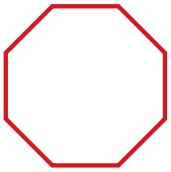
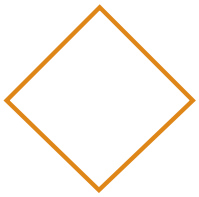
HHPS Symbols

	poisonous	flammable	explosive	corrosive
				
danger					
warning					
caution					

OHT 2

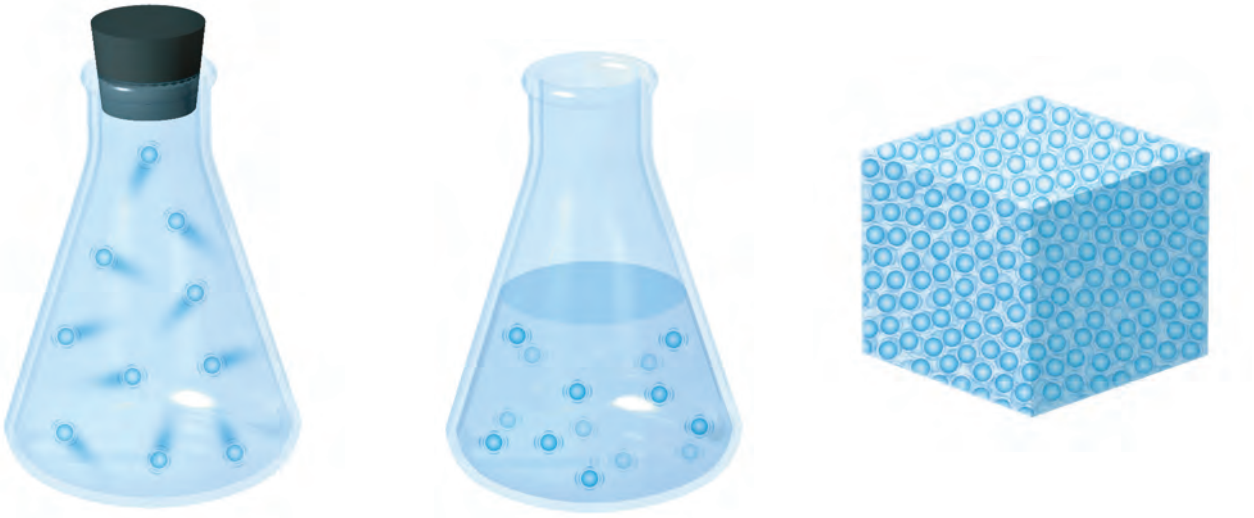
Science Lab Safety

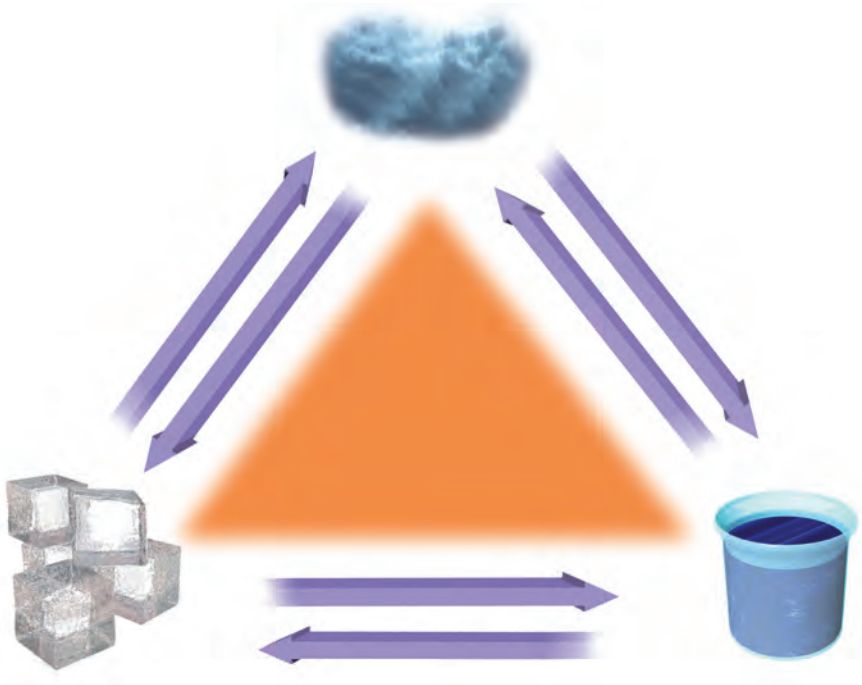
Mass or Volume?

cereal 650 g	chicken 0.56 kg	grapes 2 kg
milk 4 L	sugar 1 kg	butter 250 g
pop 2 L	mayonnaise 950 mL	vanilla 43 mL
potato chips 120 g	orange juice 1.89 L	whipping cream 500 mL
seasoned salt 1 kg	olive oil 1 L	chocolate 168 g
salmon 170 g	flour 2 kg	sour cream 500 mL

OHT 4

States of Matter

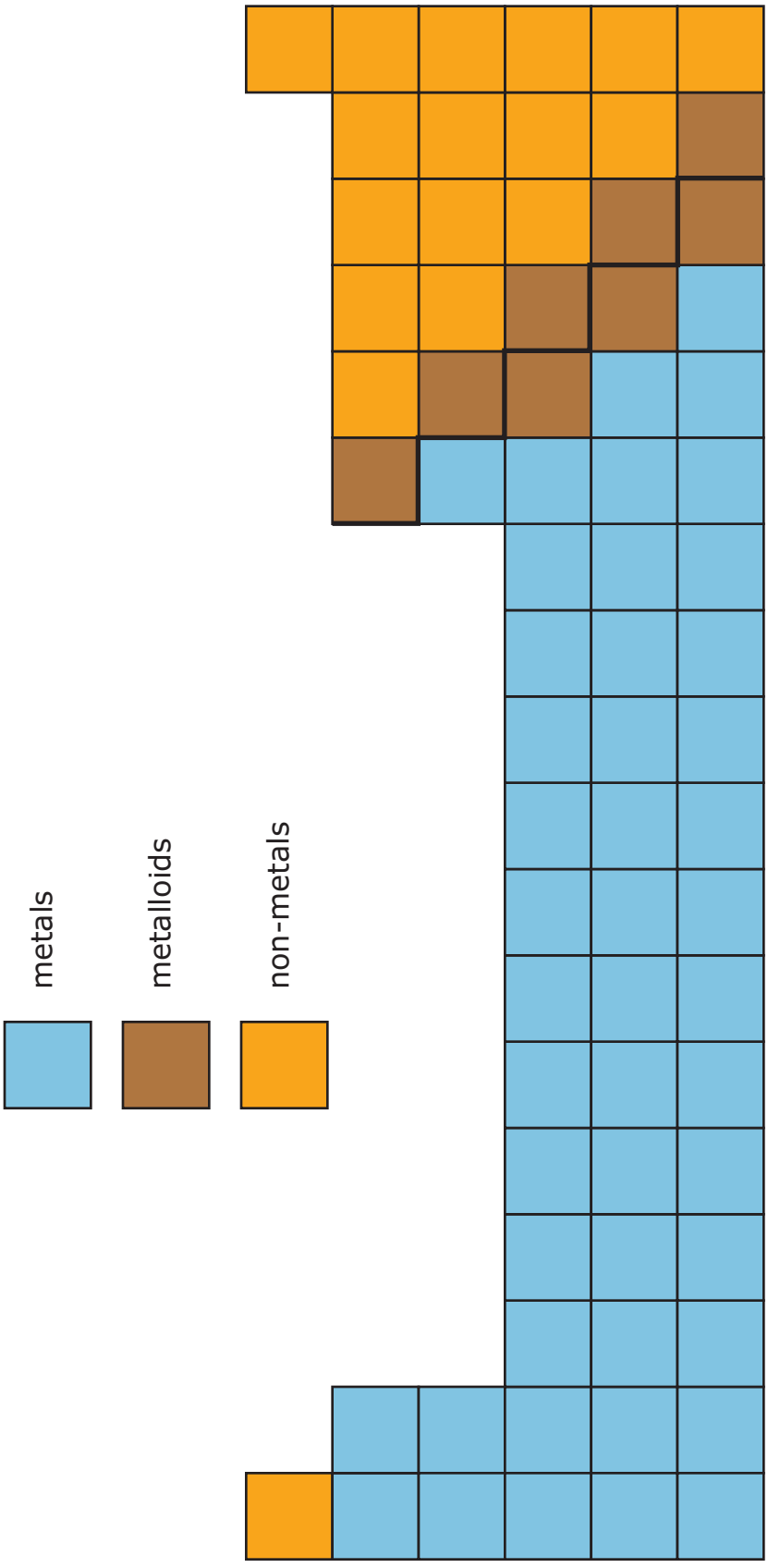




OHT 5

How Would You Organize This?

The Periodic Table



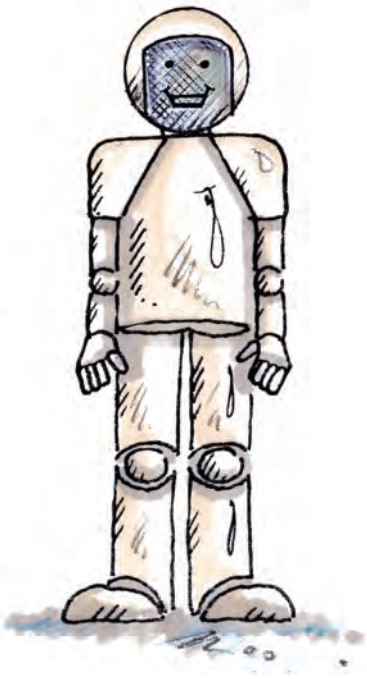
OHT 7

How Do You Use Electricity?

What Type of Electricity?

Work Safe

What Is Alive?



Plant Cell

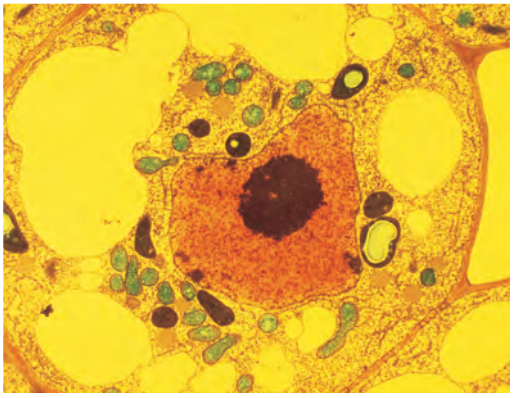
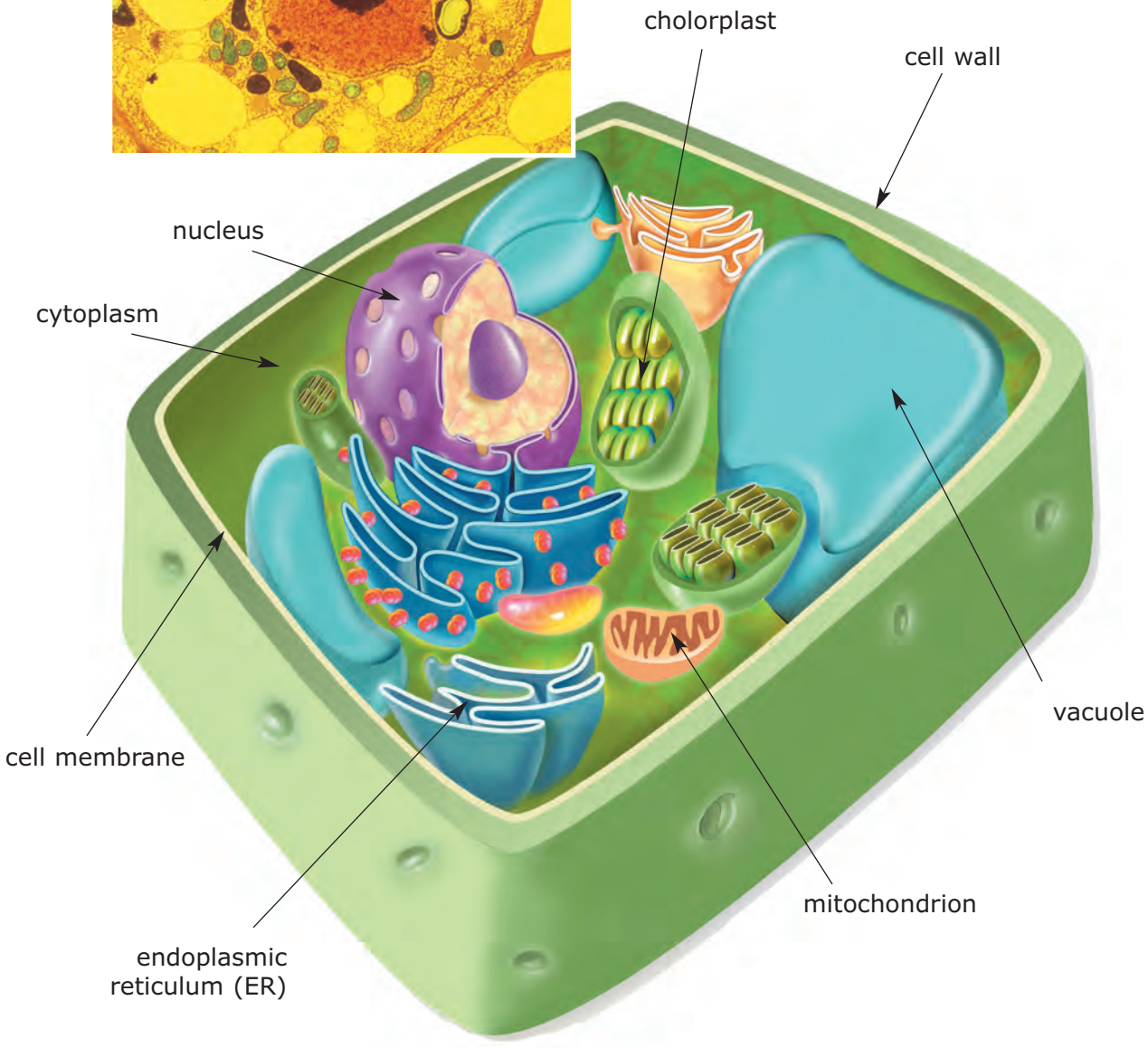
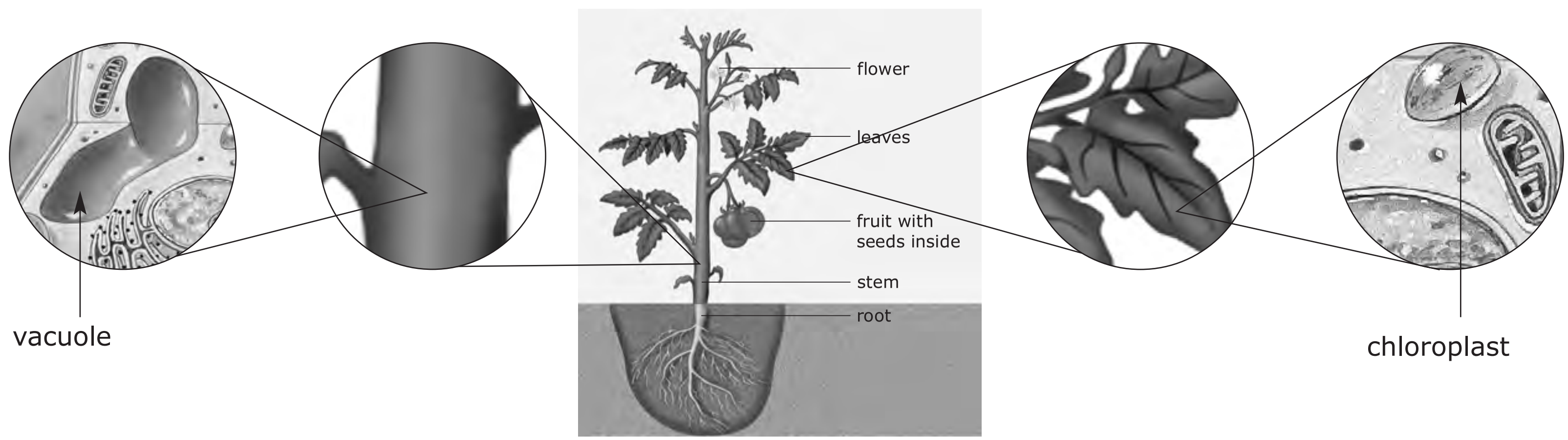


Figure 1.10B A microscopic view of a plant cell (1945×)



Plant Cells Work Together



Plants need stems. Stems are made of cells. Tubes in the stem transport water from the root into the stem. The vacuole in the stem cell stores the water.

Plants need leaves. The leaves are made of cells. The chloroplasts in a leaf cell collect sunlight to make food for the plant.

Animal Cell

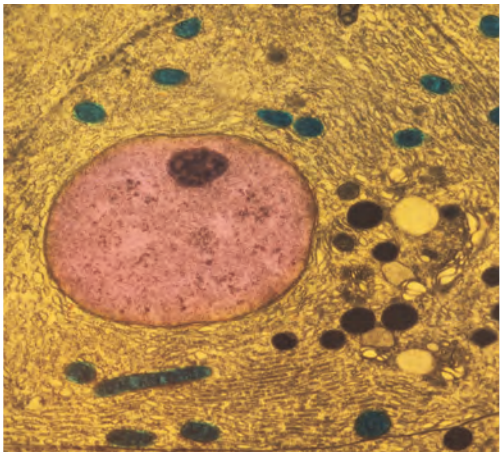
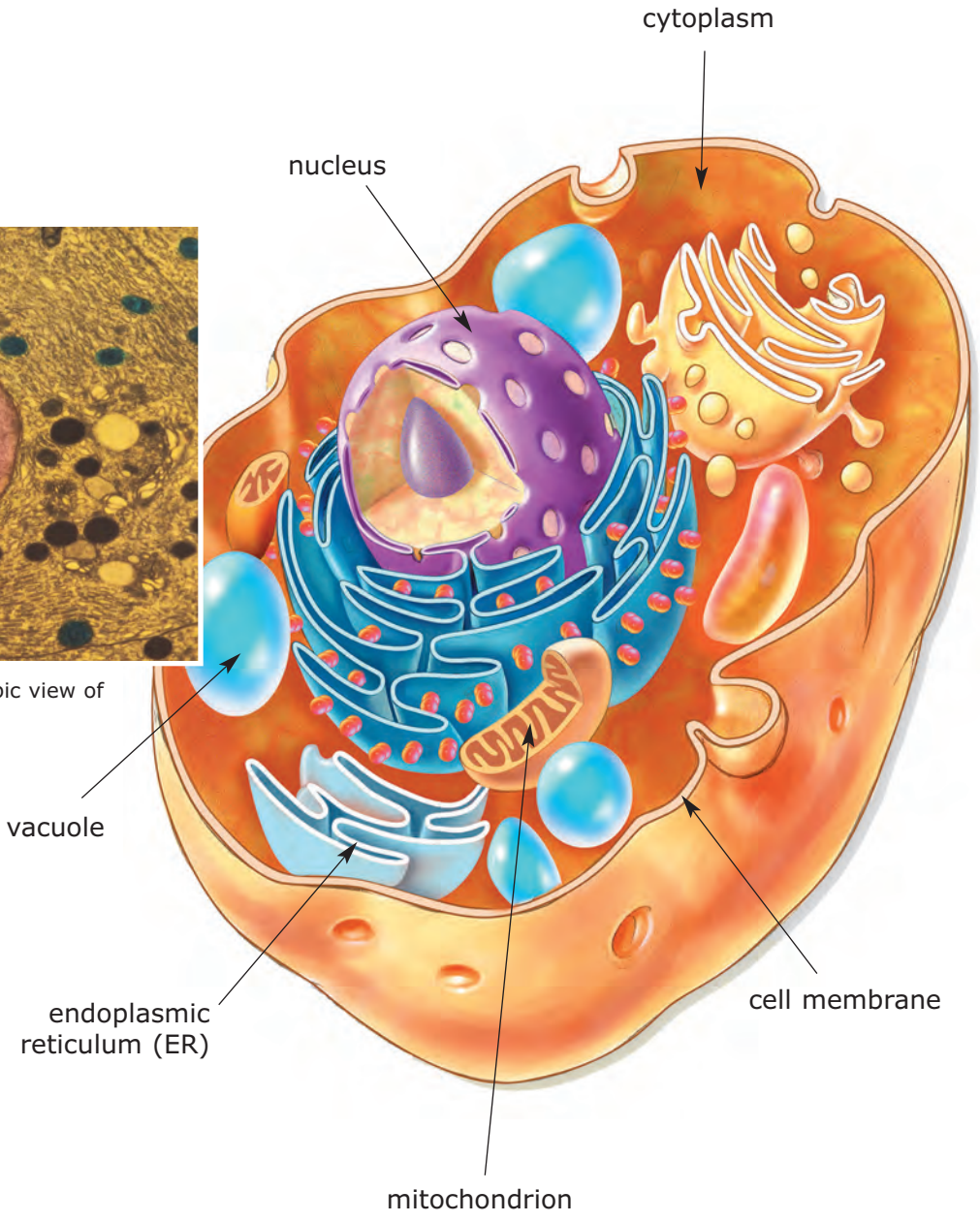


