convection.

1. Explain how convection occurs in a convection chamber.

2. Explain how a convection cell might occur on Earth.

Convection Chamber

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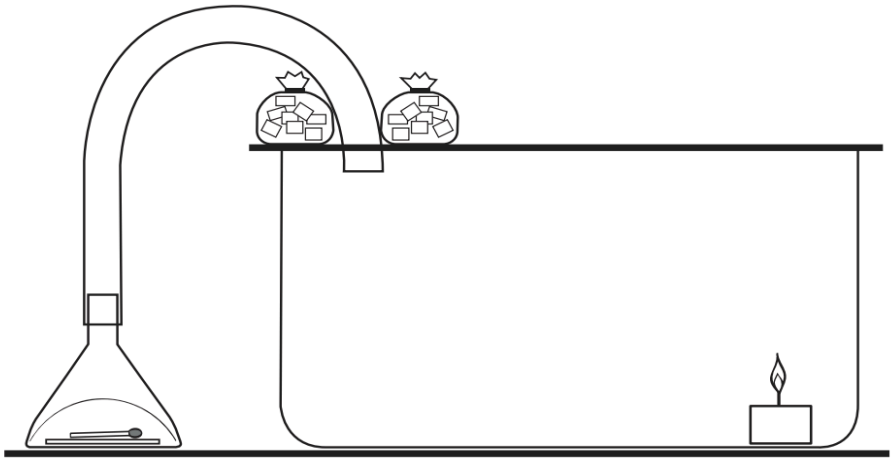

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Investigation 3: Convection
No. 20—Notebook Master

Focus Question How do gases flow in the atmosphere?	Focus Question How do gases flow in the atmosphere?

Climate Factors—Latitude A

Review data for two groups of three cities: one group on the West Coast and one group on the Great Plains. Each group has cities with different latitudes but similar longitudes and elevations. You can locate these cities on the US map.

Record the greatest and lowest average monthly temperatures. Determine the temperature range for each city (the difference between the greatest and lowest average temperature).

City (Great Plains)	Latitude	Greatest average temperature (°C)	Lowest average temperature (°C)	Temperature range (°C)
Sioux Falls, South Dakota	**43.5° N**			
Salina, Kansas	**38.8° N**			
Dallas, Texas	**32.8° N**			

City (West Coast)	Latitude	Greatest average temperature (°C)	Lowest average temperature (°C)	Temperature range (°C)
Newport, Oregon	**44.6° N**			
San Francisco, California	**37.8° N**			
San Diego, California	**32.7° N**			

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Weather and Water Course
Investigation 4: Radiation
No. 21—Notebook Master

Climate Factors—Latitude A

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Newport, Oregon	**44.6° N**			
San Francisco, California	**37.8° N**			
San Diego, California	**32.7° N**			

Climate Factors—Latitude B

1. What pattern do you see when you look at latitude and temperature for the Great Plains cities?

2. What pattern do you see when you look at latitude and temperature for the West Coast cities?

3. What conclusion can you draw about the effect of latitude on temperature?

4. Why do you think latitude has an effect on temperature?

Climate Factors—Latitude B

1. What pattern do you see when you look at latitude and temperature for the Great Plains cities?

2. What pattern do you see when you look at latitude and temperature for the West Coast cities?

3. What conclusion can you draw about the effect of latitude on temperature?

4. Why do you think latitude has an effect on temperature?

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Weather and Water Course
Investigation 4: Radiation
No. 22—Notebook Master

Focus Question How does weather differ between locations?	Focus Question How does weather differ between locations?

Light Angle

1. Which spot (30° or 90°) on the paper received the greatest amount of energy?

2. If you put a penny in each light spot, explain which penny will receive the most energy.

3. If you used a heat lamp instead of a regular lamp, which penny would get the hottest? Explain why.

Light Angle

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2. If you put a penny in each light spot, explain which penny will receive the most energy.

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Weather and Water Course
Investigation 4: Radiation
No. 23—Notebook Master

Focus Question How does the Sun affect the temperature of locations on Earth?	Focus Question How does the Sun affect the temperature of locations on Earth?