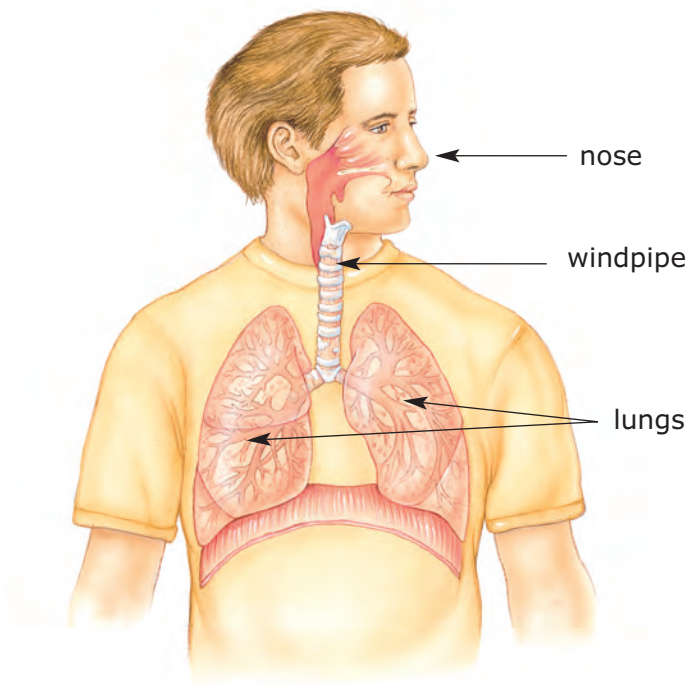
Figure 1.10A A microscopic view of an animal cell (300×)



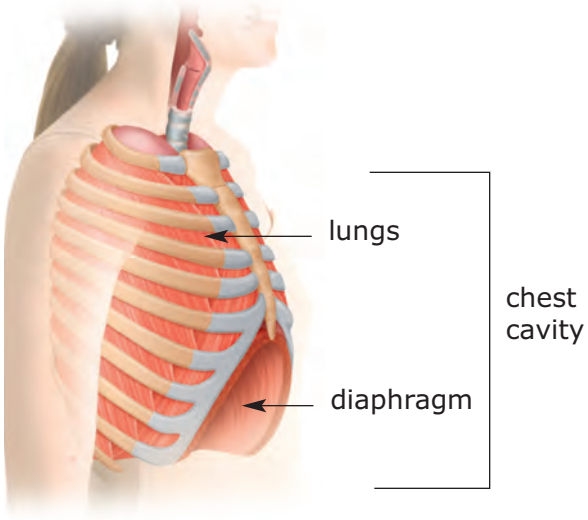
Health and Safety Practices

OHT 15

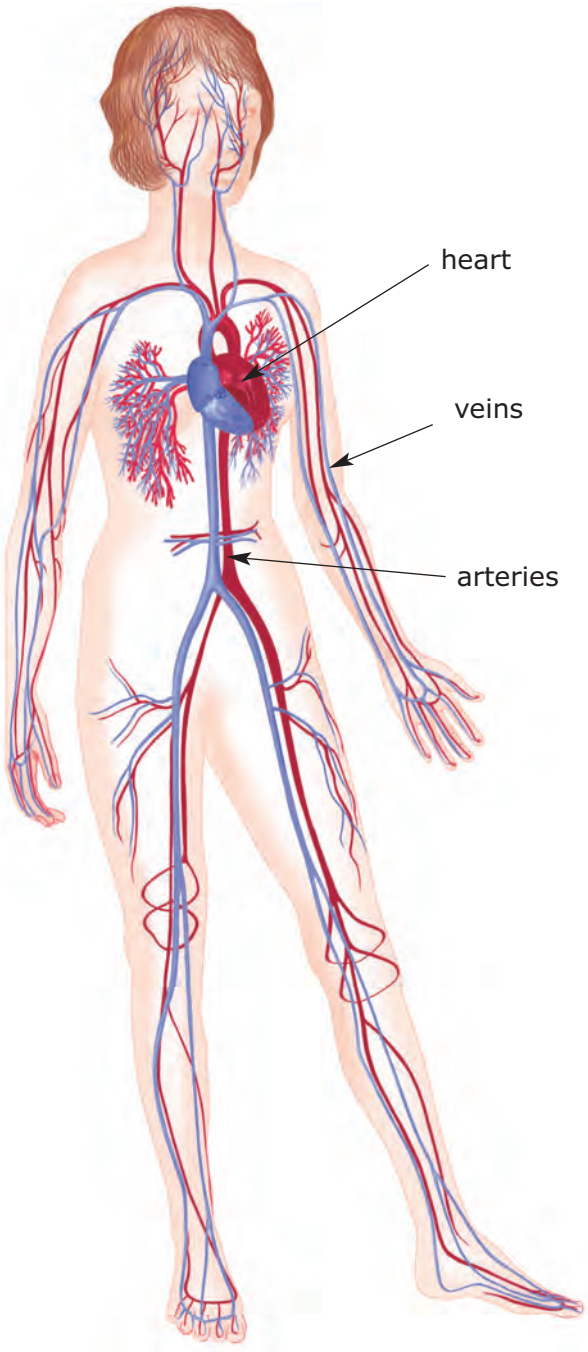
The Respiratory System



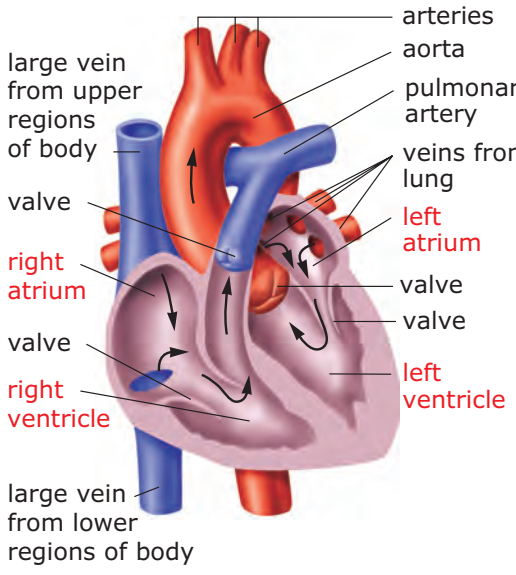
Respiratory system



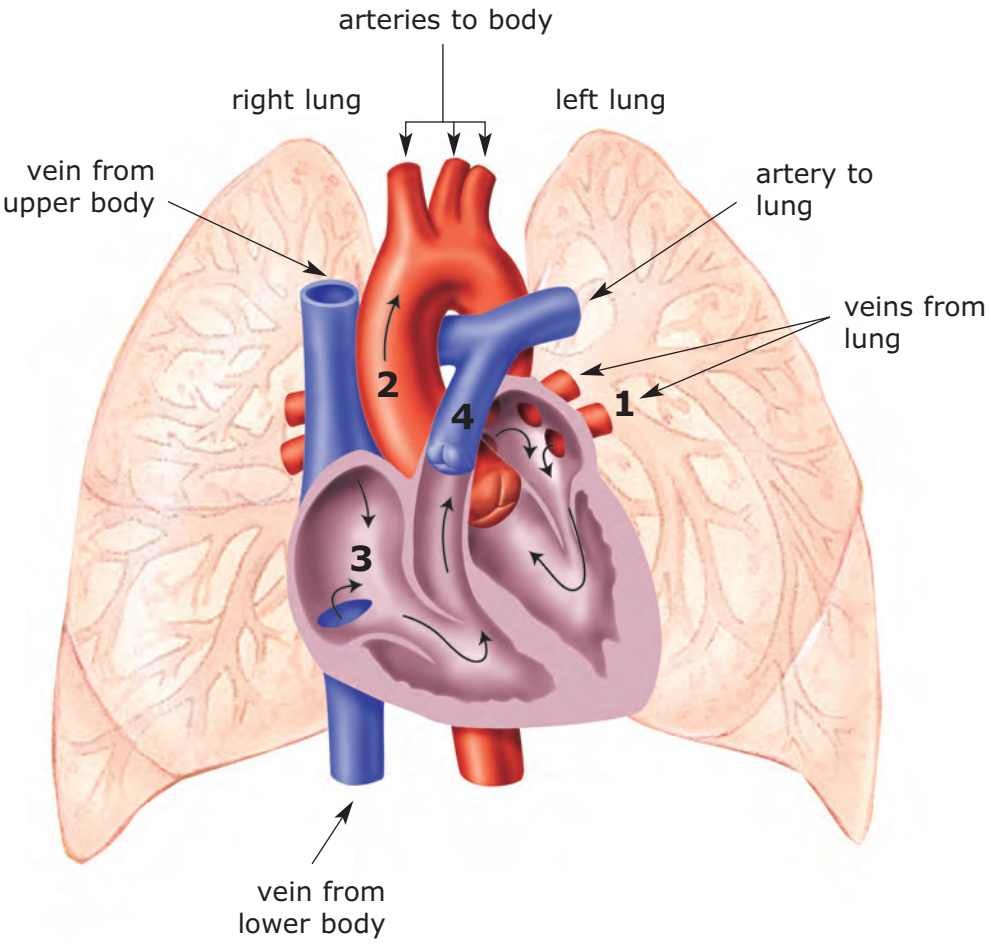
Circulatory System



The human heart has four compartments: the right atrium, the right ventricle, the left atrium, and the left ventricle.

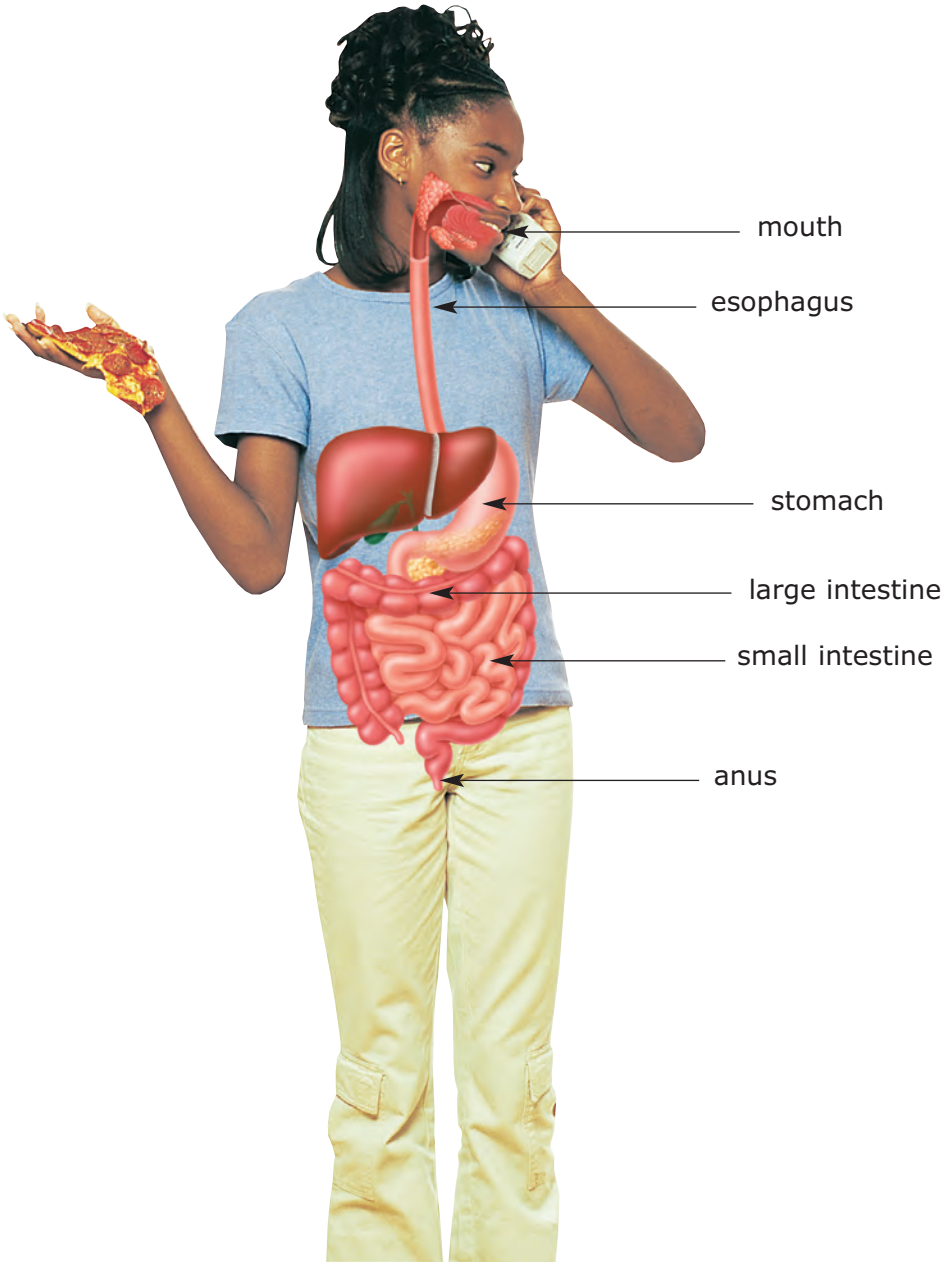


Heart and Lungs

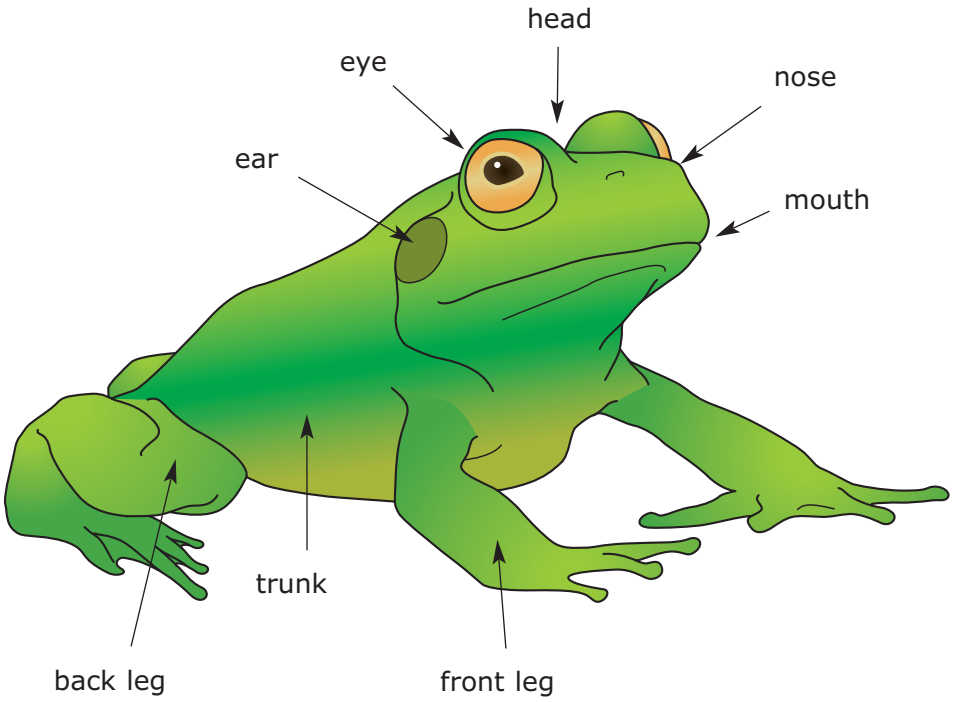


OHT 18

Digestive System

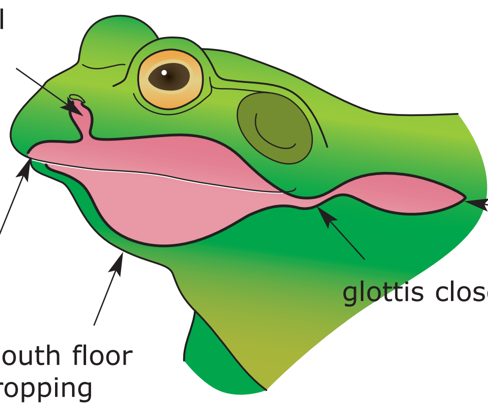


The Frog

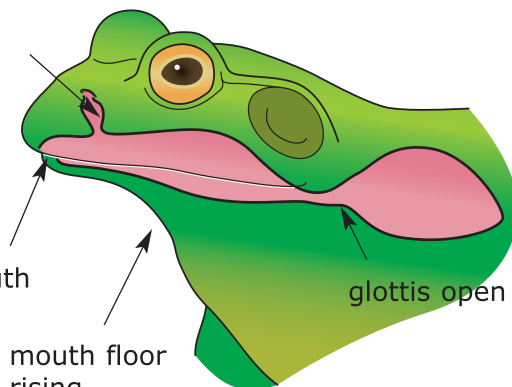


How Frogs Breathe

A



B

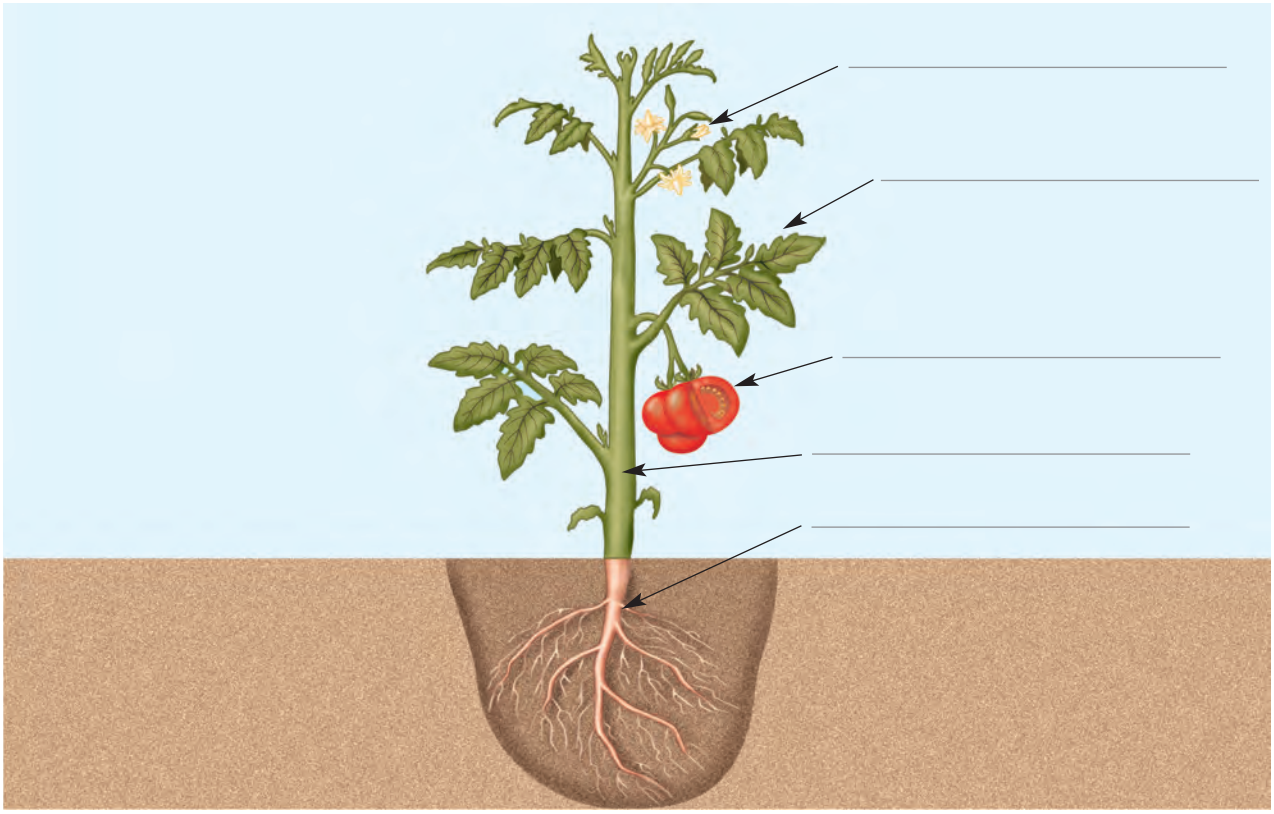


- With its mouth closed, the frog inhales through its **nostrils**, which are openings in the nose. The floor of the mouth drops, which causes the throat to swell. This allows the air to enter the mouth.