Earth-Material Temperature Chart

Time (2-minute intervals)	Temperature (°C)			
	Sand	Soil	Water	Air

Earth-Material Temperature Chart

Time (2-minute intervals)	Temperature (°C)			
	Sand	Soil	Water	Air

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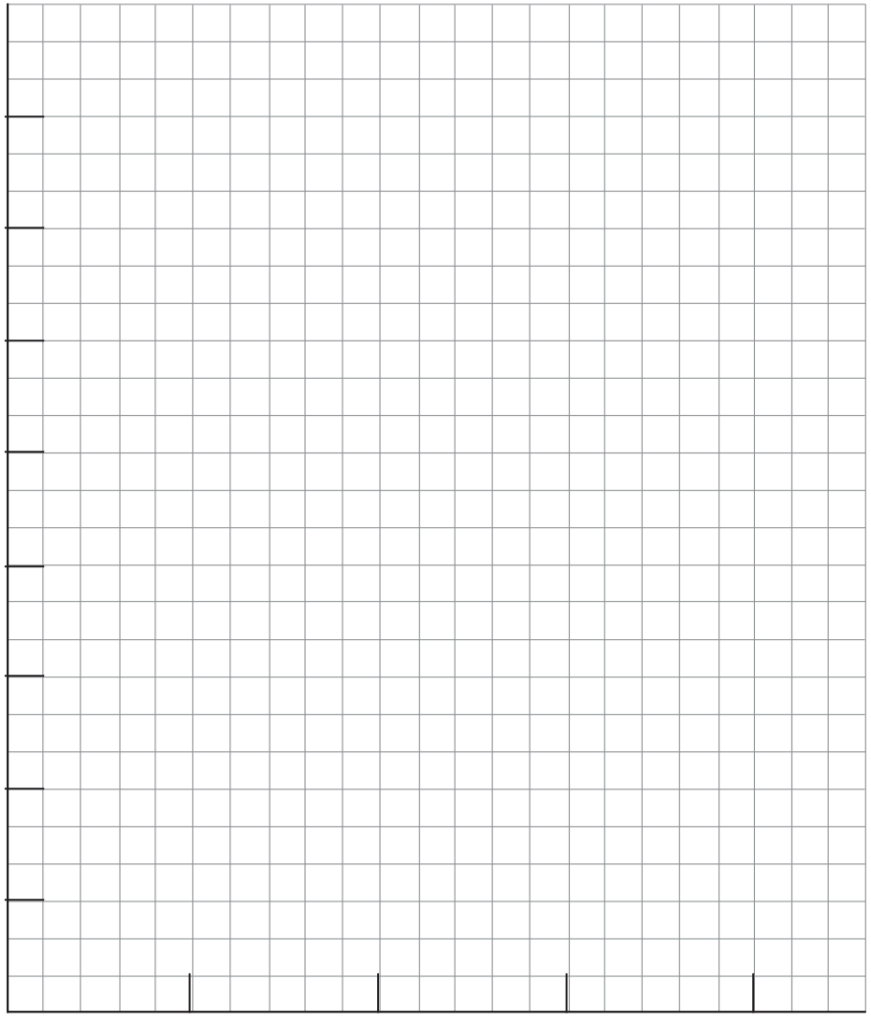
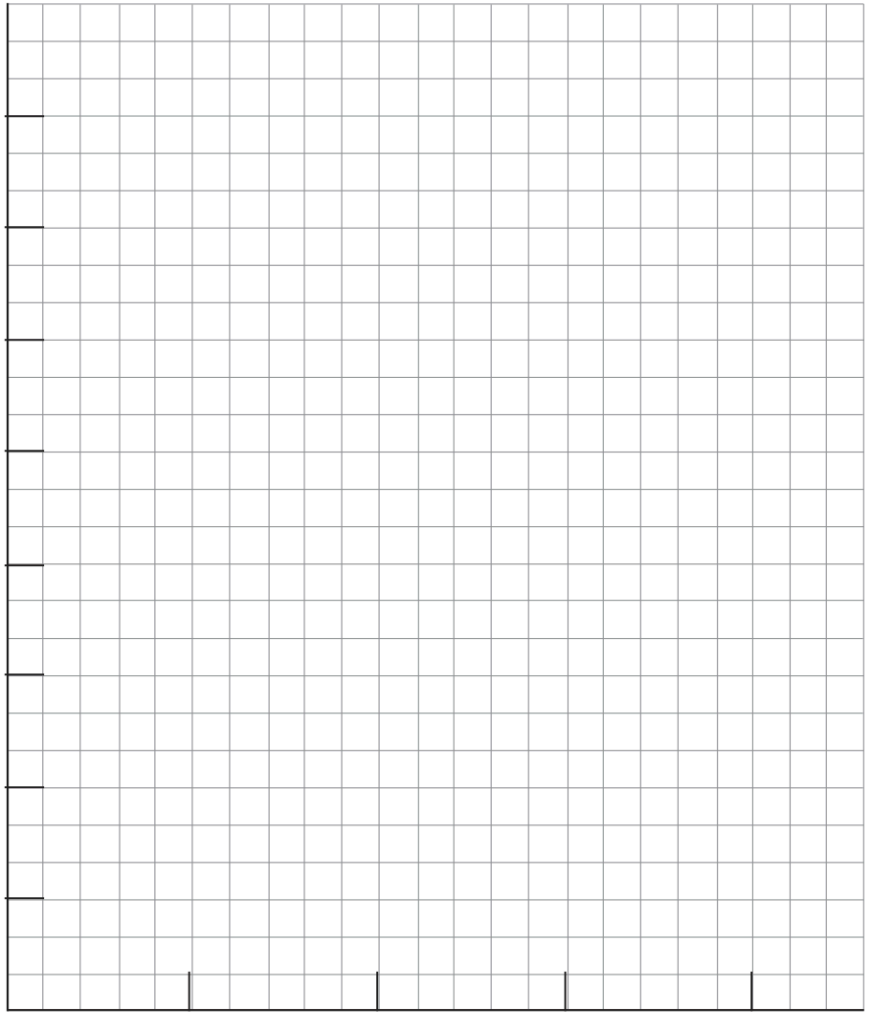
Investigation 4: Radiation
No. 24—Notebook Master

Earth-Material Temperature Graph



Earth-Material Temperature Graph



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Weather and Water Course
Investigation 4: Radiation
No. 25—Notebook Master

Earth-Material Temperature Questions

1. Which material heated up the most in 10 minutes?

2. Which material heated up the least in 10 minutes?

3. Which material cooled off the fastest?

4. Which material cooled off the slowest?

5. Did all four earth materials receive the same amount of solar energy? Support your answer.

6. Which properties of the earth materials do you think may have caused the temperature differences?

Earth-Material Temperature Questions

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2. Which material heated up the least in 10 minutes?

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Weather and Water Course
Investigation 4: Radiation
No. 26—Notebook Master

Focus Question What factors affect the surface temperature on Earth?	Focus Question What factors affect the surface temperature on Earth?

Focus Question How does energy move through materials?	Focus Question How does energy move through materials?

Insulating Materials

Part 1

Material: _____

	Initial temperature	Final temperature	Change in temperature
Insulated home trial 1			
Insulated home trial 2			
Average insulated home			
Average control home			

Which material(s) in the class best reduced energy transfer?

Part 2

	Initial temperature	Final temperature	Change in temperature
Design 1 trial 1			
Design 1 trial 2			
Average design 1			
Design 2 trial 1			
Design 2 trial 2			
Average design 2			

Insulating Materials

Part 1

Material: _____

	Initial temperature	Final temperature	Change in temperature
Insulated home trial 1			
Insulated home trial 2			
Average insulated home			
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Which material(s) in the class best reduced energy transfer?

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Average design 1			
Design 2 trial 1			
Design 2 trial 2			
Average design 2			

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Weather and Water Course
Investigation 5: Conduction
No. 27—Notebook Master

Response Sheet—Investigation 5

A group of students are raising mealworms in their classroom. They decide to test insulation materials to design a more energy-efficient cardboard-box habitat for the mealworms. Here is the plan they made to determine which material would do the best job.

1. Construct three cardboard-box habitats the same in every way.
2. Cover habitat A with three layers of aluminum foil; cover habitat B with one layer of fluffy cotton; put habitat C into a much larger box with a lid so that air is trapped between the layers of the cardboard.
3. Use identical heat lamps as the energy source at one end of each habitat.
4. Stick one thermometer into each habitat through a slit on the top of the habitat.
5. Measure the temperature every 5 minutes for 1 hour. Record data in a table.

Evaluate this group's investigation plan. What is good and what needs improvement?

Response Sheet—Investigation 5

A group of students are raising mealworms in their classroom. They decide to test insulation materials to design a more energy-efficient cardboard-box habitat for the mealworms. Here is the plan they made to determine which material would do the best job.

1. Construct three cardboard-box habitats the same in every way.
2. Cover habitat A with three layers of aluminum foil; cover habitat B with one layer of fluffy cotton; put habitat C into a much larger box with a lid so that air is trapped between the layers of the cardboard.
3. Use identical heat lamps as the energy source at one end of each habitat.
4. Stick one thermometer into each habitat through a slit on the top of the habitat.
5. Measure the temperature every 5 minutes for 1 hour. Record data in a table.

Evaluate this group's investigation plan. What is good and what needs improvement?

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Weather and Water Course
Investigation 5: Conduction
No. 28—Notebook Master

Focus Question How can you reduce energy transfer to or from a model home?	Focus Question How can you reduce energy transfer to or from a model home?

Home-Insulation Design

Illustration	Design # ___
Explanation	

1. How does your design affect energy transfer by radiation?

2. How does your design affect energy transfer by convection?

3. How does your design affect energy transfer by conduction?

Next steps	

Home-Insulation Design

Illustration	Design # ___
Explanation	

1. How does your design affect energy transfer by radiation?

2. How does your design affect energy transfer by convection?

3. How does your design affect energy transfer by conduction?

Next steps	

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Investigation 5: Conduction
No. 29—Notebook Master

Final Project Reflection

Change in temperature:

Design 1 _____

Design 2 _____

1. What did you learn from the first design that helped you with the second design?

2. What did you learn from real-life homes that helped you with the second design?

3. How did your final design reduce energy transfer?

4. What questions do you have about insulation and energy transfer?

Final Project Reflection

Change in temperature:

Design 1 _____

Design 2 _____

1. What did you learn from the first design that helped you with the second design?

2. What did you learn from real-life homes that helped you with the second design?

3. How did your final design reduce energy transfer?

4. What questions do you have about insulation and energy transfer?

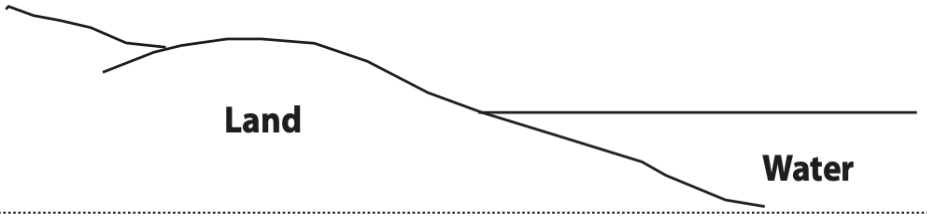
Focus Question How can we design a more efficient way to decrease energy transfer between a model home and the environment?	Focus Question How can we design a more efficient way to decrease energy transfer between a model home and the environment?

Focus Question How does the atmosphere heat up?	Focus Question How does the atmosphere heat up?

Diagram the wind. Does your diagram explain

1. how wind starts?
2. how the Sun is involved?
3. energy transfer by radiation, conduction, and convection?
4. differential heating?
5. air pressure and air density?
6. how wind moves across Earth's surface?

Sea Breeze



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5. air pressure and air density?
6. how wind moves across Earth's surface?

Sea Breeze

Land
Water

Weather and Water Course
Investigation 6: Air Flow
No. 38—Notebook Master

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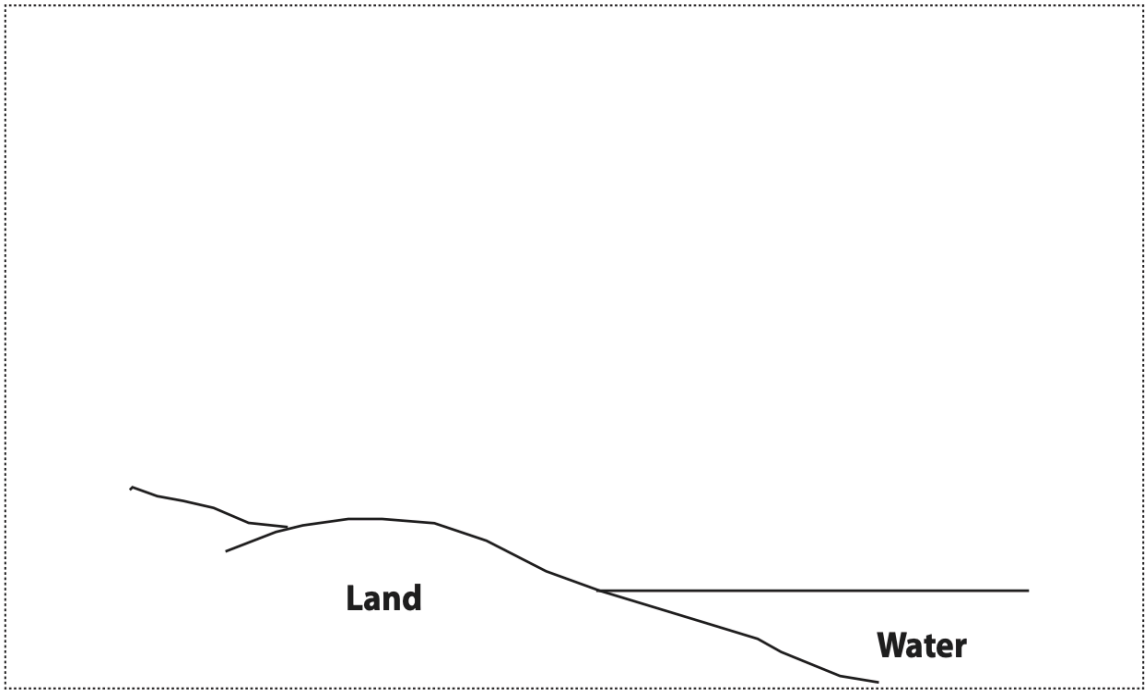
Diagram the wind. Does your diagram explain

1. how wind starts?
2. how the Sun is involved?
3. energy transfer by radiation, conduction, and convection?
4. differential heating?
5. air pressure and air density?
6. how wind moves across Earth's surface?