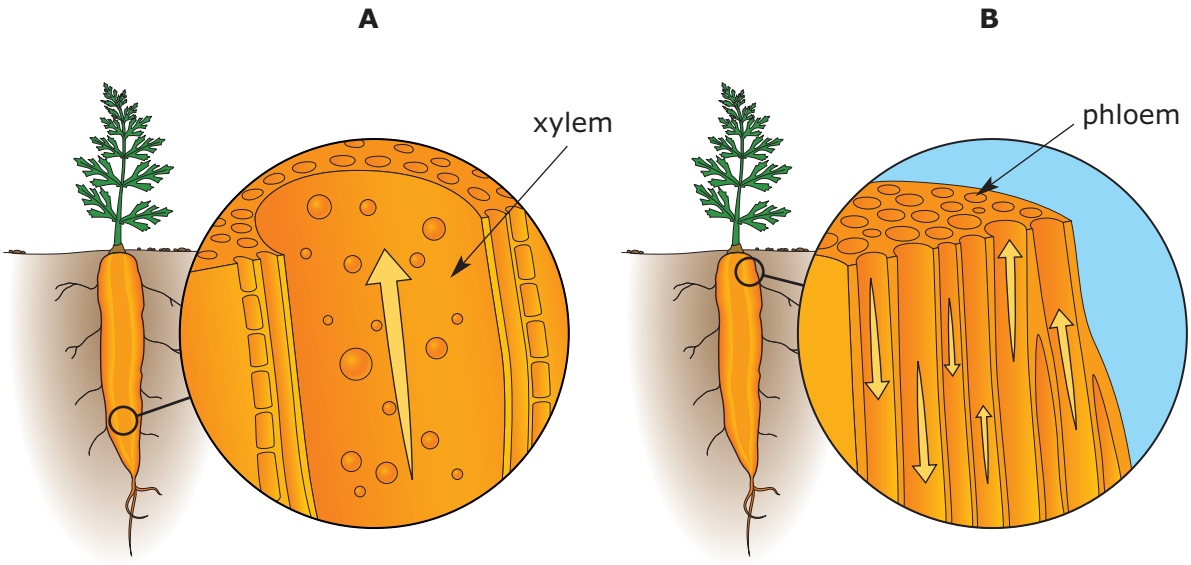
- The nostrils close. The **glottis**, which is the opening to the windpipe, opens. The floor of the mouth rises. This forces air into the windpipe and lungs.
- The frog exhales using muscles on the sides of its body to push air out of the lungs.

OHT 21

The Tomato Plant



Xylem and Phloem

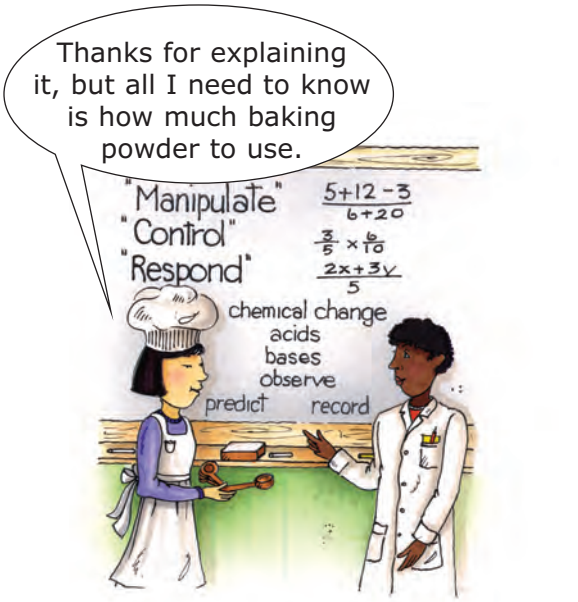


Water moves up _____ tubes.

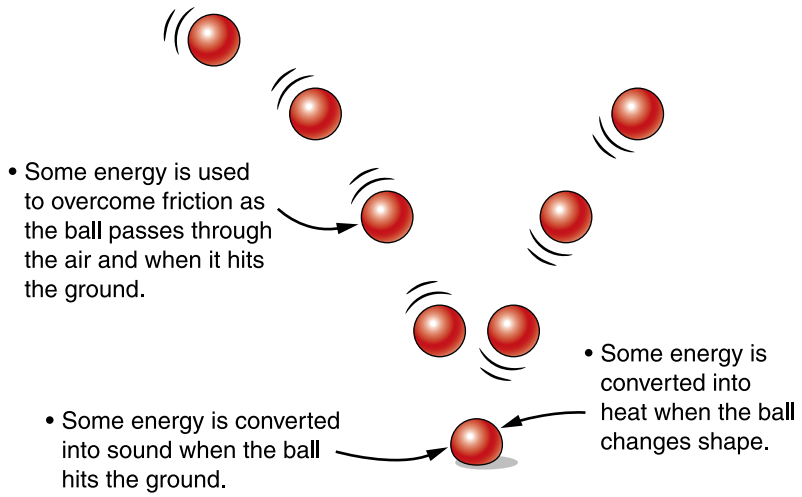
Food moves up and down _____ tubes.

Xylem and phloem are separate tubes inside the plant. They continue from roots to stem and leaves.

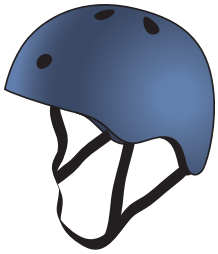
Using Scientific Inquiry



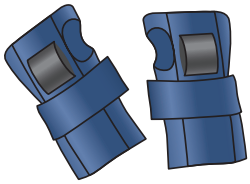
That's the Way the Ball Bounces



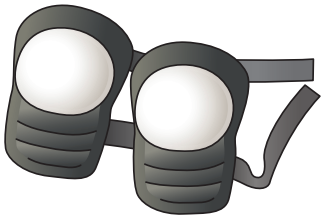
Safety Equipment



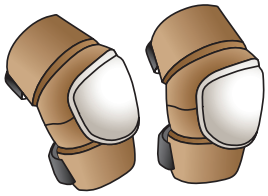
helmets



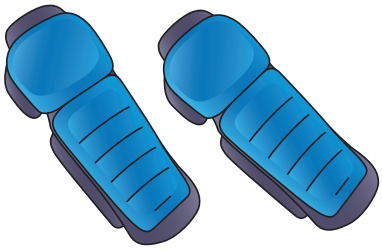
wrist guards



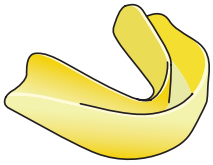
knee pads



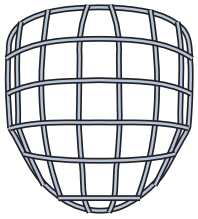
elbow pads



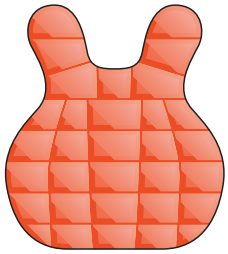
shin guards



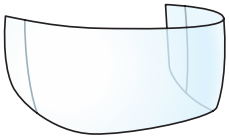
mouth guard



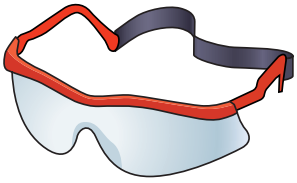
face mask



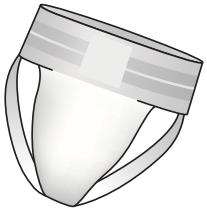
chest guard



face shield



sports goggles



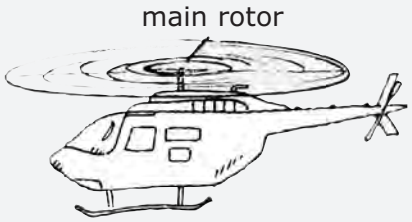
athletic supporter

OHT 26

Centimetre Grid

TEST IT!

Paper Helicopter, Part 1



Rotors are the spinning propellers on a helicopter. The rotor blades help a helicopter to hover, move sideways, and move up and down. You can make a paper model of helicopter rotors.

Question

What factors affect the flight time of a paper helicopter?

Safety Precautions

- Be careful when using scissors.
- Be careful not to fall when launching your helicopter.

What You Need

paper
scissors
ruler
pencil
paper clip
stopwatch

What to Do

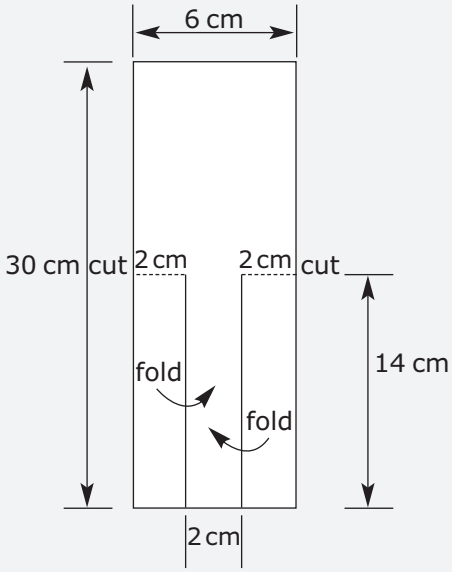
1. Cut out a strip of paper 6 cm by 30 cm.

2. Mark your strip of paper as shown here.

3. Cut and fold your strip of paper as shown on page 3.

4. Make an additional cut to make the rotor blades. Open up the rotors.

5. Attach the paper clip to the bottom of your paper helicopter.

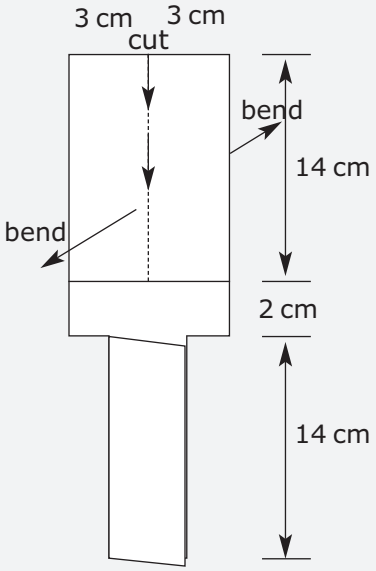


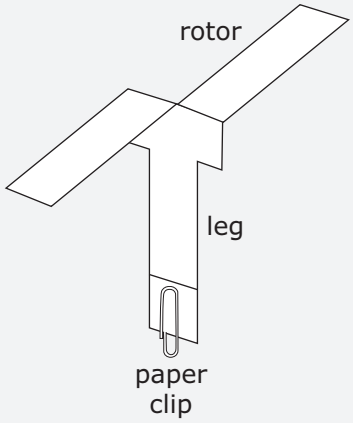
TEST IT! (continued)

6. Trial 1.

a) Stand at the top of a stairwell or where your teacher recommends. Hold your helicopter straight out in front of you at shoulder level.

b) Release the helicopter. Use the stopwatch to measure your helicopter's flight time in seconds from the time you release it until it lands. Record the flight time in the data table.





	Trial 1	Trial 2	Trial 3
Flight Time (s)			

7. Repeat Step 6 for Trial 2 and Trial 3.

What Did You Observe?

8. Calculate the average flight time.

a) Add the three flight times together. _____

b) Divide Total Time by 3. _____ ÷ 3 = _____

What Did You Discover?

9. Why is it important to have several trials?

10. What factors affect the flight time of a paper helicopter?

11. Compare your average flight time with that of your classmates. What are two reasons why your times might be different?

Types of Variables

Variable	Meaning	Example
Manipulated	the factor that is changed	•
Responding	the factor that changes as a result	•
Controlled	the factors that must be kept the same	• •

TEST IT!

Paper Helicopter, Part 2

Use the following steps to help you design an investigation. Decide what length of rotor blades you will use. Keep the same length for all three trials.

Question

How does the length of the rotor blades affect the flight time of a paper helicopter?

What Do You Think Will Happen?

1. Fill in the blanks using *longer* or *shorter*.
If I make the rotor blades _____ , then the helicopter flight time will be _____ .

Safety Precautions

2. List all the safety precautions that you think apply.

What You Need

3. List the materials and apparatus that you will need to complete your investigation.

What to Do

4. List the steps that you are going to follow to do a fair test.

TEST IT! (continued)

What Did You Observe?

5. Record your observations.

Trial	Length of Rotor Blades (cm)	Flight Time (s)
Trial 1		
Trial 2		
Trial 3		
	Total Time	

6. Calculate the average flight time. _____ ÷ 3 = _____

What Did You Discover?

7. What variable did you manipulate in this investigation?

8. What variables did you control in this investigation?

9. Why did the rotor blades have to be the same length for all trials?

10. Did the results of your investigation support your prediction?
YES NO

11. How does the length of the rotor blades affect the flight time of a paper helicopter?

12. Suggest a new question that you could investigate using the paper helicopter.

Scientific Method

Scientific Processes	Description	Used this process?
Question	• Decide what you want to find out. State this as a question.	✓
Gather information	• Gather background information on the question.	
Predict	• Predict what you think will happen.	
Decide what to do	• Identify the variables. • List the steps that you will follow. Include several trials. • Identify safety precautions.	
Do the investigation	• Follow the steps and safety precautions.	
Measure and record	• Measure the data and record your observations. You might wish to use a chart or table.	
Compare	• Go back to your prediction. Did the results of your investigation support your prediction?	
Make an inference	• Based on your observations, what did you learn?	
Evaluate	• Think about how you could improve your investigation. • If possible, make changes and repeat your investigation.	
Communicate	• Tell others what you learned.	

TEST IT!

Design Your Own Investigation

Question

1. What question will you investigate?

What Do You Think Will Happen?

2. Describe what you think will happen.

Safety Precautions

3. List all the safety precautions that you think apply.

What You Need

4. List all the materials and apparatus that you will use.

What to Do

5. Use the following chart to help you identify the variables.

What variable will you manipulate?	How will you change this variable?
What will be the responding variable?	How will you measure the change in this variable?
What variables will you control?	How will you control these variables?

TEST IT! (continued)

6. On a separate sheet of paper, list all the steps that you will follow. Have your teacher approve your plan.

What Did You Observe?

7. A data table might help you organize your observations and data.

What Did You Discover?

8. Did the results of your investigation support your prediction?

YES NO Explain.

9. What did you learn from this investigation?

10. Would other students who follow the steps arrive at the same conclusion? YES NO Explain why or why not.

11. How could you improve your investigation if you did it again?

Chemistry and Safety

Common Chemicals

Chemical	Common Uses	Dangers	Safety Ideas
Toluene	• common ingredient in nail polish and some glues	• breathing fumes can cause dizziness	
Muriatic acid (hydrochloric acid)	• removes scaly buildup in pipes	• can irritate skin tissue and eyes	
Propylene glycol	• ingredient in mascara and deodorant	• can irritate eyes	
Methanol (wood alcohol)	• dissolves paint	• toxic fumes	

Classroom Safety Rules

Think about improper behaviours in the laboratory and what could happen. Together with your teacher and classmates, create the safety rules you will use while conducting investigations in your classroom lab.

1.

2.

3.

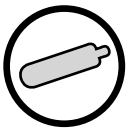
4.

5.

6.

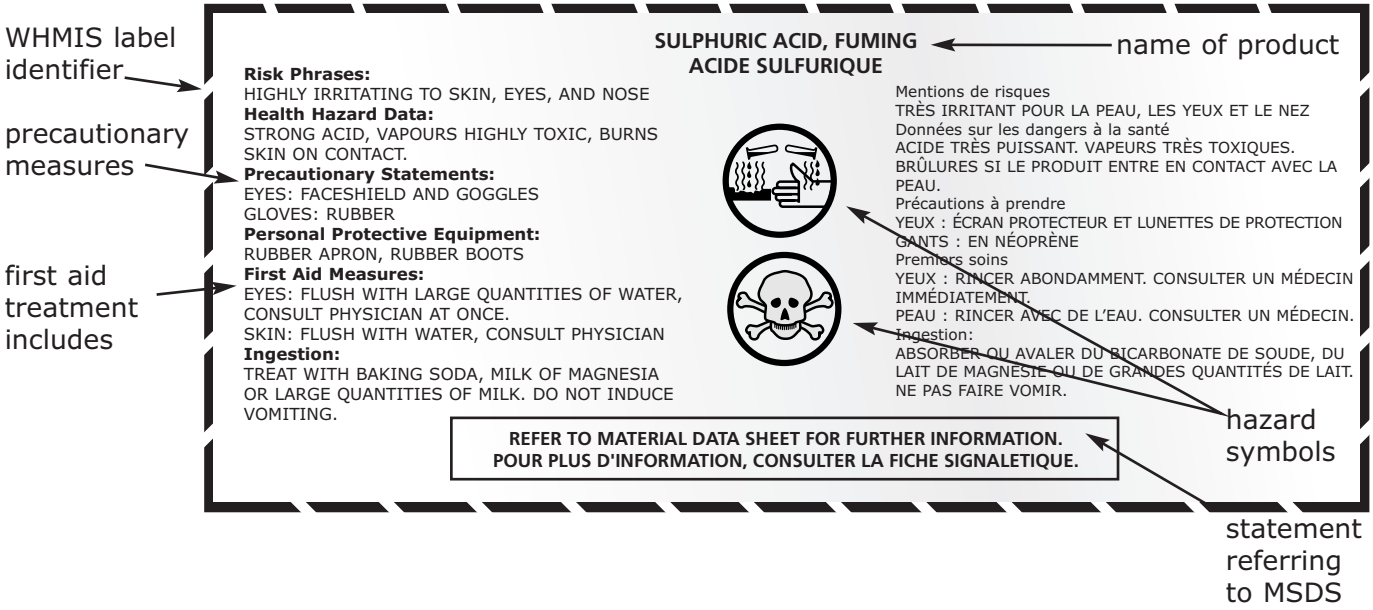
7.

WHMIS Symbols

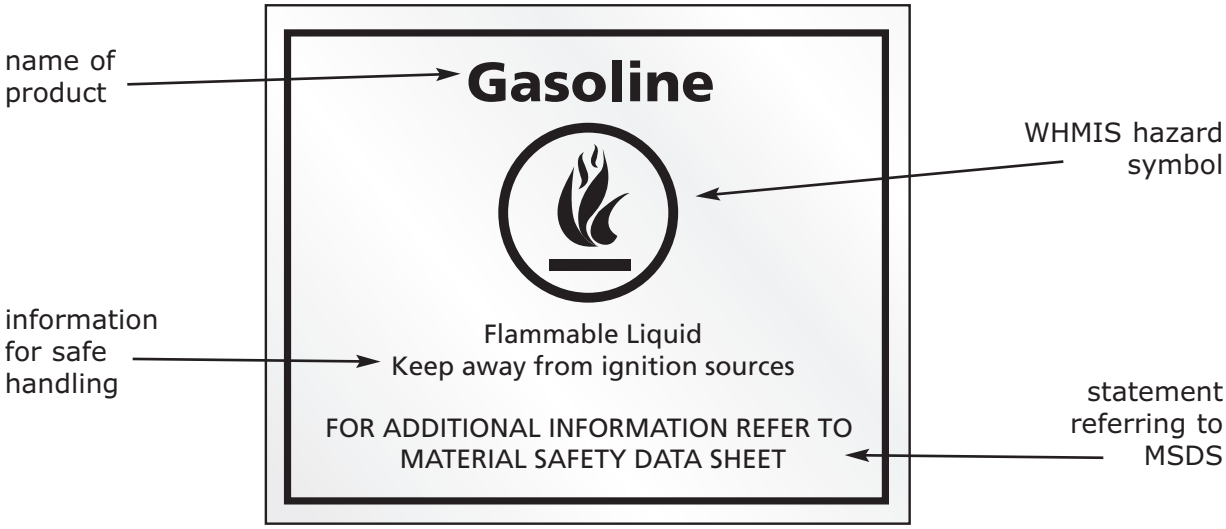
Symbol	Meaning	What Might Happen
	Compressed gas	A gas is under high pressure in a cylinder. The cylinder could explode or burst if it is heated, dropped, or damaged.
	Oxidizing material	These materials can cause explosions or fires if they come into contact with wood, fuels, or anything else that can burn.
	Biohazardous	Materials with this symbol may cause infectious disease or serious illness. People could die from these diseases or illnesses.
	Reactive	These materials might react violently and cause an explosion or a fire, or produce toxic gases when exposed to light, heat, vibrations, or extreme temperatures.
	Poisonous	A single exposure to this substance could kill you or cause serious or permanent damage.
	Toxic	Exposure to this poisonous substance could cause irritation. Repeated exposure could cause cancer, birth defects, or other permanent damage.
	Corrosive	
	Flammable	

WHMIS Labels

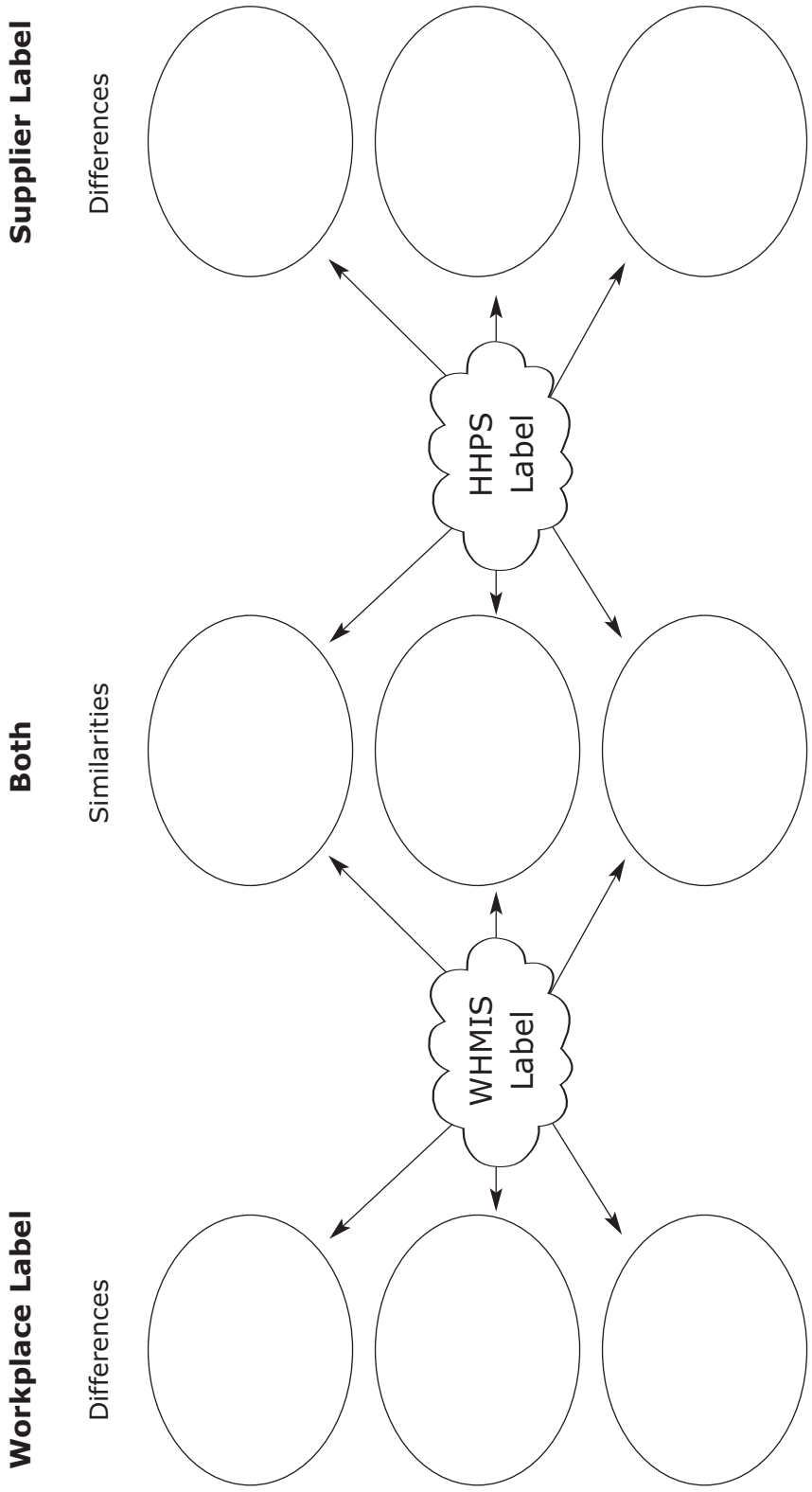
Supplier Label



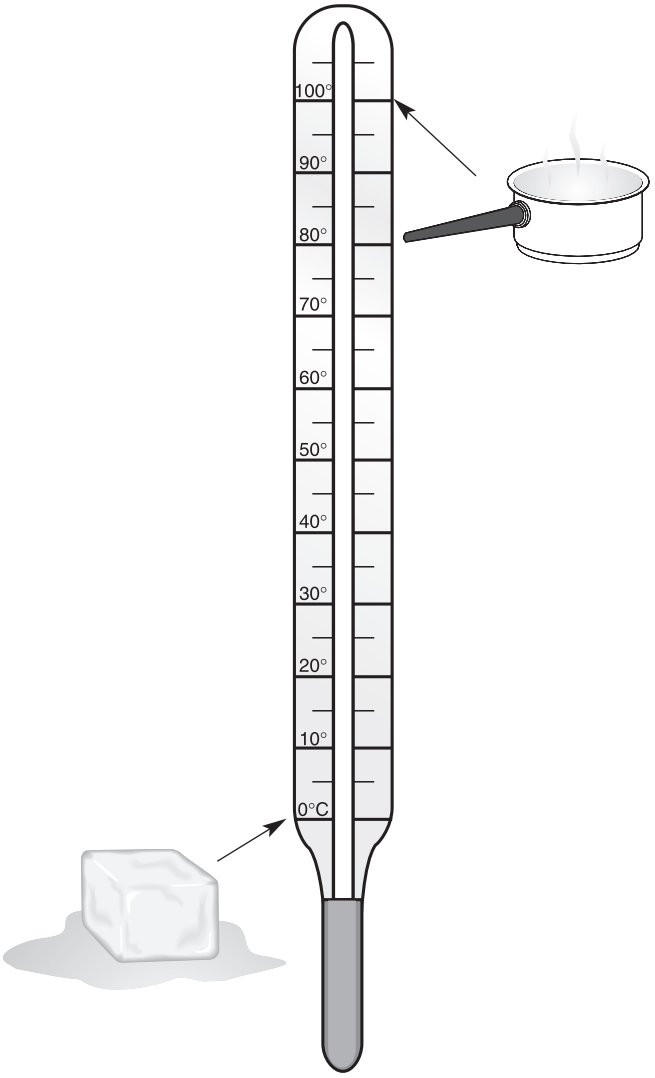
Workplace Label



Comparing WHMIS Labels



Thermometer



TEST IT!

What Labels Belong Where?

Spring floods have caused problems in this science lab. Four bottles on the bottom shelf have lost their labels. The partial labels show that the bottles hold glucose, baking soda, starch, and sodium chloride. But which bottle is which?

You know the following:
- Baking soda bubbles when it reacts with vinegar.
- Starch reacts with iodine to make a bluish-black colour.
- Sodium chloride has square-sided crystals.

Question

What three questions do you need to answer to identify the substances?

1. _____

2. _____

3. _____

What Do You Think Will Happen?

4. How might the substances react to help you answer your questions?

TEST IT! (continued)

Safety Precautions 

- Be careful with glass. If it breaks, use a dust pan to collect the pieces. Put them in the broken glass container.
- Clean up the work area and wash your hands thoroughly at the end of this investigation.

What You Need

4 mystery powders labelled 1, 2, 3, 4
spot plate
vinegar (in dropper bottle)
iodine (in dropper bottle)
scoopula
magnifying lens

What to Do

5. Outline the steps you can take to identify each of the substances.

First, how can you use the magnifying lens? _____

6. Second, how can you use vinegar? _____

7. Third, how can you use iodine? _____

What Did You Observe?

8. Develop a method for recording your observations.

What Did You Discover?

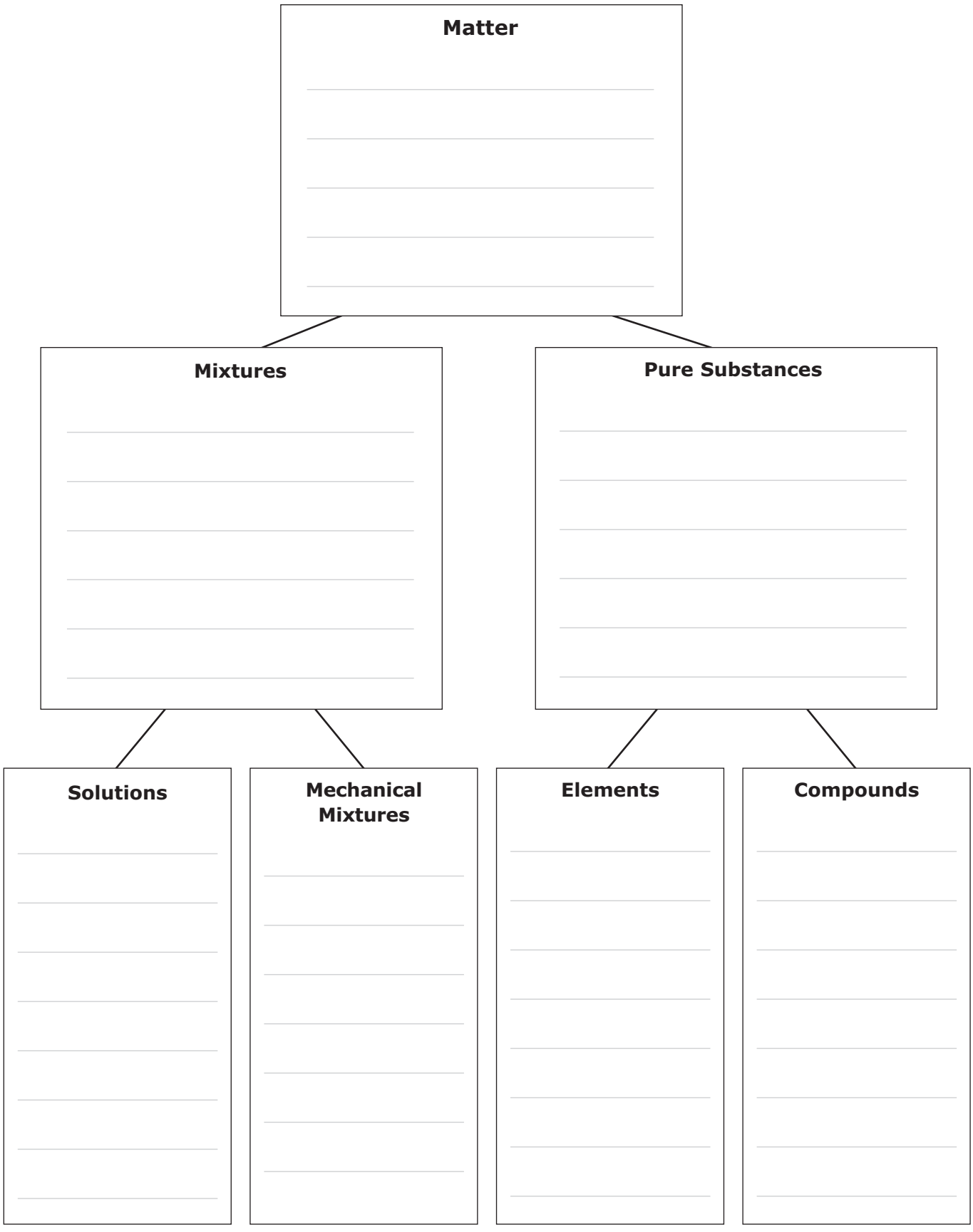
9. What label belongs on what jar? Explain how you know.

10. a) What physical property did you observe? _____

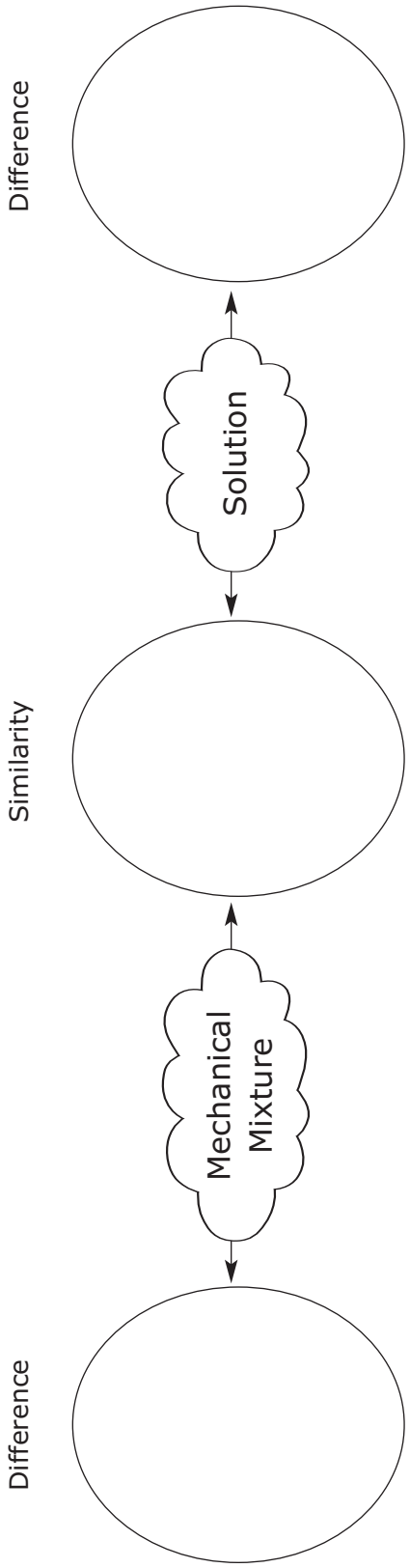
b) What chemical properties did you observe?

OHT A–10

Classifying Matter



Comparing a Mechanical Mixture and a Solution



TEST IT!

Compare the Melting Points and Boiling Points of Water and Salt Water

Develop a fair test to investigate the melting and boiling points of water and salt water.

Question

1. What question can you ask?

What Do You Think Will Happen?

2. After writing the What to Do section, describe what you think will happen during the test.

3. What variable are you testing?

Safety Precautions 

4. After developing the What to Do section, suggest some safety precautions for this test.

What You Need

5. After developing the What to Do section, list the equipment you will need.

6. After developing the What to Do section, draw a picture showing how you plan to set up your equipment.

TEST IT! (continued)

What To Do

7. With your group, plan what to do to make a fair test of the melting and boiling points of water and salt water.

Melting Point

Boiling Point

8. Complete steps 2 to 6. Then, get your teacher's approval and do the investigation.

What Did You Observe?

9. Develop a method for recording your observations.

TEST IT! (continued)

What Did You Learn?

10. Graph the results. Use the checklist below to help you complete your graph.

- ❑ Title your graph.
- ❑ Decide on a scale.
- ❑ Title and label the *x*-axis.
- ❑ Title and label the *y*-axis.
- ❑ Plot each point.
- ❑ Join the points.

11. What happens to the melting point of the ice as the amount of salt added goes up?

12. What happens to the boiling point of the water as the amount of salt added goes up?

13. Describe two ways you might use what you learned in this activity at home or in the workplace.

TEST IT!

Which Metal Is the Best for Pots and Pans?

Question

1. What question will you try to answer in this test?

What Do You Think Will Happen?

2. Predict which metal will conduct heat the fastest. _____

TEST IT! (continued)

Safety Precautions

- Read the instructions. What safety procedures should you use for this activity?

What You Need

birthday candle
tea light
matches
15 cm strip of each metal:
aluminum, iron, and copper
9 metal tacks
timer or stopwatch
tongs

3. Read the What to Do section. List at least three variables that it will be important to keep the same to make this a fair test.

What to Do

4. Light the birthday candle.

5. Tip the birthday candle so the flame melts the wax quickly. Make three drops of wax 2 cm apart on the end of a strip of metal.

6. Have a partner push a tack, flat side down, into each drop of wax.

7. Repeat steps 5 and 6 for the two other strips of metal.

8. Allow the wax to harden to room temperature, so the tacks stick.

9. One partner should get ready with a stopwatch. The other should use the tongs to hold the tackless end of one metal strip in the flame of a tea light.

10. Record the time that it takes for each tack to fall from the metal strip.

11. Repeat steps 9 and 10 with the other two strips.

Material	Time until Tacks Drop (s)		
	1	2	3
Iron			
Aluminum			
Copper			

TEST IT! (continued)

What Did You Discover?

12. Draw a bar graph the time required for each tack to fall from its strip.

- ❑ Title your graph.
- ❑ Decide on a scale.
- ❑ Title and label the x-axis.
- ❑ Title and label the y-axis.
- ❑ Use a different colour for each metal.
- ❑ Plot each point.
- ❑ Complete your bar graph.

Title: _____

13. a) How did you make sure that you held each metal strip at the same distance from the flame?

_____

b) Why was this important?

_____

_____

14. Based on your results, which type of pot would you buy if you wanted to cook something quickly? Explain.

_____

_____

15. Complete the table.

Type of Heat Transfer	Tasks	Reason
Two tasks that need a fast transfer of heat	**a)**	
	b)	
Two tasks that need a slow transfer of heat	**c)**	
	d)	

TEST IT!

Which Laundry Detergent Is the Best at Removing Stains?

Question

1. Write a question that will help you test which laundry detergent works best.

What Do You Think Will Happen?

2. Which laundry detergent do you think will work the best?

Safety Precautions

- Contact with laundry detergents can irritate your eyes, lungs, and stomach.
- Clean up the work area and wash your hands thoroughly at the end of the investigation.

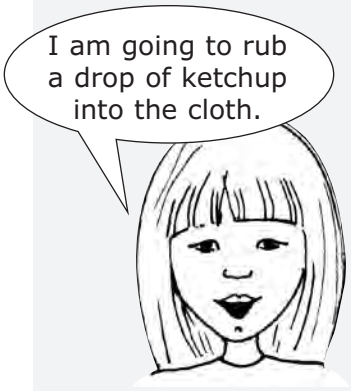
What You Need

large beaker or container with a lid (such as a large yogurt container)
2 substances to make stains (such as ketchup, grass, mustard, grape juice, grease from a bicycle chain, or motor oil)
6 identical small squares of fabric
thermometer
2 types of laundry detergent
water

TEST IT! (continued)

Planning the Test

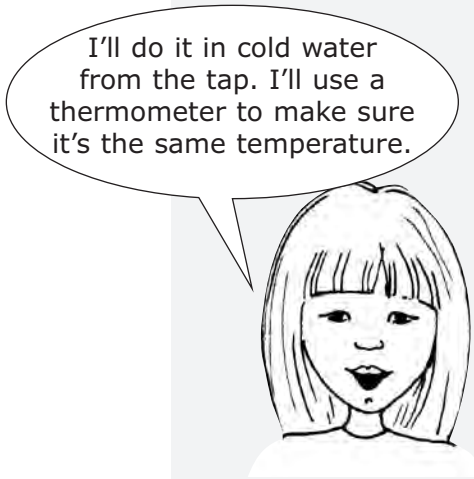
In a fair test, all of the variables except one must stay the same. Think about how you will keep the following variables the same.



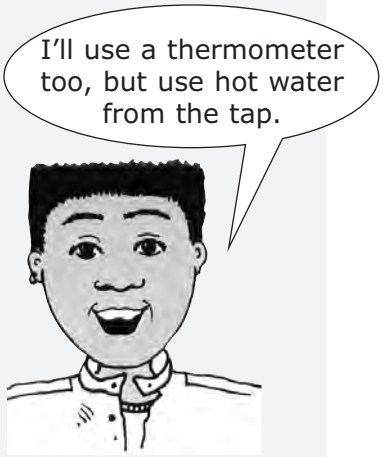
- How will you stain the fabrics?

- How long will you let the stains sit on the fabric before washing?

- What water temperature will you use?



- How will you wash the laundry?



- How will you make sure this is the same for each sample?

- What type of container will you use?

- What type of fabric will you test?

- Which laundry detergents will you test?

TEST IT! (continued)

- How will you show that the detergent is doing the cleaning and not just the water and agitation? This is your control.

What to Do

3. Use your planning notes to write a step-by-step procedure for testing the different laundry detergents.

What Did You Observe?

4. Record the results of your investigation.

What Did You Discover?

5. Which laundry detergent cleaned the best overall? Explain.

6. a) Which stain was the most difficult to remove?

b) Why do you think that was so?

7. Look at your procedure. How might you improve on this procedure?

TEST IT!