Land Breeze



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5. air pressure and air density?
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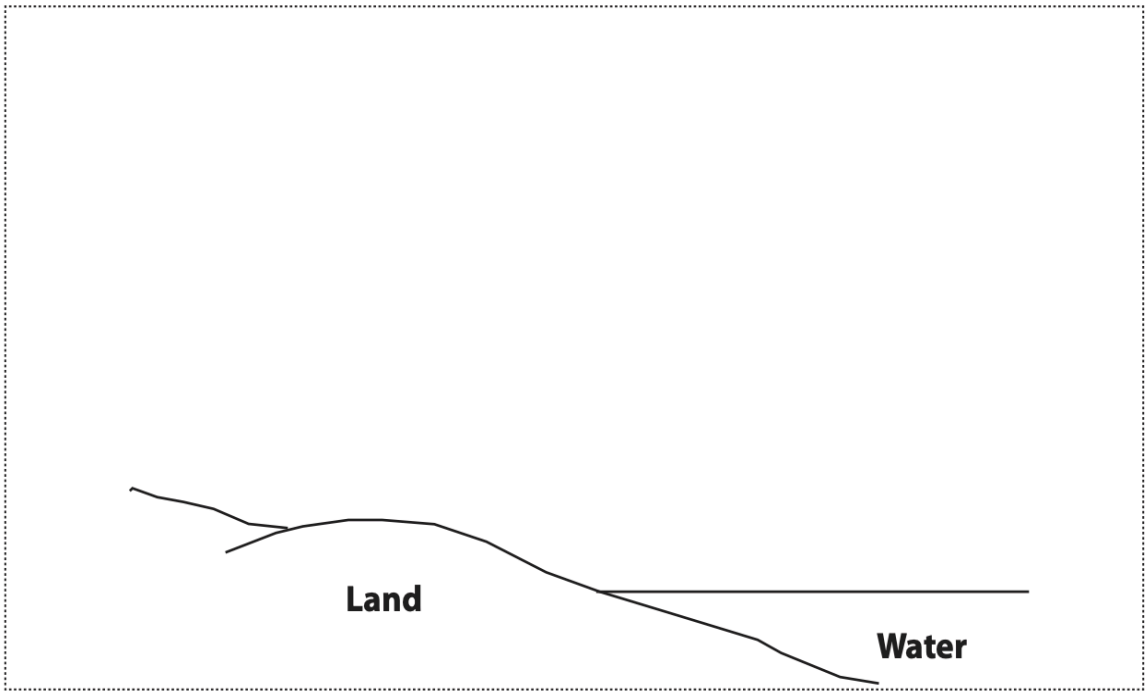
Land Breeze



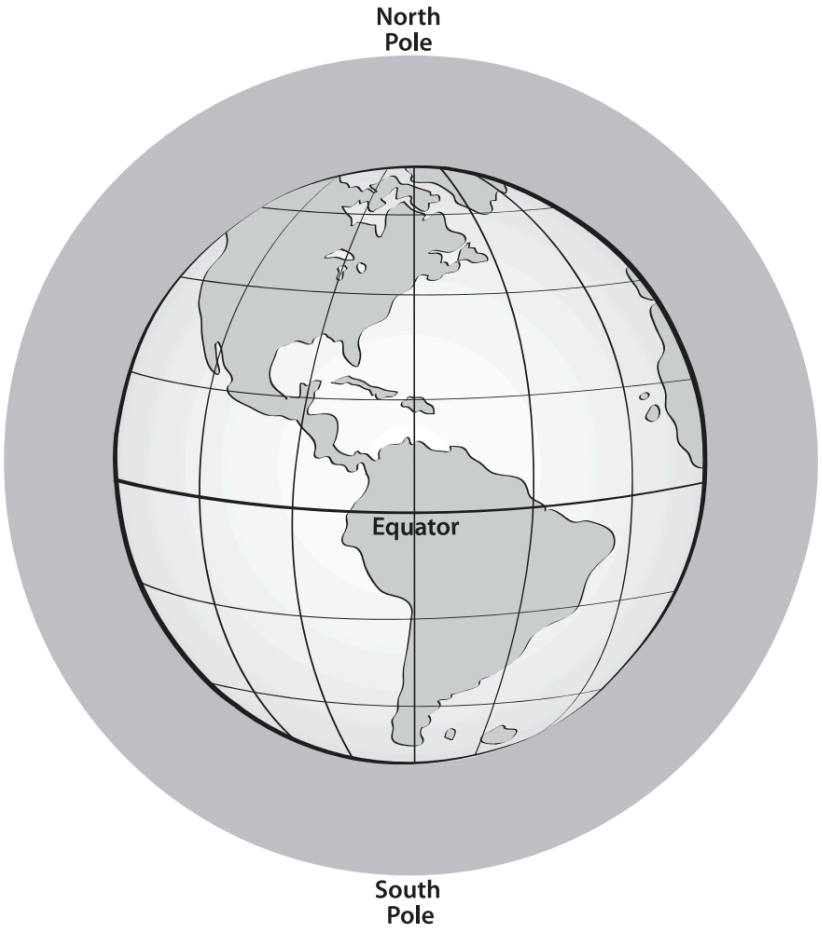
FOSS Weather and Water Course
Investigation 6: Air Flow
No. 39—Notebook Master

Focus Question How does energy from the Sun affect wind on Earth?	Focus Question How does energy from the Sun affect wind on Earth?