Consumer Product Choices

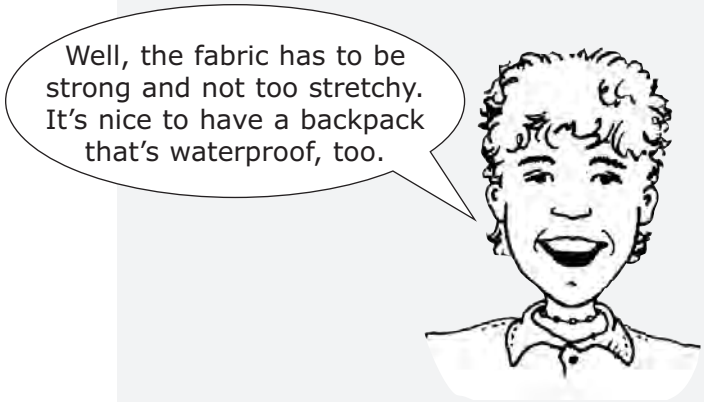
Planning the Test

1. Name the product you plan to test.

2. What is the function of this product?

3. Name at least three important properties of the product you are testing.

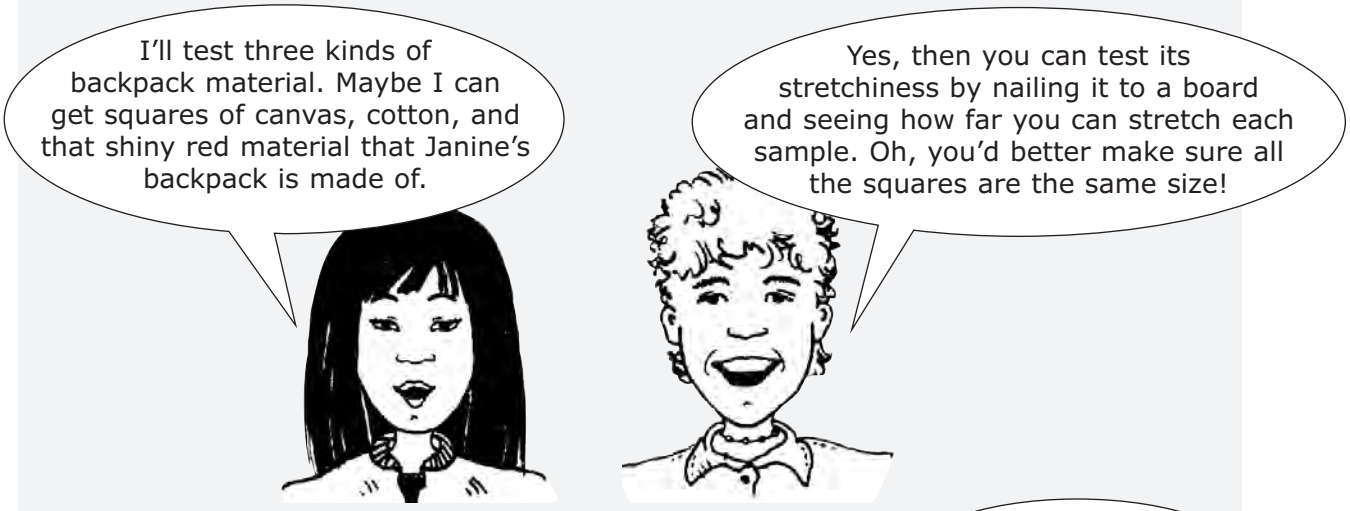
a) **b)** **c)**



4. Decide how you will test the properties of your object. Brainstorm about tests you might try. List possible tests.

TEST IT! (continued)

5. In a fair test, all of the variables except one must stay the same. Think about how you will do this as you write the What to Do section. Write down the things you will keep the same.



Question

6. Write a question that will help you test the properties of your product.

What Do You Think Will Happen?

7. What do you think the results of your investigation will be?

Safety Precautions

8. After you write the What to Do section, list the safety precautions you need to follow.

TEST IT! (continued)

What You Need

9. Write a list of the materials you need for your investigation.

What to Do

10. Use your planning notes to write a step-by-step procedure for testing your product. Include sketches of any lab set-ups.

TEST IT! (continued)

What Did You Observe?

11. Decide how to record the results of your investigation. Record your observations here.

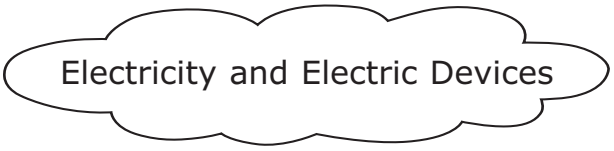
What Did You Discover?

12. What did you learn about the product you tested?

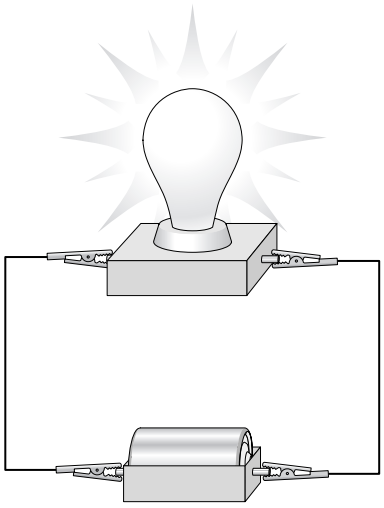
13. a) Which product do you think you will buy next time? Why?

b) What factors will you consider that you might not have thought about before?

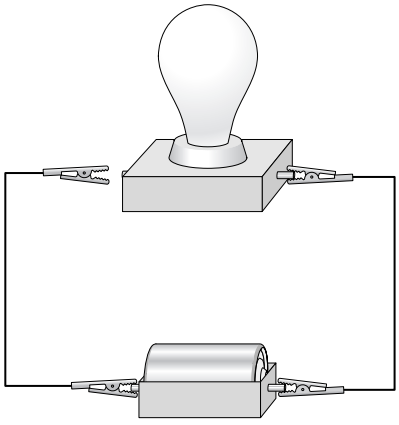
Electricity and Electric Devices



Open and Closed Circuits

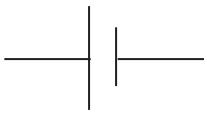


Closed circuit

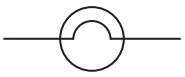


Open circuit

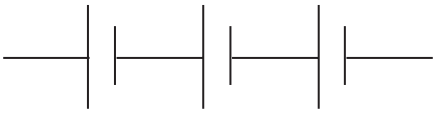
Circuit Symbols



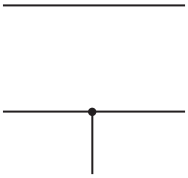
A battery symbol.



A bulb symbol.



This symbol shows three batteries together.

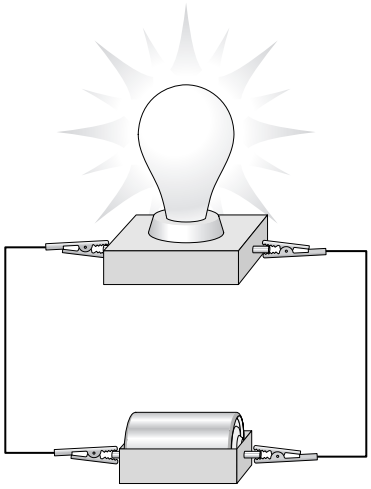


A wire symbol. All wires are drawn using straight lines.

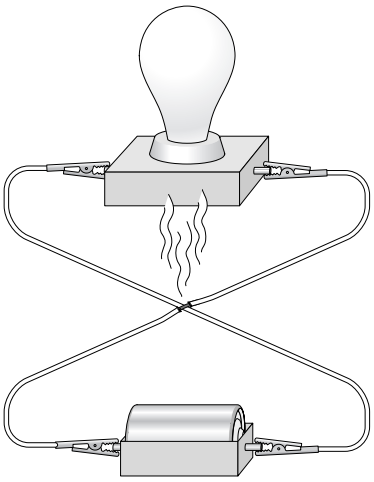
An open switch symbol.

A closed switch symbol.

Safe and Unsafe Circuits



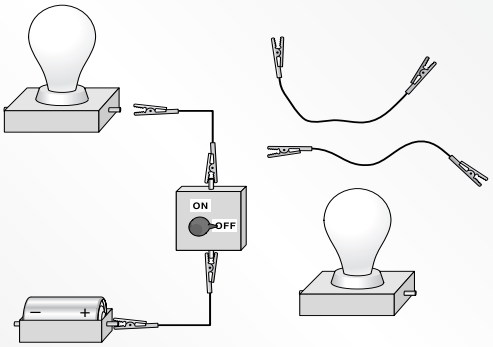
Circuit A. This circuit is safe to work with.



Circuit B. In this circuit, the insulation around the wires is damaged where the wires cross. This is a dangerous short circuit.

Building Circuits Checklist

1. Safety comes first.

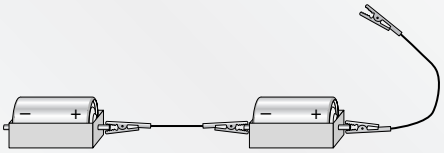


- ☑ Check all your equipment. Replace any damaged equipment.
- ☑ Remove all metal jewellery.
- ☑ Make sure your work area is clean, dry, and uncluttered.

2. Connect loads in order.

- ☑ Connect one end of a wire to the positive terminal of the battery.
- ☑ Connect components one at a time.
- ☑ Complete the circuit by connecting the free end of the last wire to the negative terminal of the battery.
- ☑ If you are connecting one wire to another, use the alligator clips to hold the wires together.

3. Face all batteries the same way.



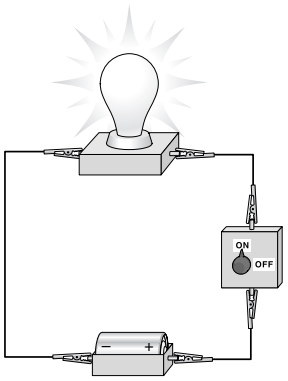
- ☑ If you are connecting batteries together, always connect the positive terminal of one battery to the negative terminal of the next battery.

4. Keep switches off.

- ☑ Always keep the switch in the "off" position until the circuit is complete. When you are ready to use your circuit, turn the switch on. Turn it off when you are finished.

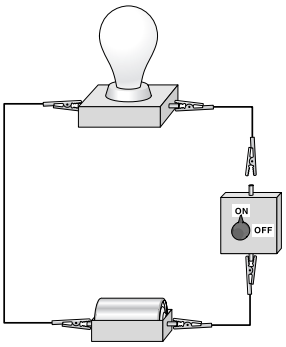
Circuits Checklist

2.



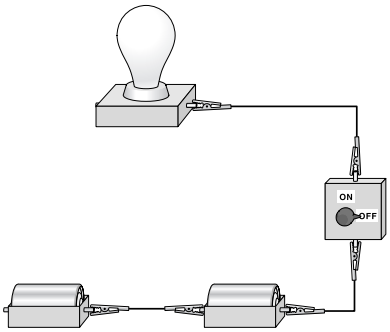
Test	✓
Is the circuit complete?	
Is the switch closed?	
Are all the wires properly connected?	

3.



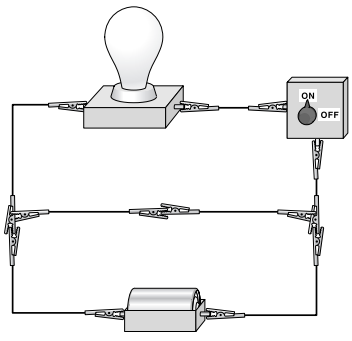
Test	✓
Is the circuit complete?	
Is the switch closed?	
Are all the wires properly connected?	

4.



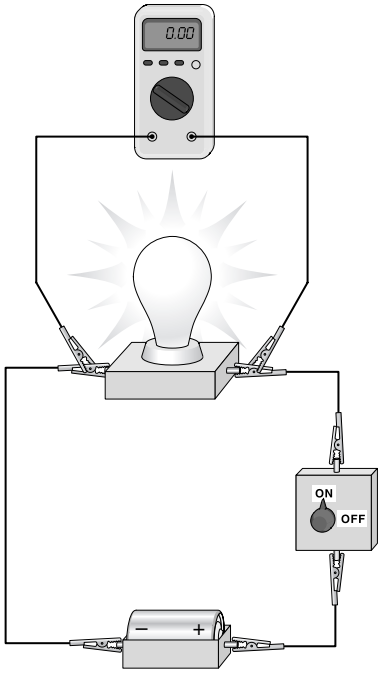
Test	✓
Is the circuit complete?	
Is the switch closed?	
Are all the wires properly connected?	

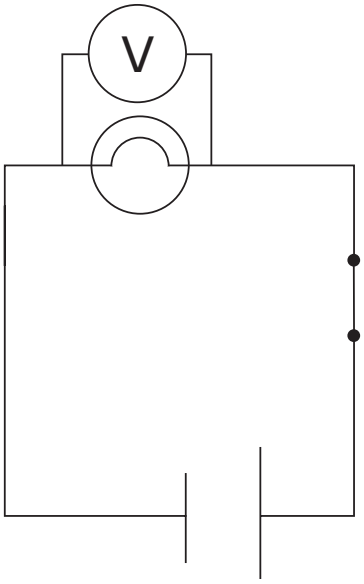
5.



Test	✓
Is the circuit complete?	
Is the switch closed?	
Are all the wires properly connected?	

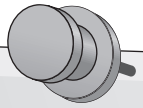
Voltmeter





A voltmeter measures voltage across a component of a circuit. If you are using a multimeter to measure voltage, your circuit diagram shows the multimeter as a voltmeter.

Electric Safety Checklist



Electric Safety

- ☑ Never let small children play near uncovered electric outlets.
- ☑ Never fly a kite or climb a tree near overhead electric wires.
- ☑ Never touch exposed electric wires.
- ☑ Never plug in an electric device with the switch in the "on" position.
- ☑ Never use an electric device until you have checked to make sure its cord is safe.
- ☑ Never work with electric circuits if you are wearing metal jewellery.
- ☑ Never unplug the device by pulling the cord. Pull the plug.

☑ Always cover electric outlets when small children are playing nearby.

☑

☑

☑

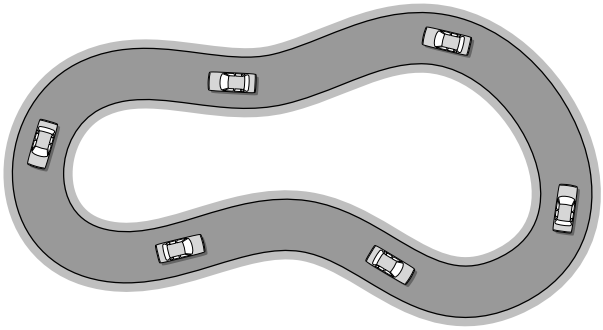
☑

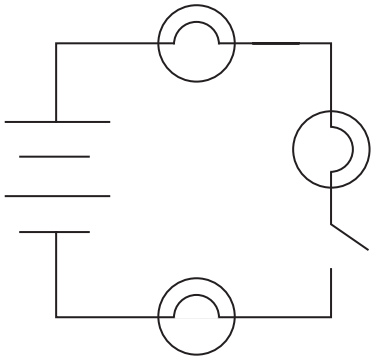
☑

☑

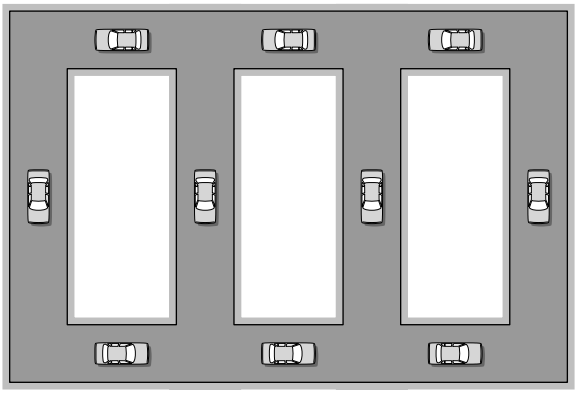
Types of Circuits

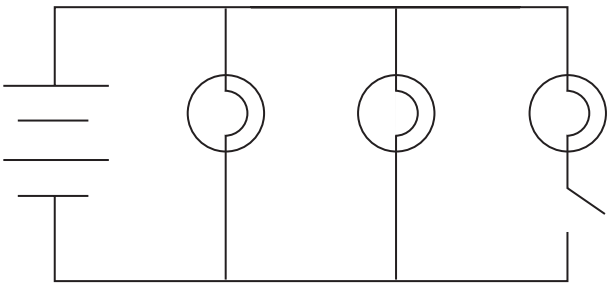
Series Circuit





Parallel Circuit

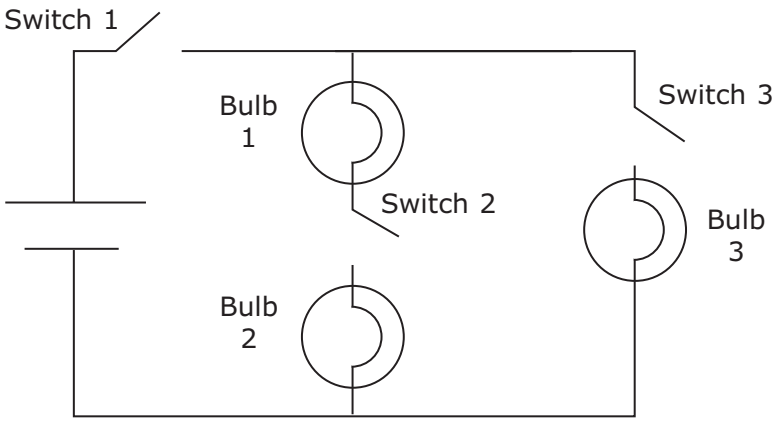




Compare Circuits

Series Circuit	Parallel Circuit

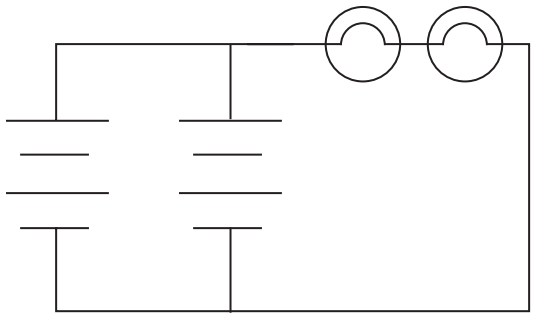
Combination Circuit



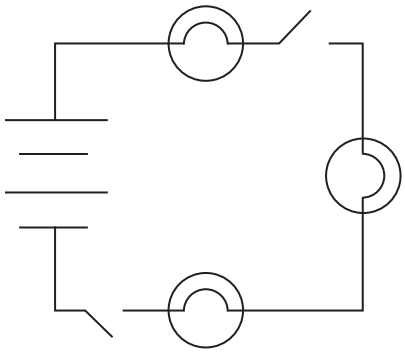
Name the Circuit

series circuit | parallel circuit | combination circuit

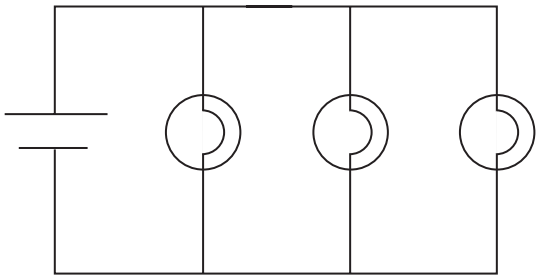
a)



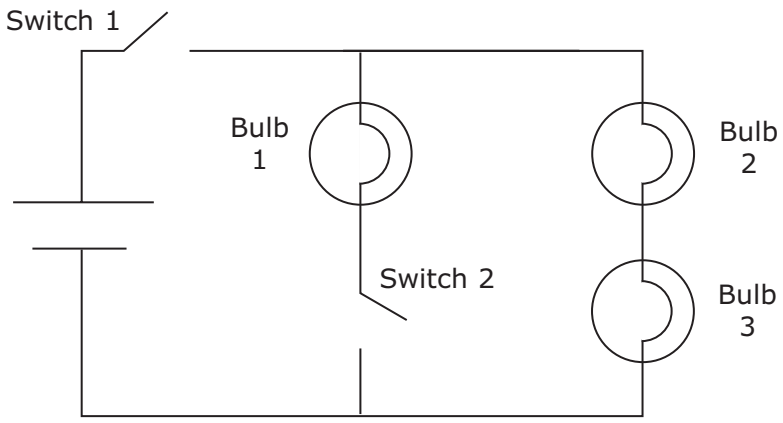
b)



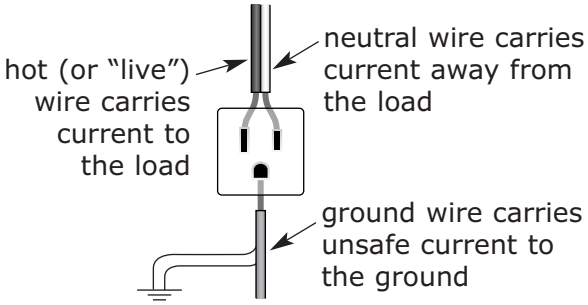
c)

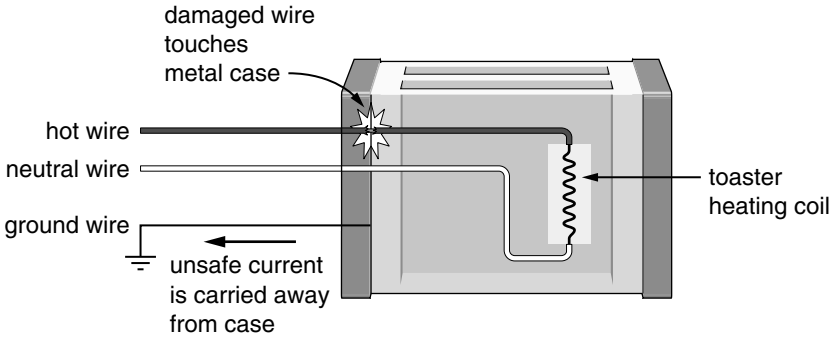


Circuit Diagram



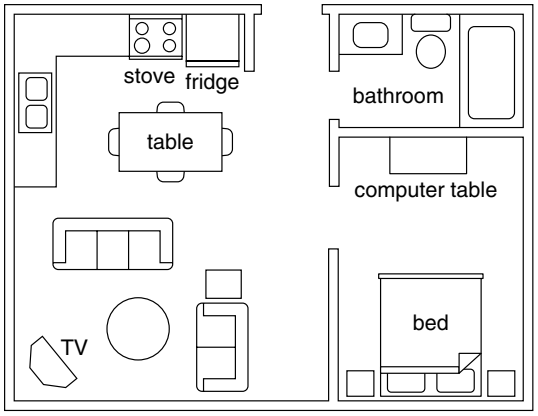
You're Grounded





Plan Your Wiring

FLOOR PLAN



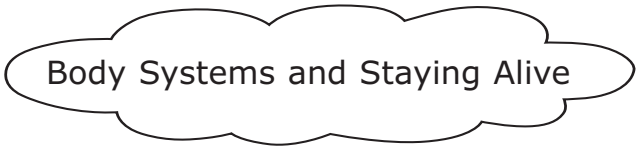
LIST OF APPLIANCES

Appliance	Current	Voltage
Light bulb or lamp	3 A	120 V
Computer	2 A	120 V
TV	2 A	120 V
Stereo	2 A	120 V
Refrigerator	20 A	120 V
Hair dryer	8 A	120 V
Electric stove	22 A	240 V

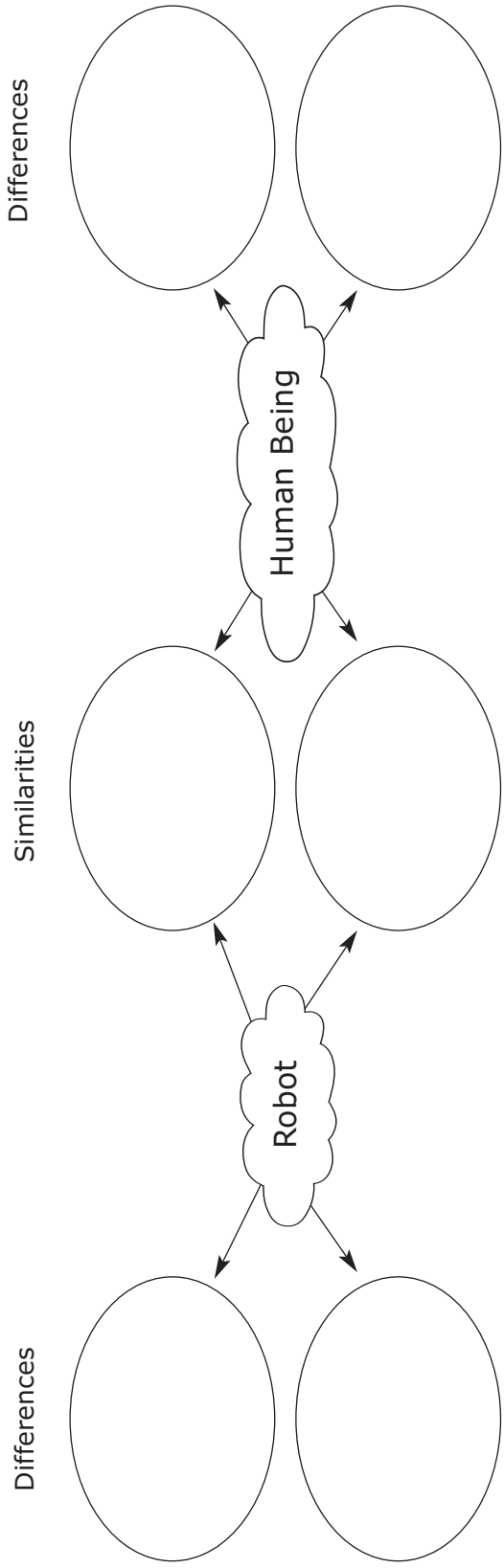
Wiring Rules

- ☑ All outlets in the kitchen and bathroom must be GFI outlets.
- ☑ Any device that draws more than 18 A must have its own circuit.
- ☑ A maximum of six devices can be connected on the same circuit.
- ☑ A maximum of two devices can be connected to the same outlet.
- ☑ You can use up to two 30 A circuits. The other circuits must be 15 A or 20 A.

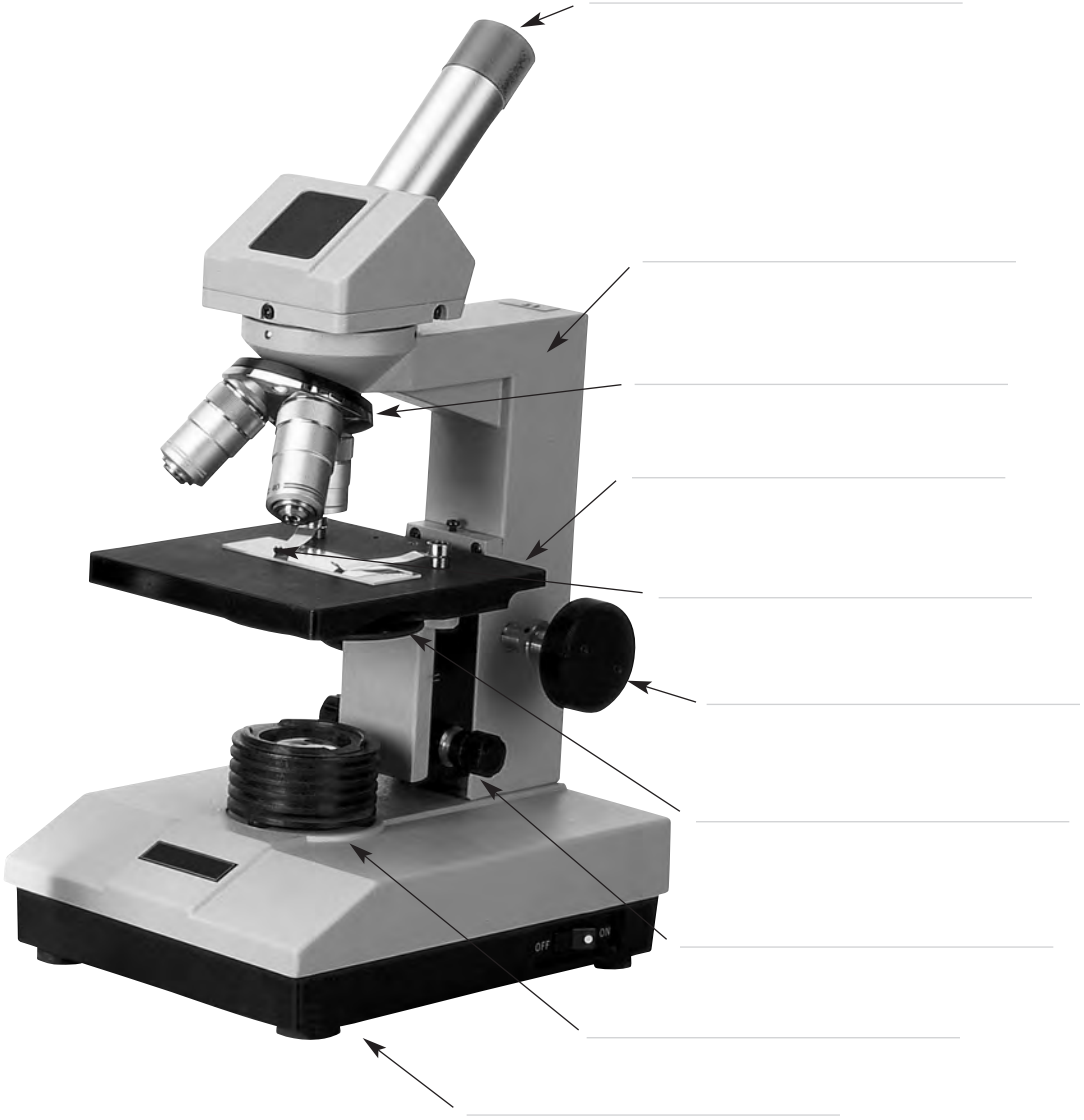
Body Systems and Staying Alive



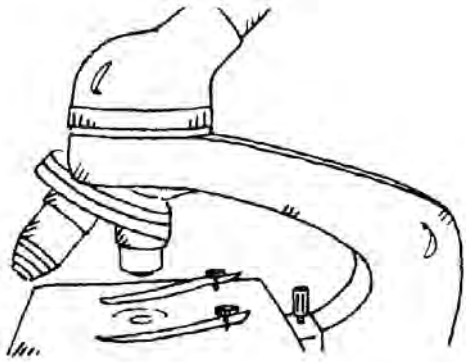
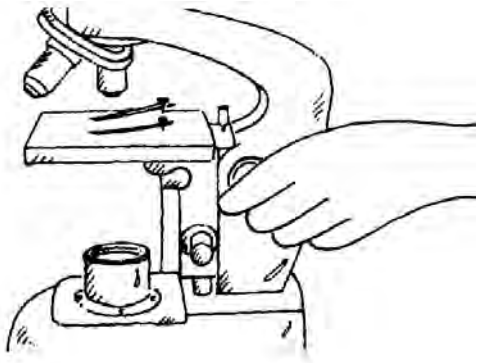
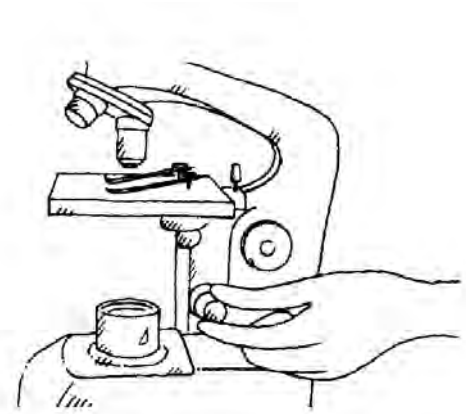
Compare a Robot to a Human Being



Microscope



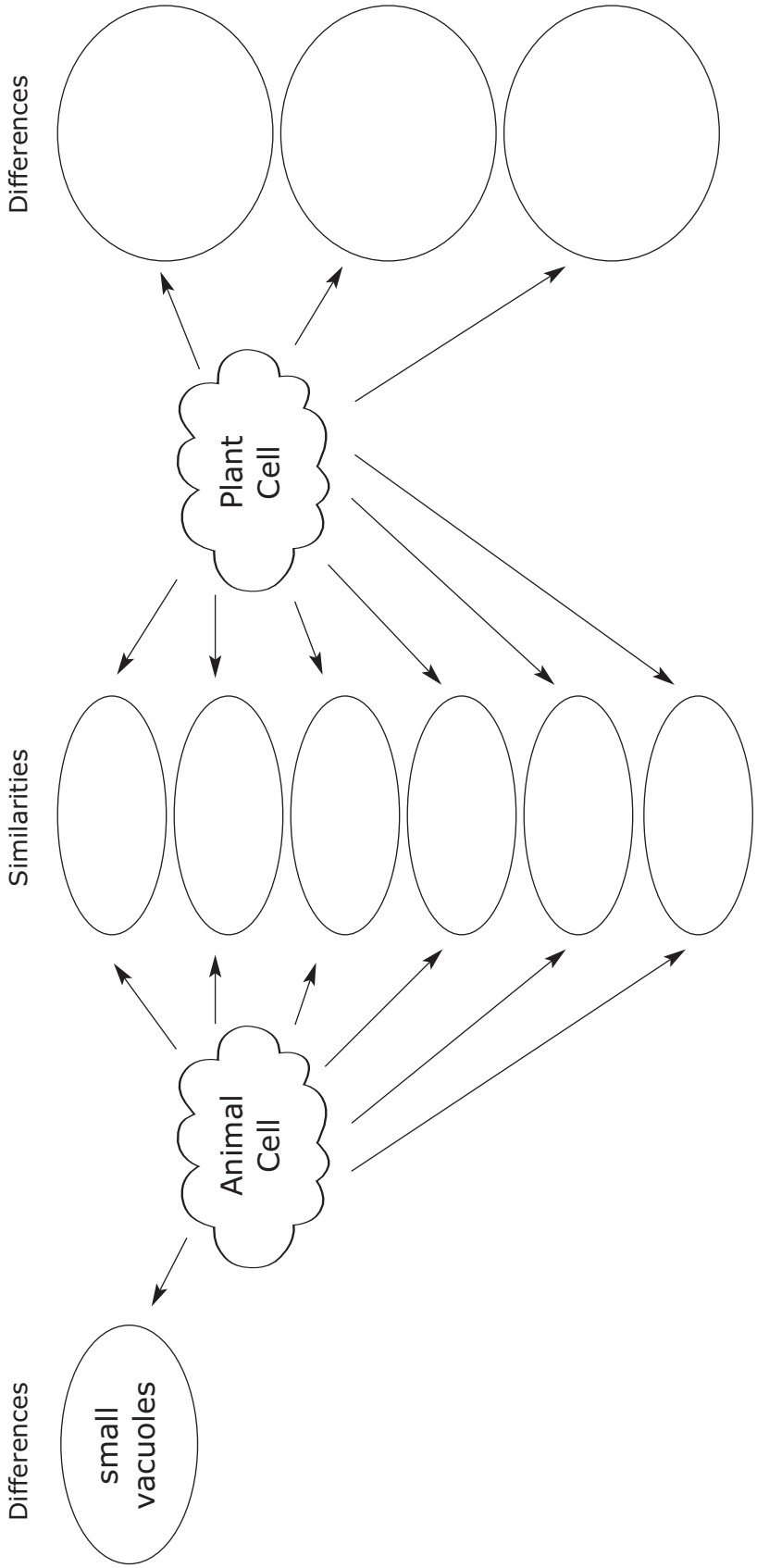
What Part Is Being Used? Why?

1. 	What objective lens is Mark using? Explain why.
2. 	What adjustment knob is Mark using? Explain why.
3. 	What adjustment knob is Mark using? Explain why.

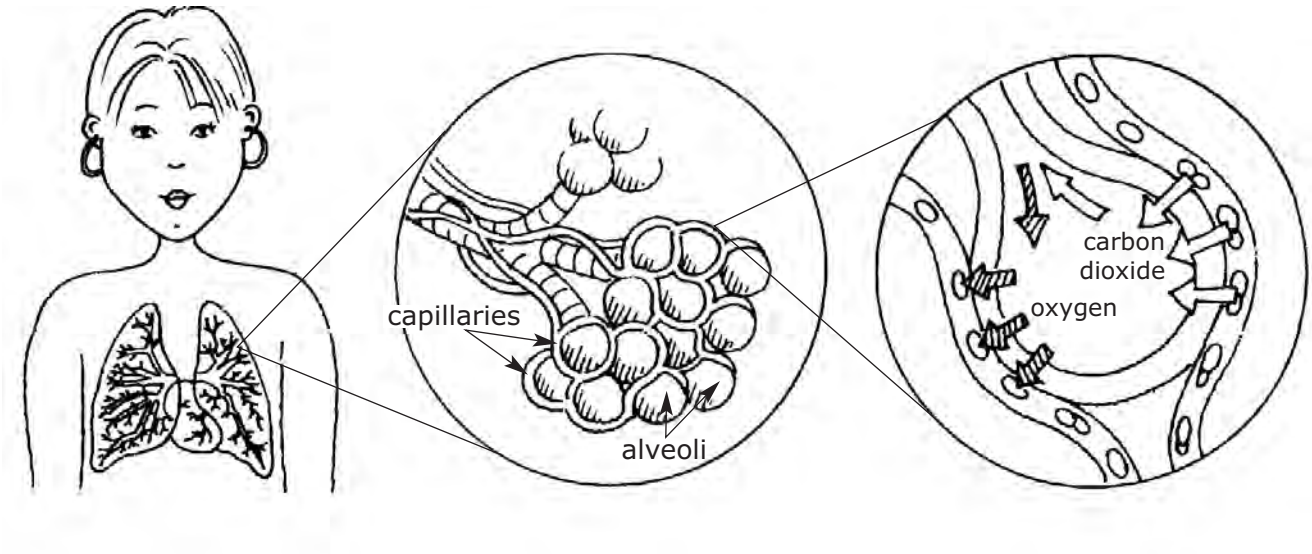
Microscope Checklist

- ❑ Plug in your microscope and turn on the light.
- ❑ Turn the nosepiece until the low-power lens faces the stage.
- ❑ Put the slide on the stage.
- ❑ Secure it in place using the stage clips.
- ❑ Use the coarse-adjustment knob to bring the lens as close as it will go to the stage.
- ❑ Look in the eyepiece. Slowly turn the coarse-adjustment knob to get the object in focus.
- ❑ Make sure the insect part is in the centre of the circle.
- ❑ Turn the fine-adjustment knob to get the best focus possible.

Compare Plant and Animal Cells

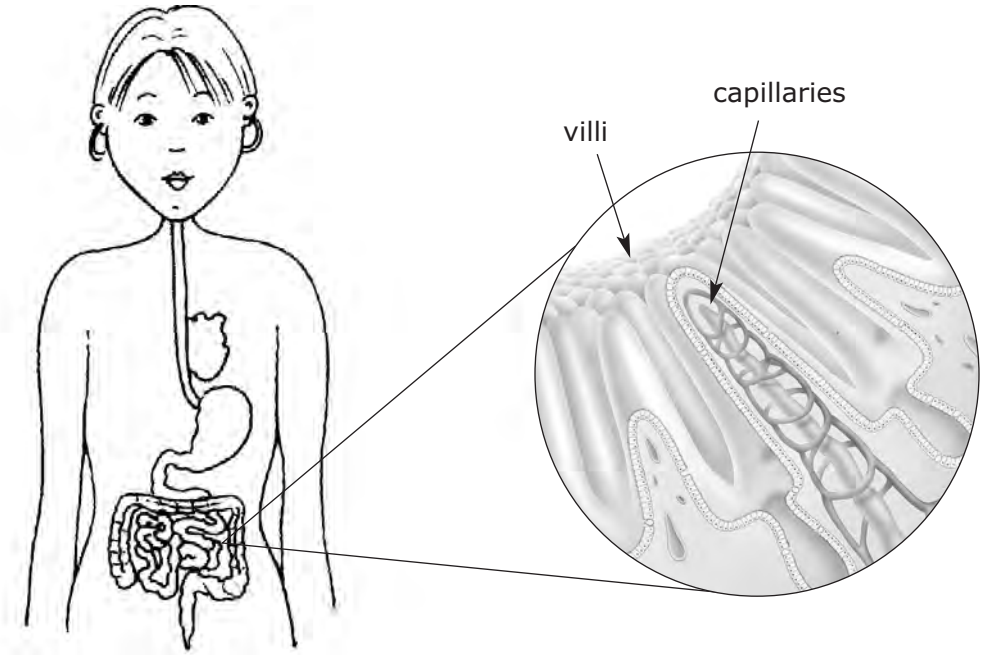


The Circulatory System and Respiratory System Connect



- The blood picks up oxygen from the lungs and delivers it to body cells.
- The blood picks up carbon dioxide from the cells and delivers it to the lungs. Maria breathes out the carbon dioxide.
- Inside each lung, there are many tiny air sacs called **alveoli**. The alveoli are surrounded by **capillaries**, which are very small blood vessels that connect the arteries and veins.
- The alveoli and capillaries have very thin cell membranes.
- The oxygen passes through the membrane of the alveolus and the membrane of the capillary into the blood.
- Carbon dioxide moves in the opposite direction. The gas moves from the blood into the alveolus.