Global Winds

Note: Atmosphere not drawn to scale

Global Winds



Note: Atmosphere not drawn to scale

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Weather and Water Course
Investigation 6: Air Flow
No. 40—Notebook Master

Focus Question What affects the direction of global winds?	Focus Question What affects the direction of global winds?

Class Weather Chart

Location:

Date/ time	Temp. (°C)	Temp. (°F)	Air pressure (mb)	Relative humidity (%)	Other observations (wind, visibility)

Class Weather Chart

Location:

Date/ time	Temp. (°C)	Temp. (°F)	Air pressure (mb)	Relative humidity (%)	Other observations (wind, visibility)

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Weather and Water Course
Investigation 1: What Is Weather?
No. 1—Notebook Master

Focus Question Is there water vapor in the air?	Focus Question Is there water vapor in the air?

Response Sheet—Investigation 7

Two girls walked off the court after a tough basketball workout. Both were dripping with sweat. One girl said to the other,

> I have heard that sweating helps keep you cool when you are working hard. Could that be right?

The second girl responded,

> I think it has something to do with condensation of water on your skin, but I'm not sure how it works.

What would you tell the girls to help them better understand sweating and cooling?

Response Sheet—Investigation 7

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> I have heard that sweating helps keep you cool when you are working hard. Could that be right?

The second girl responded,

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What would you tell the girls to help them better understand sweating and cooling?

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Weather and Water Course
Investigation 7: Water in the Air
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Dew-Point Questions

The temperature at which water changes from gas to liquid—the temperature at which condensation will appear on surfaces such as your cups earlier in this investigation—is the dew point. Dew point is the temperature at which air is saturated with water vapor. Once the air is saturated in a given location, no more water can evaporate.

Dew-point temperature is not the same everywhere. It can even be different in a location that is centimeters or meters away. You always have to figure out the dew point for the area you are interested in at the time.

Dew point depends on the amount of water vapor in the air locally. This is why some mornings you find dew on the lawn or car, and other mornings you do not.

1. Under what conditions would dew not form?

2. What do you think would happen to water vapor that condenses on a surface that has a temperature below 0°C? What is it called?

3. People who wear glasses often see condensation on their lenses when they walk from a cold, outdoor environment into a warm house. Why does that happen? How could they prevent it? (Write your answer on a blank sheet in your notebook.)

Dew-Point Questions

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FOSS Weather and Water Course
Investigation 7: Water in the Air
No. 42—Notebook Master

Focus Question How does energy transfer when water changes phase?	Focus Question How does energy transfer when water changes phase?

Pressure/Temperature Demonstration

Investigation question

What happens to the temperature of a gas if you squeeze it into a smaller volume?

Materials

- Plastic bottles
- Bottle pump
- Liquid-crystal thermometers
- Masking tape

Observations and conclusion

1. Record your observations.

2. Record your answer to the investigation question.

3. Knowing what you do about the movement of particles in a gas, explain the change in temperature as you changed the gas volume.

4. How is the bottle demonstration similar to what happened inside a syringe when you pushed in the plunger?

5. How do you think the temperature changes inside the syringe when the air is compressed with the plunger?

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Investigation question

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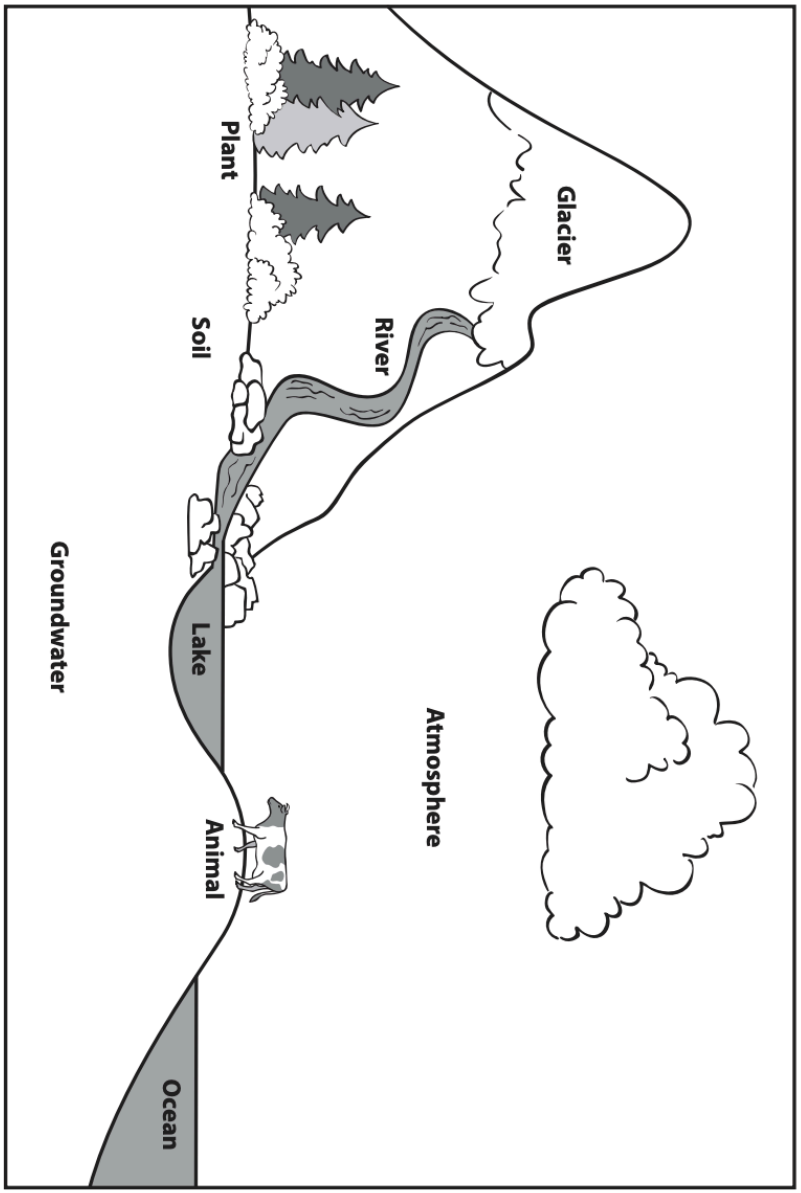
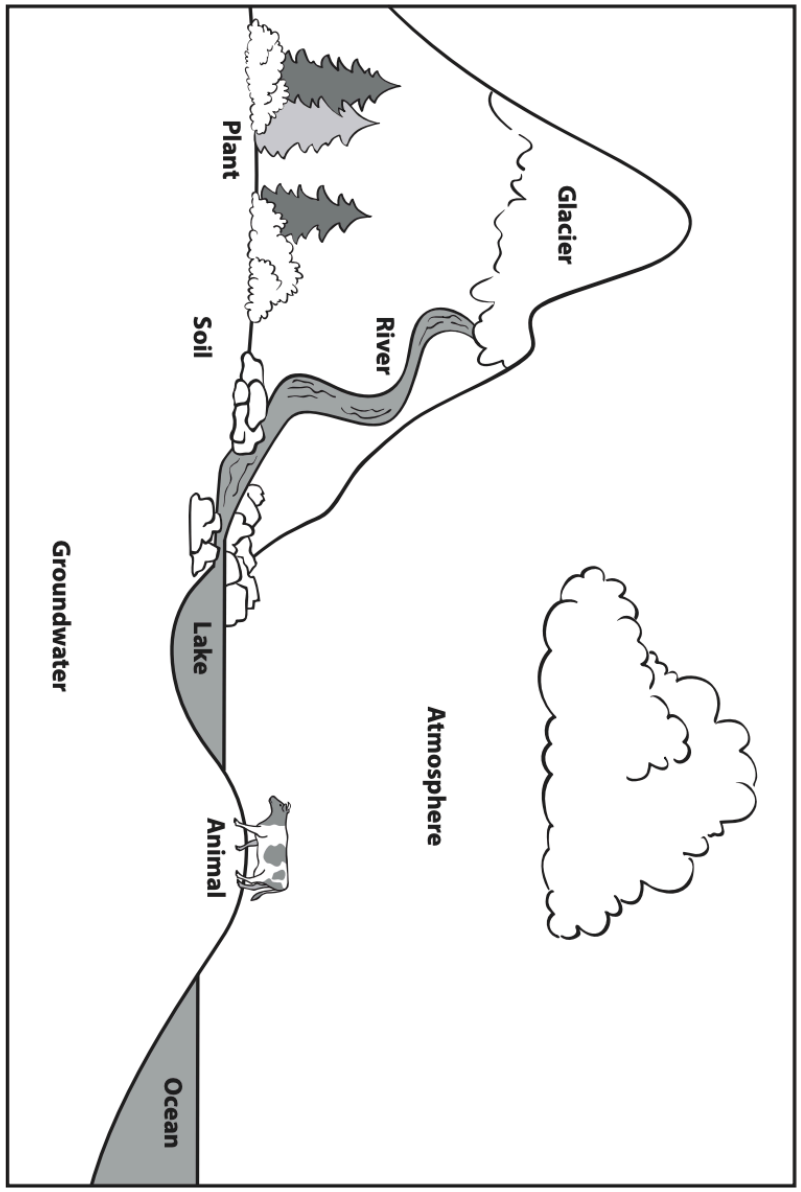
Weather and Water Course
Investigation 7: Water in the Air
No. 43—Notebook Master

Focus Question What causes clouds to form?	Focus Question What causes clouds to form?

My Water Cycle



My Water Cycle



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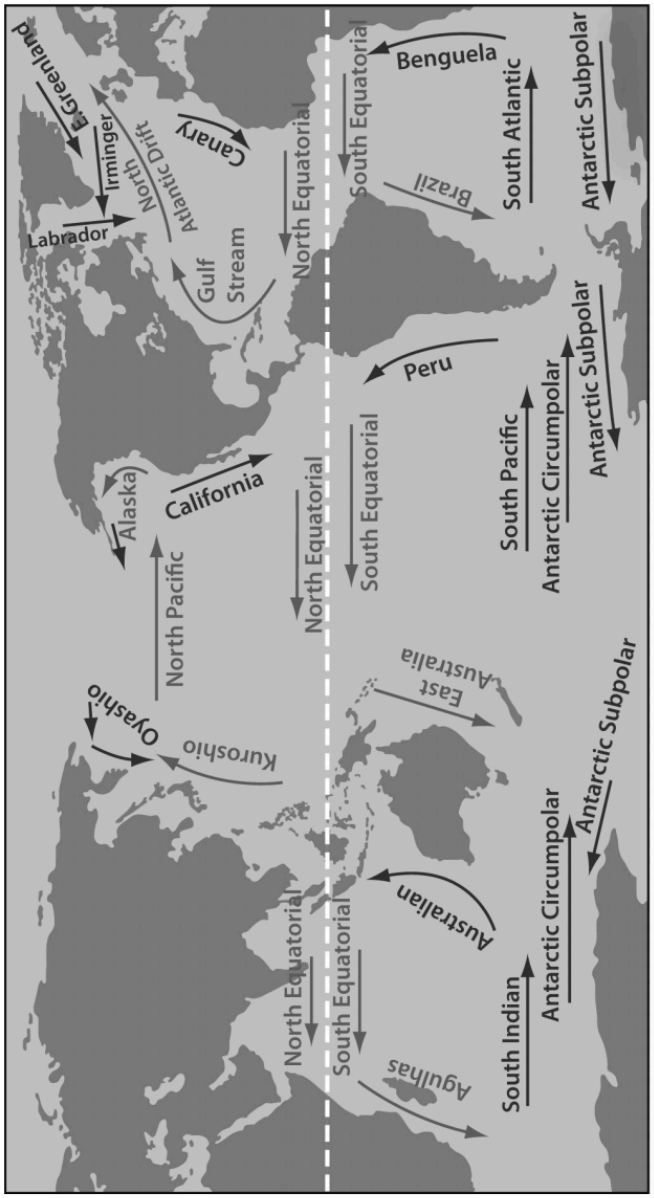
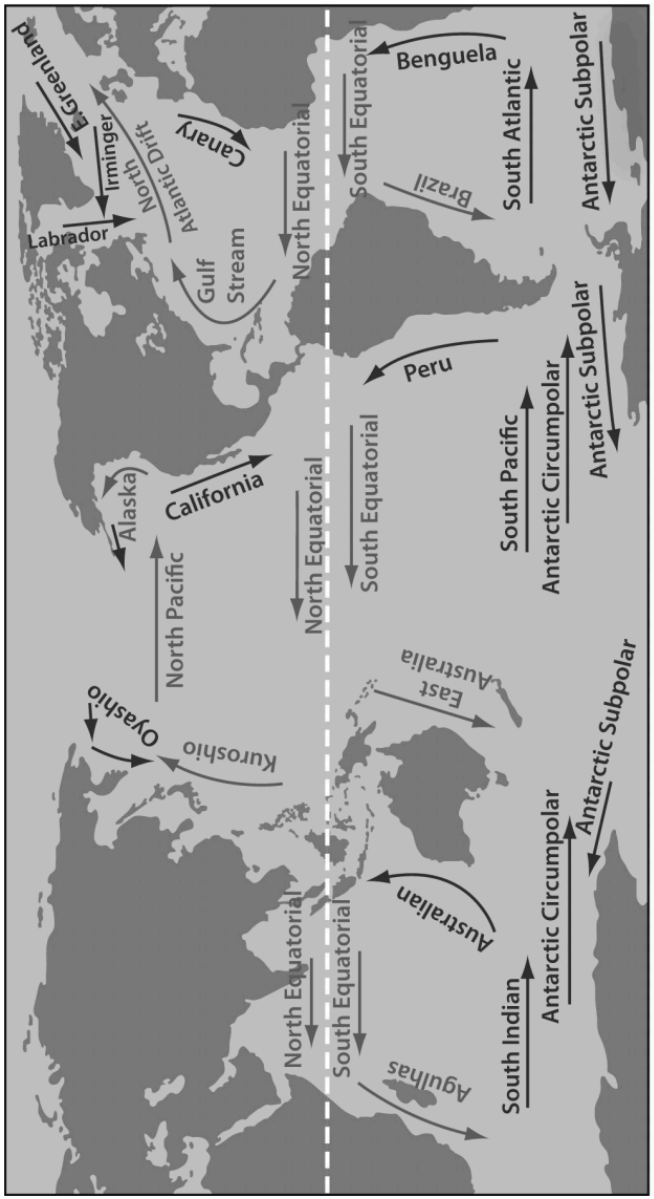
Weather and Water Course
Investigation 8: The Water Planet
No. 44—Notebook Master