The Circulatory System and Digestive System Connect



- Nutrients enter the blood from the small intestine. The blood carries nutrients to the body cells.
- Wastes pass from the cells back into the blood. The wastes leave Maria's body.

- On the inside wall of the small intestine, there are many **villi**, which look like tiny fingers.
- Inside the villi, there are many capillaries. The villi and capillaries have very thin cell membranes.
- The nutrients pass through the villi into the capillaries.
- Waste products from the body cells pass into the capillaries before the body gets rid of them.

Prevent Food Poisoning Checklist

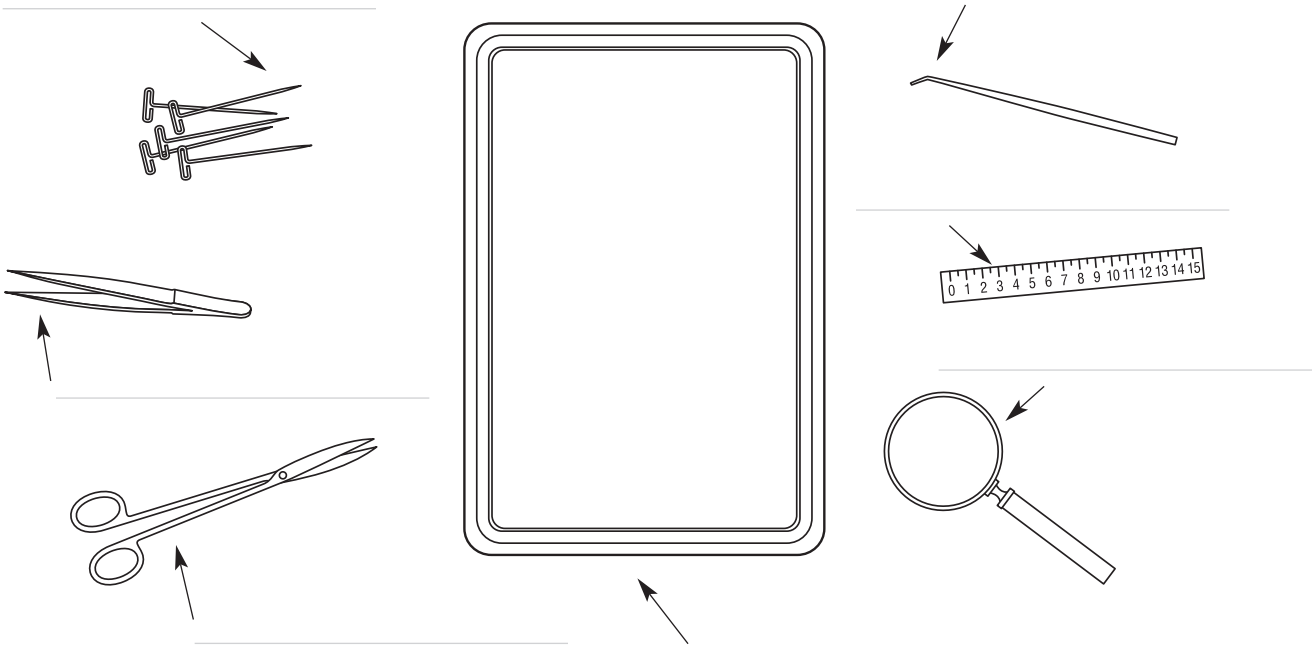
Prevent food poisoning by doing the following:

- ☑ Thaw food in the refrigerator, *not* on the countertop.
- ☑ Cook meat and eggs thoroughly.
- ☑ Store foods that contain meat and dairy products in the refrigerator.
- ☑ Do not put cooked food on unclean plates that have held raw meat or fish.
- ☑ Wash your hands before and after you handle food. Or, wear latex gloves.
- ☑ Clean the cooking utensils and cooking area carefully.
- ☑ Clean dishcloths every day. Do not use sponges because bacteria grow in them.

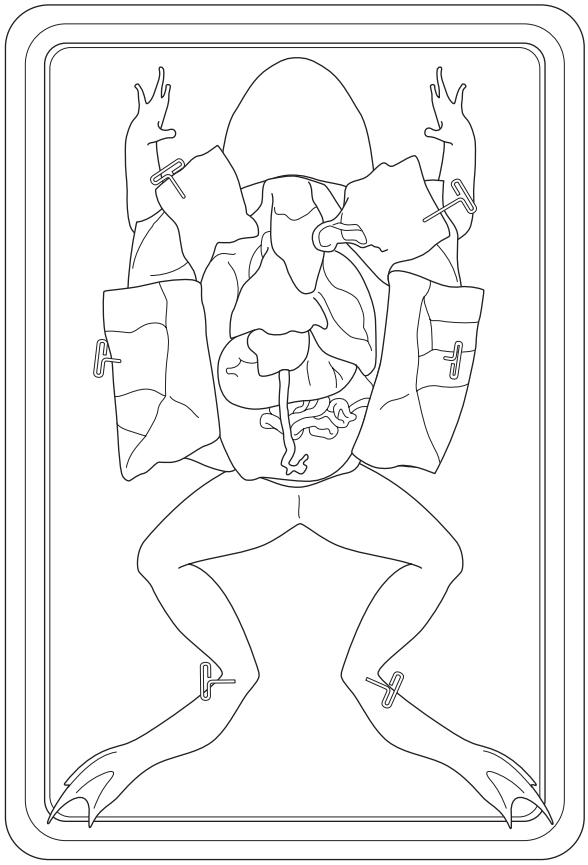
Why Is It Hazardous?

Hazardous Behaviour	What Might Happen	Body System Affected
	Ammonia is an irritant that can damage skin. Breathing in ammonia fumes may damage your lungs.	respiratory system
		
		

Dissection Tools

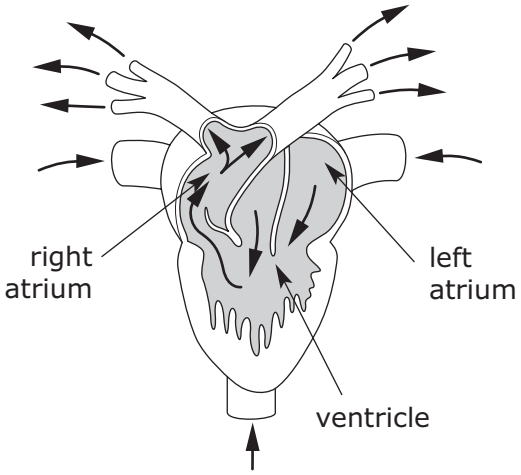


Expose the Organs

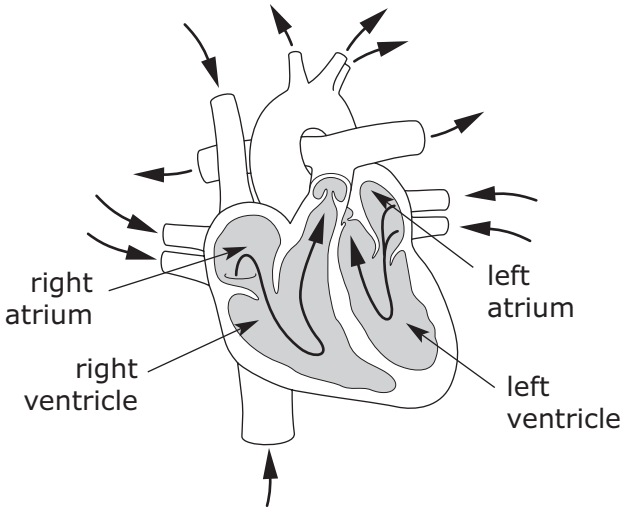


Frog Heart and Human Heart

Frog Heart

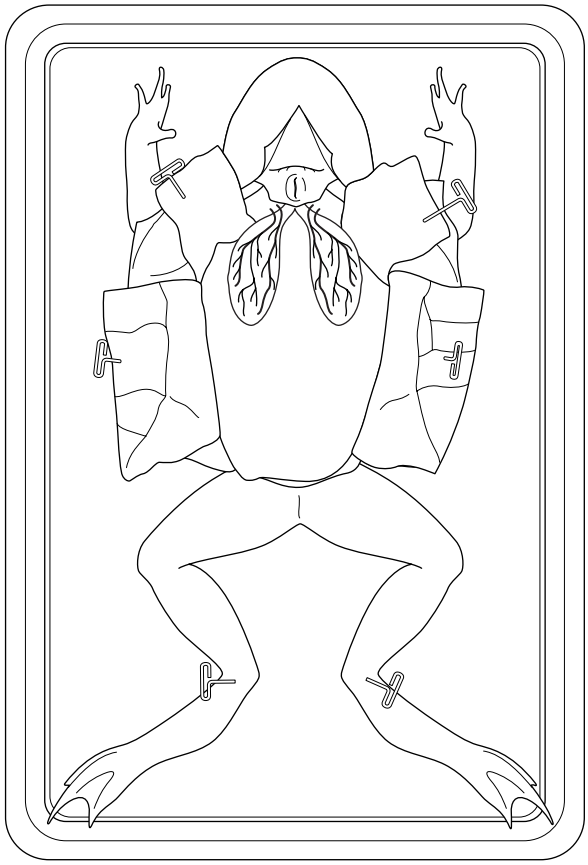


Human Heart

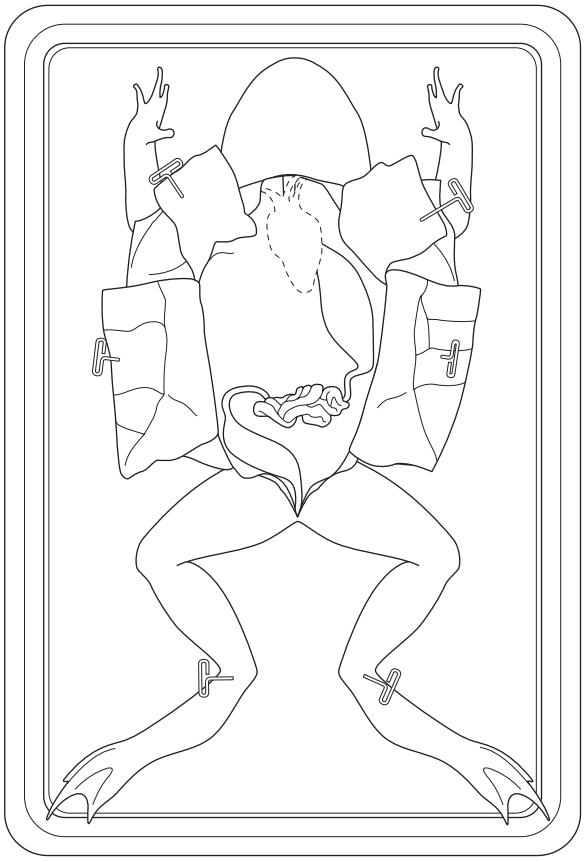


The frog's heart gets oxygen-rich blood from the lungs and the skin.

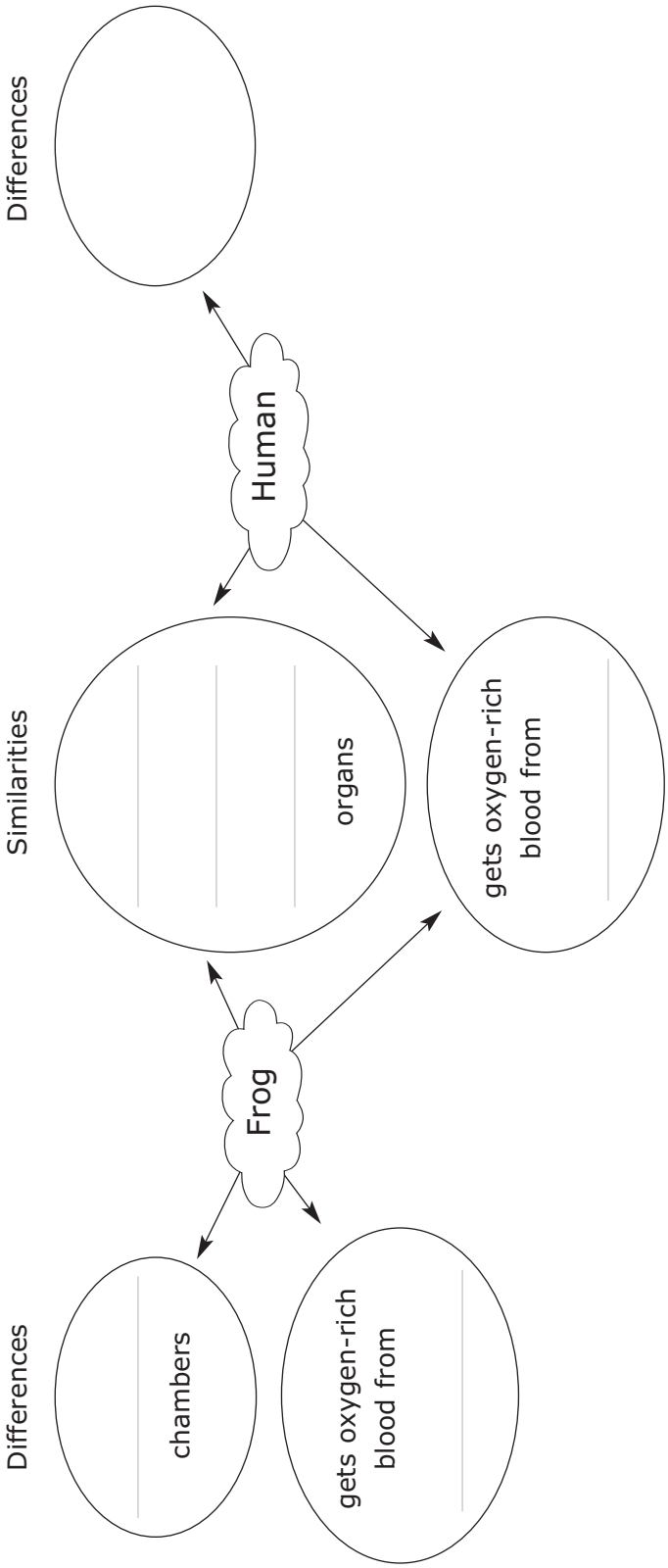
The Frog's Respiratory System



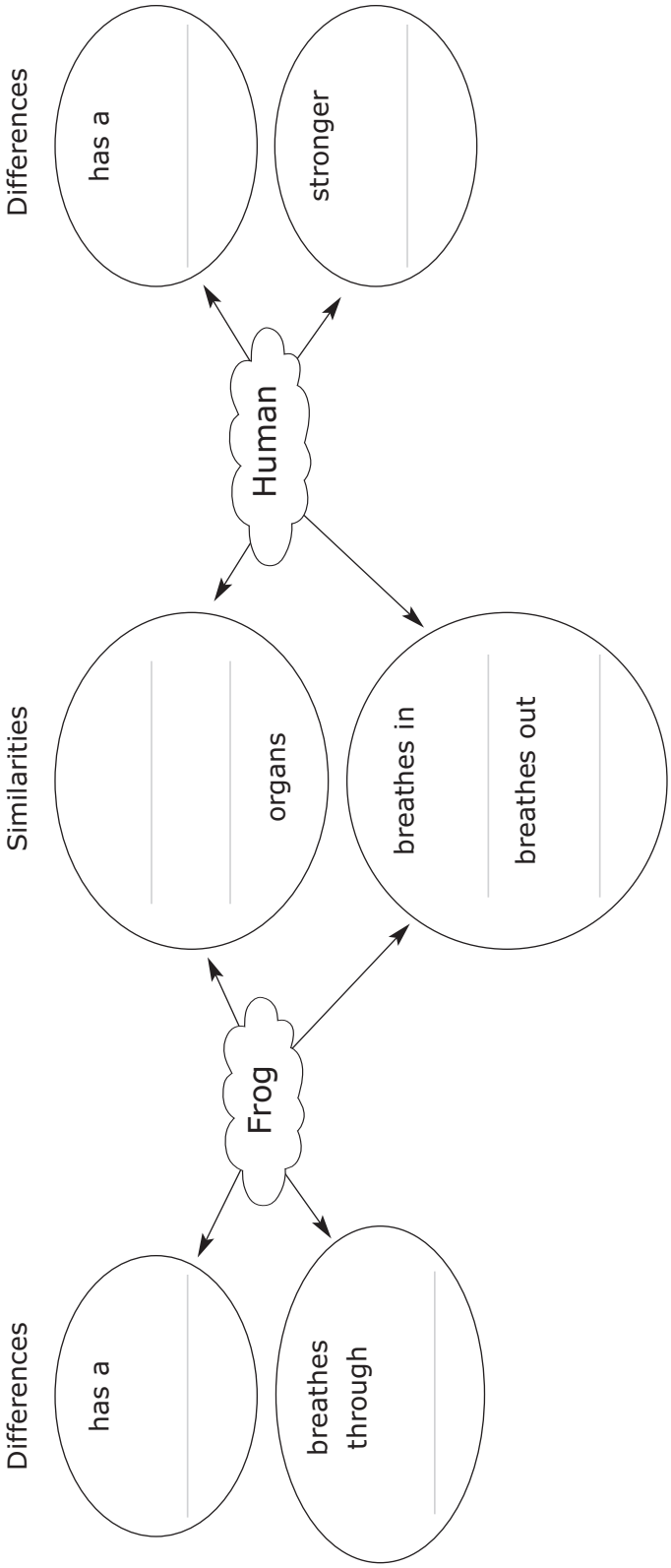
The Frog's Digestive System



Compare the Human and Frog Circulatory Systems



Compare the Human and Frog Respiratory Systems

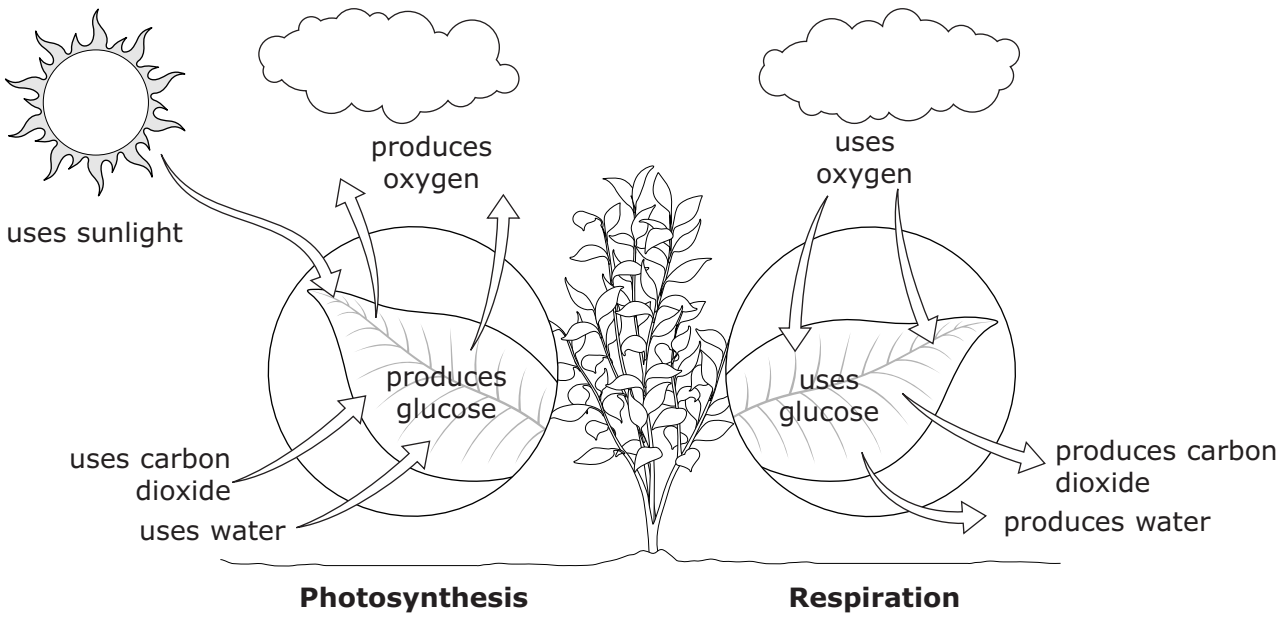


Root Growth

What Did You Observe?