Focus Question What is the water cycle?	Focus Question What is the water cycle?

Ocean Currents



Ocean Currents



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Weather and Water Course
Investigation 8: The Water Planet
No. 45—Notebook Master

Focus Question What affects the direction that ocean water flows?	Focus Question What affects the direction that ocean water flows?

Climate Factors—Ocean Distance A

Review data for three pairs of cities. In each pair, the two cities are located different distances from the ocean, but have a similar latitude and longitude. In addition, each pair of cities is located at similar elevation (not shown in data table).

Record the average annual precipitation for each city. Determine the temperature range for each city (the difference between the greatest and lowest average high temperature).

City	Latitude	Longitude	Distance to ocean (km)	Annual precipitation (cm)	Average temperature (°C)	Temperature range (difference)
Homer, AK	59.6° N	151.5° W	0		3.3	
Bethel, AK	60.8° N	161.8° W	96		-1.1	
San Diego, CA	32.7° N	117.2° W	0		17.2	
El Centro, CA	32.8° N	115.6° W	144		22.8	
San Francisco, CA	37.8° N	122.4° W	0		14.4	
Modesto, CA	37.6° N	121.0° W	129		17.2	

Weather and Water Course
Investigation 8: The Water Planet
No. 46—Notebook Master

Climate Factors—Ocean Distance A

Review data for three pairs of cities. In each pair, the two cities are located different distances from the ocean, but have a similar latitude and longitude. In addition, each pair of cities is located at similar elevation (not shown in data table).

Record the average annual precipitation for each city. Determine the temperature range for each city (the difference between the greatest and lowest average high temperature).

City	Latitude	Longitude	Distance to ocean (km)	Annual precipitation (cm)	Average temperature (°C)	Temperature range (difference)
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San Francisco, CA	37.8° N	122.4° W	0		14.4	
Modesto, CA	37.6° N	121.0° W	129		17.2	

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Investigation 8: The Water Planet
No. 46—Notebook Master

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Climate Factors—Ocean Distance B

1. How does the distance from the ocean seem to affect the temperature range of the cities?

2. What conclusion can you draw about the relationship between distance from ocean and temperature range?

3. What did you notice about the annual precipitation for cities close to the ocean compared to those with similar latitude and elevation farther inland?

4. What conclusion can you draw about the relationship between distance from ocean and annual precipitation?

5. What do you think causes the relationships you identified in items 2 and 4?

Climate Factors—Ocean Distance B

1. How does the distance from the ocean seem to affect the temperature range of the cities?

2. What conclusion can you draw about the relationship between distance from ocean and temperature range?

3. What did you notice about the annual precipitation for cities close to the ocean compared to those with similar latitude and elevation farther inland?

4. What conclusion can you draw about the relationship between distance from ocean and annual precipitation?

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Weather and Water Course
Investigation 8: The Water Planet
No. 47—Notebook Master

Focus Question How does the ocean affect climate on land?	Focus Question How does the ocean affect climate on land?

Focus Question How have climates changed over time?	Focus Question How have climates changed over time?

Greenhouse Gases in the Atmosphere

Concentration of greenhouse gases	Infrared energy (number of red arrows)	Global average surface temperature	CO_2 parts per million (ppm)
None—no greenhouse gases			
Levels in 1750			
Current levels			
Lots of gases			

1. When you increase the greenhouse-gas concentration, what happens to the amount of infrared energy (red arrows) in the atmosphere?

2. When you increase the amount of greenhouse-gas concentration, what happens to the global average surface temperature?

3. Why does more CO_2 in the atmosphere lead to more infrared energy (red arrows) "trapped" in the atmosphere?

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Concentration of greenhouse gases	Infrared energy (number of red arrows)	Global average surface temperature	CO_2 parts per million (ppm)
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Weather and Water Course
Investigation 9: Climate over Time
No. 48—Notebook Master

Focus Question How do greenhouse gases in the atmosphere affect Earth's temperature?	Focus Question How do greenhouse gases in the atmosphere affect Earth's temperature?

Headline Activity

1. What is the relationship between Earth's temperature and carbon dioxide?

2. How can climate change affect living things?

3. How certain are scientists that climate change is happening?

4. How certain are scientists that increased carbon dioxide is caused by humans?

5. What are several effects of climate change?

Headline Activity

1. What is the relationship between Earth's temperature and carbon dioxide?

2. How can climate change affect living things?

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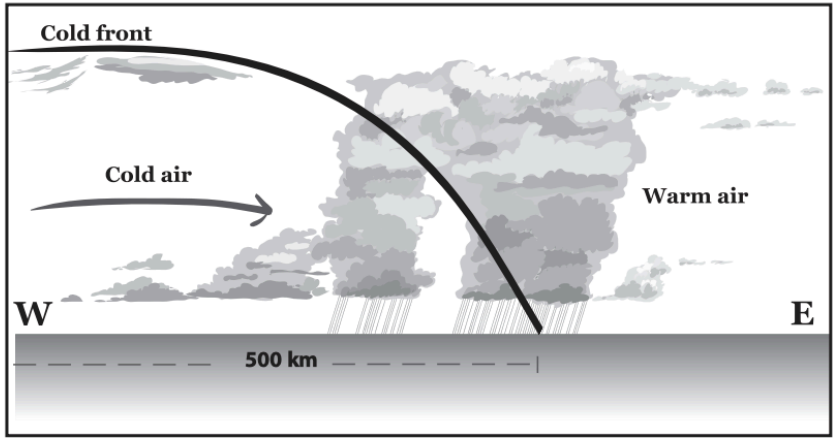
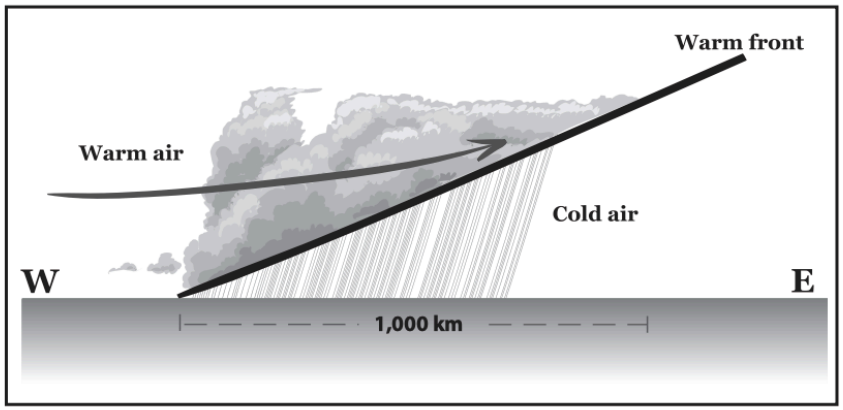
Weather and Water Course
Investigation 9: Climate over Time
No. 49—Notebook Master

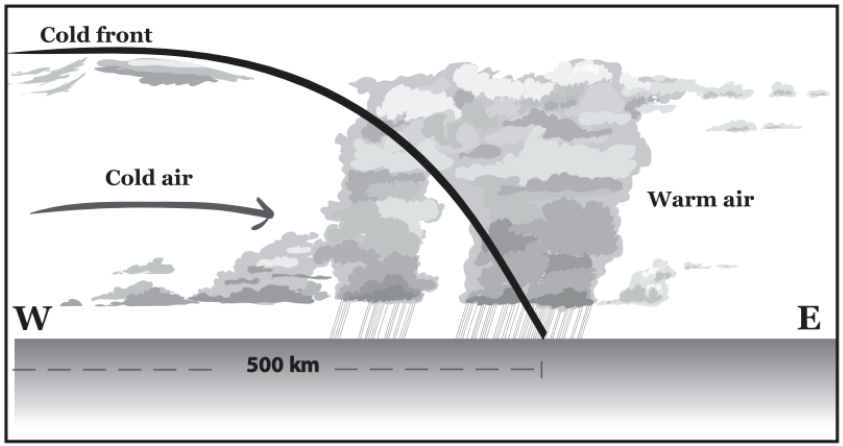
Focus Question What are the effects of a slight rise in global temperatures?	Focus Question What are the effects of a slight rise in global temperatures?

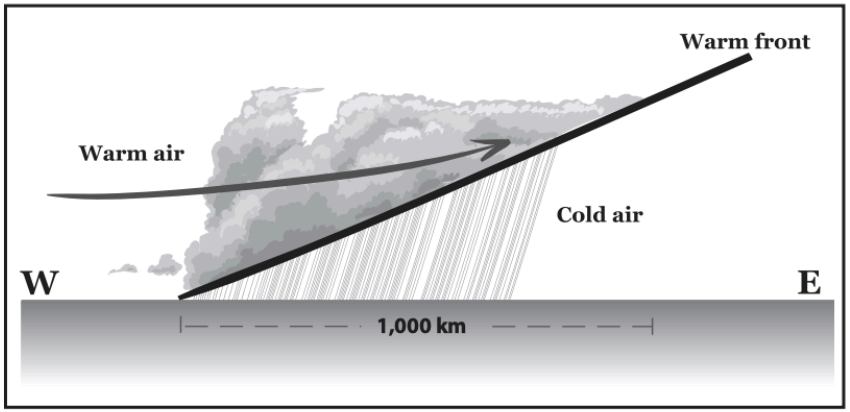
Fronts





Fronts





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Weather and Water Course
Investigation 10: Meteorology
No. 50—Notebook Master

Focus Question What information can you get from a weather map?	Focus Question What information can you get from a weather map?

Focus Question What makes weather happen?	Focus Question What makes weather happen?