Seed	Root Growth						
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
1							
2							
3							

Respiration and Photosynthesis



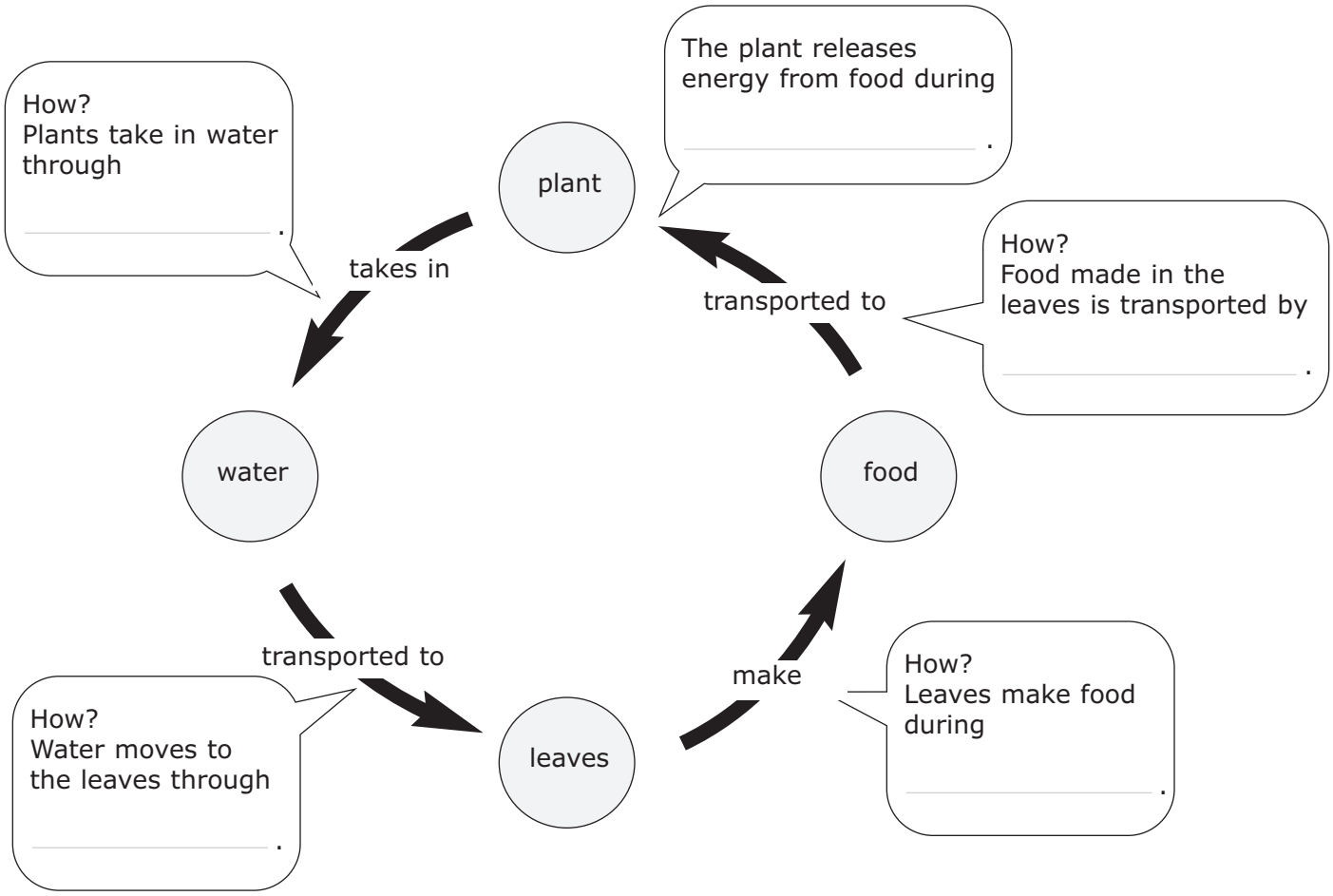
Photosynthesis

carbon dioxide + water + energy ⟶ glucose + oxygen

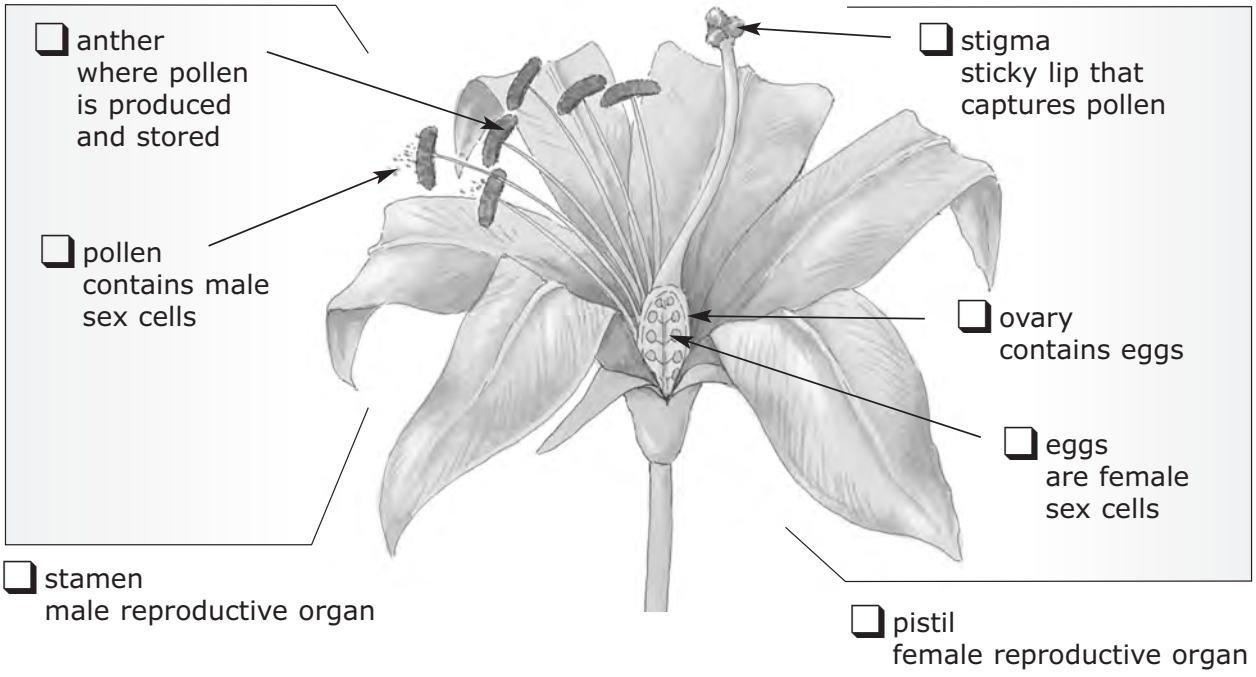
Respiration

glucose + oxygen ⟶ carbon dioxide + water + energy

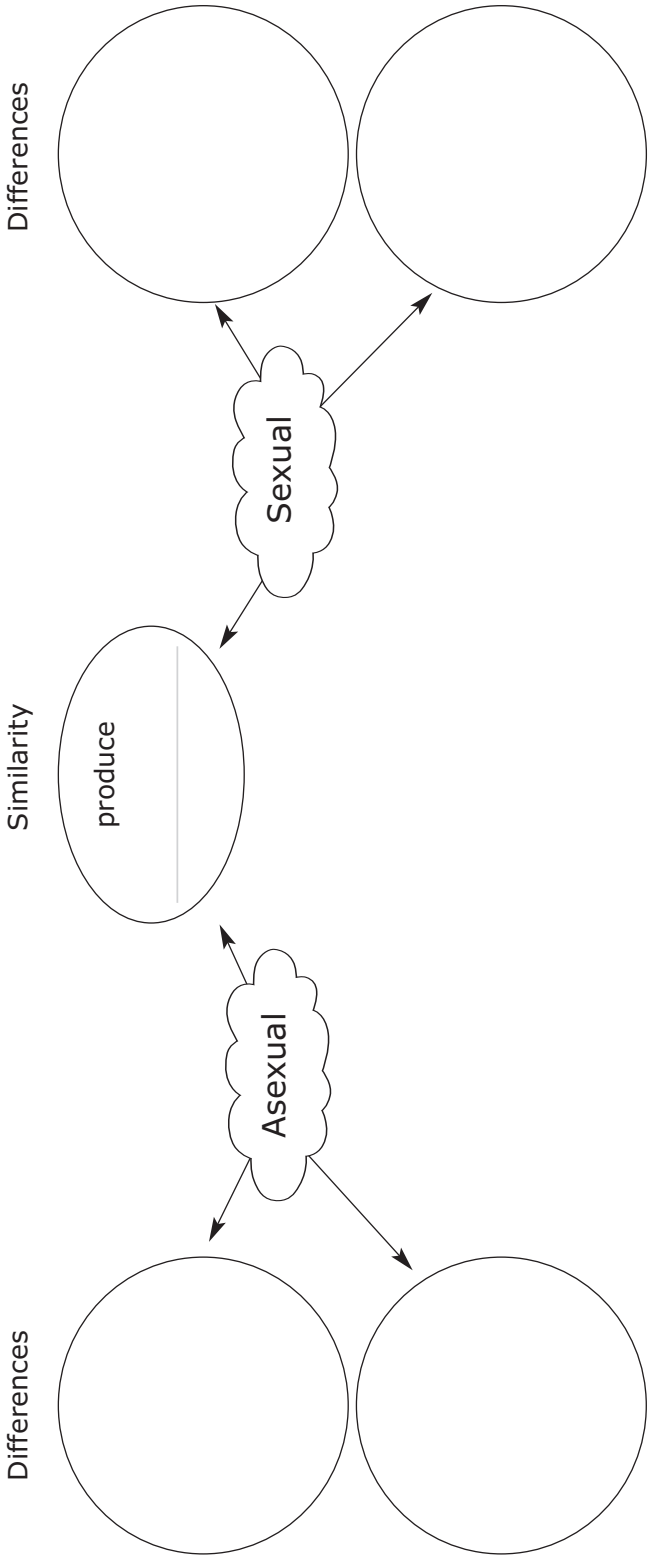
Respiration, Photosynthesis, and Circulation Connect



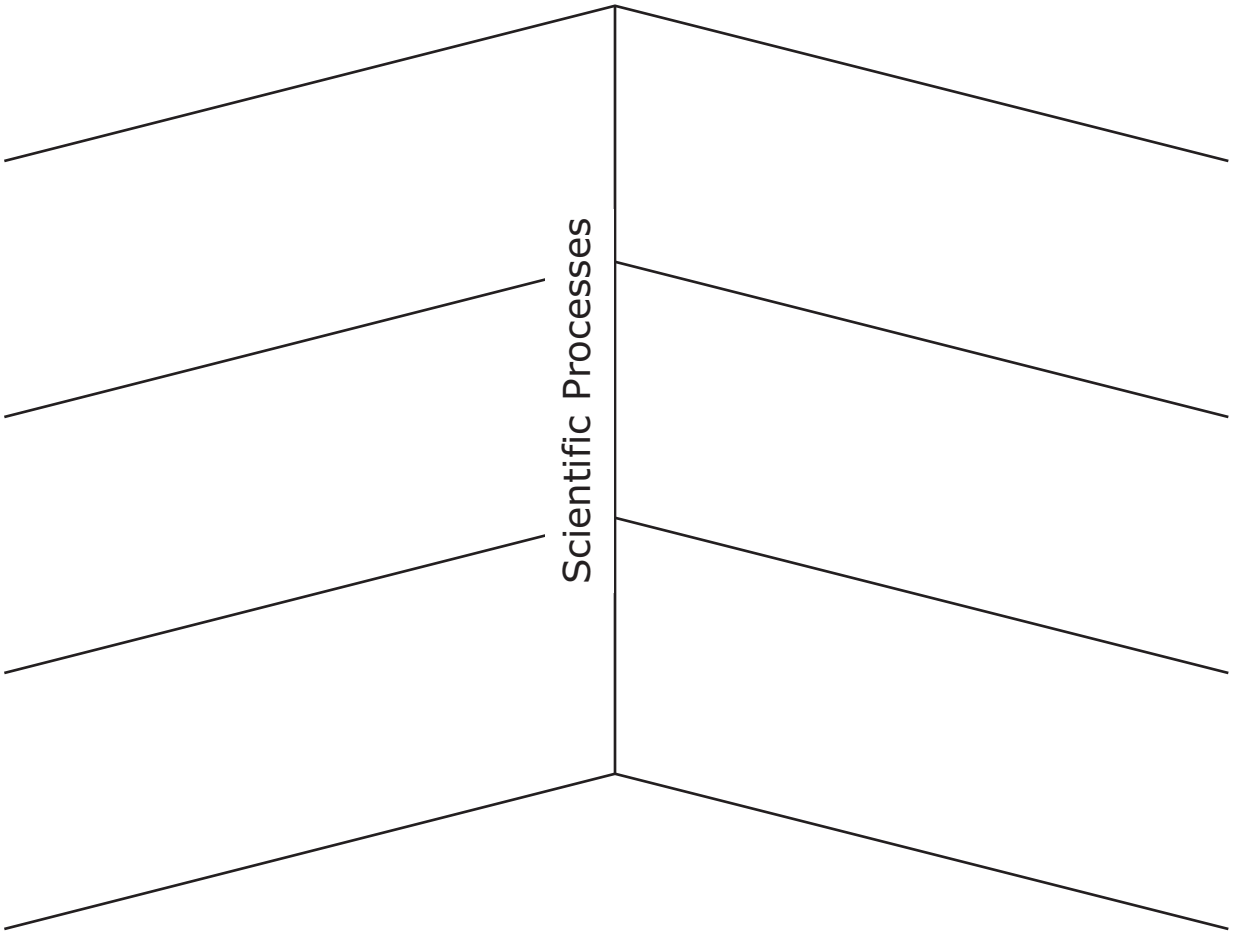
The Flower



Compare Sexual and Asexual Reproduction

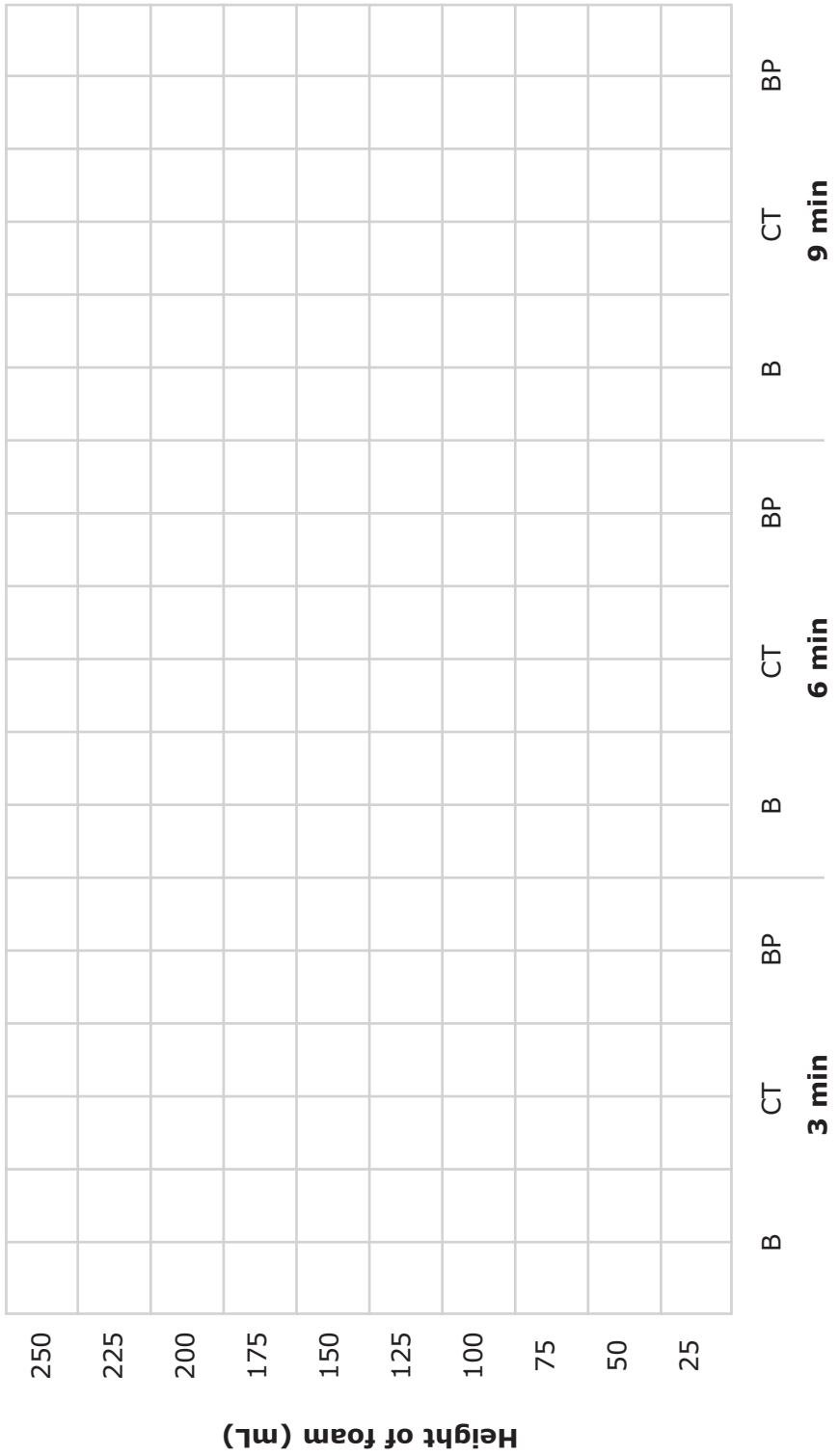


Scientific Processes



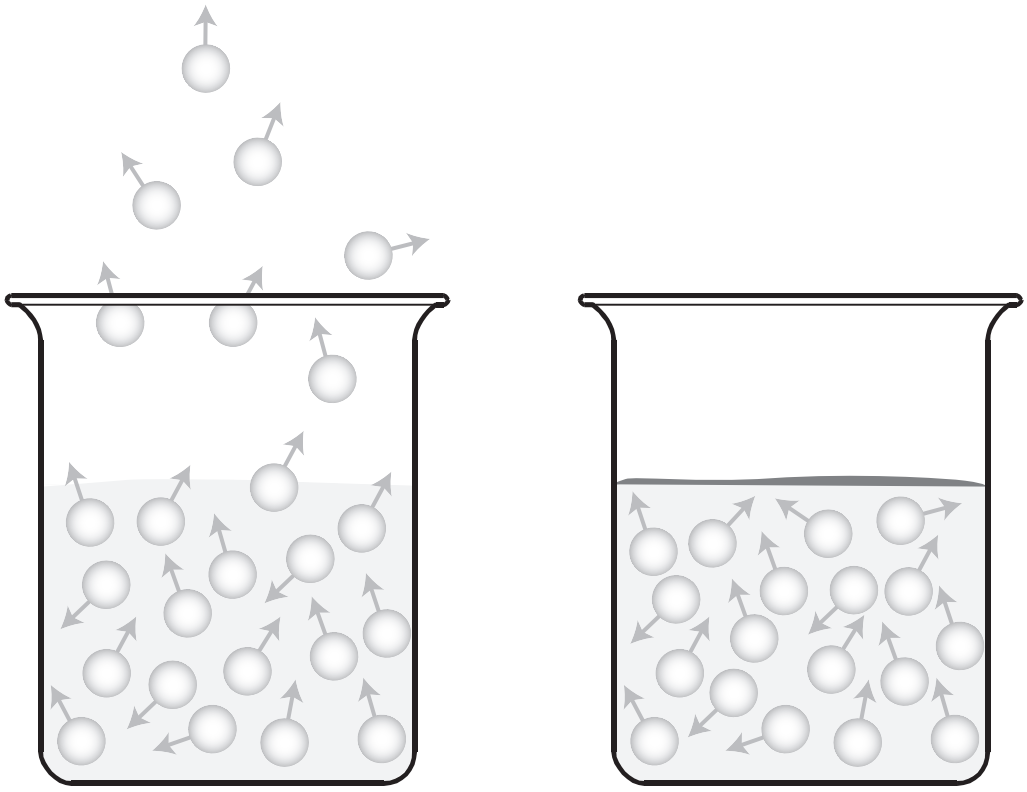
What Did You Observe?

7. Use the results in the table to make a bar graph to show the height of foam. Draw all three bars for three minutes, for six minutes, and for nine minutes.



Legend: B = baking soda CT = cream of tartar BP = baking powder

How Do Skin Creams Work?



Beaker A **Beaker B**

Toothpaste Ingredients

Type of Ingredient	What It Does	Example	Example from Toothpaste Tube
abrasive	scrubs away plaque	calcium phosphate	
fluoride	strengthens teeth	sodium fluoride	
detergent	creates foam	sodium laurel sulfate	
humectant	adds texture and moisture	glycerin	
thickener	adds texture	carrageenan	
preservative	prevents growth of micro-organisms	sodium benzoate	
flavouring agent	masks taste of detergent	peppermint	
colouring agent	makes toothpaste white or coloured	titanium dioxide	
sweetener	improves taste	saccharin	

Compare Helmets