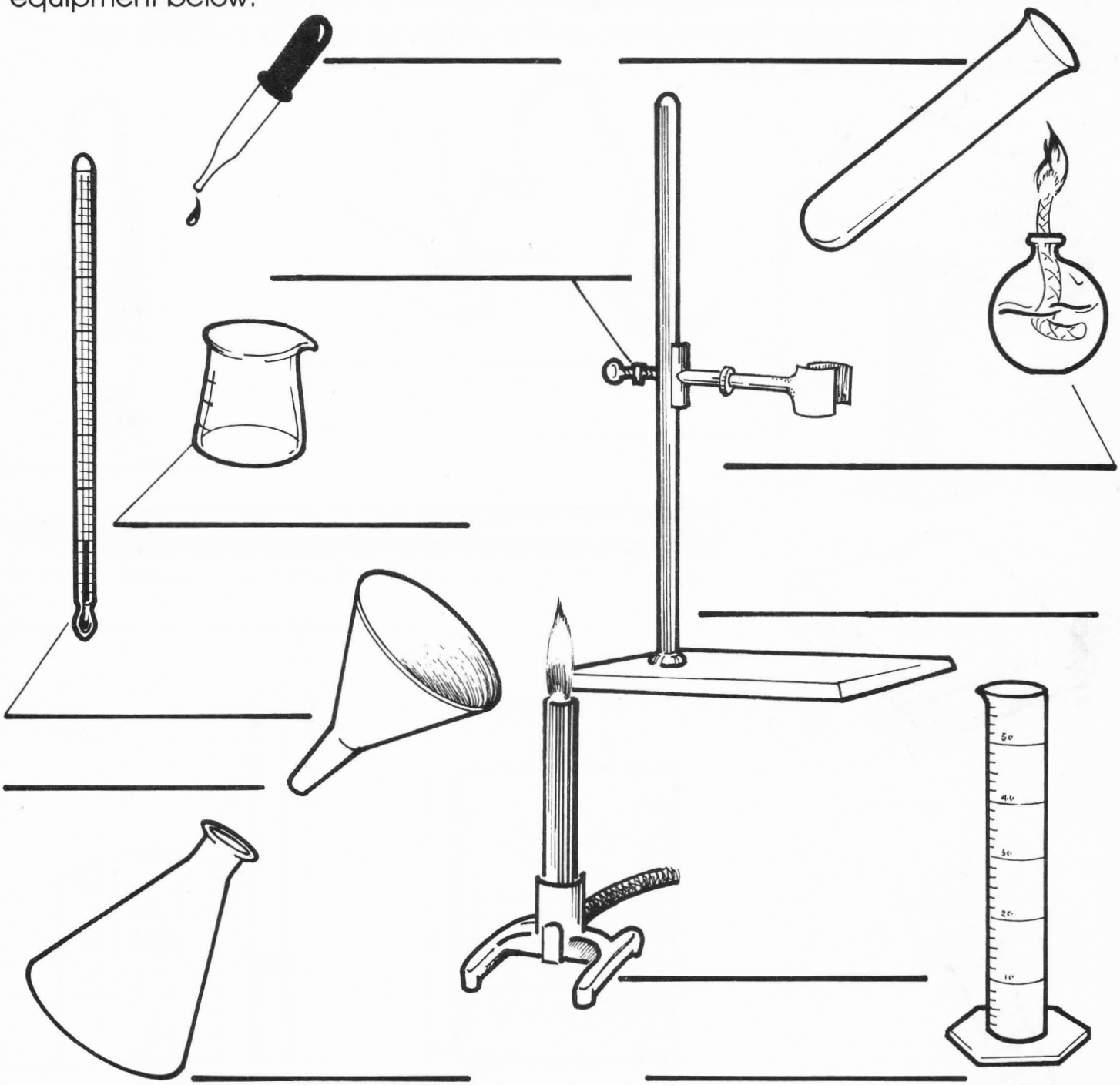
A Scientist's Equipment

Name_____

Scientists use many different kinds of special equipment in a laboratory. Label the equipment below.



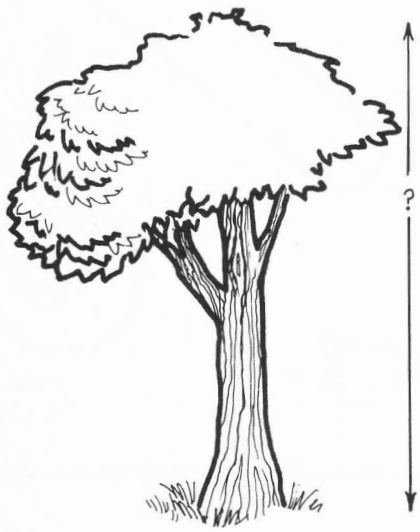
WORD BANK

beaker	ringstand	graduated cylinder
test tube	funnel	dropper
thermometer	flask	test tube clamp
Bunsen burner	alcohol lamp	

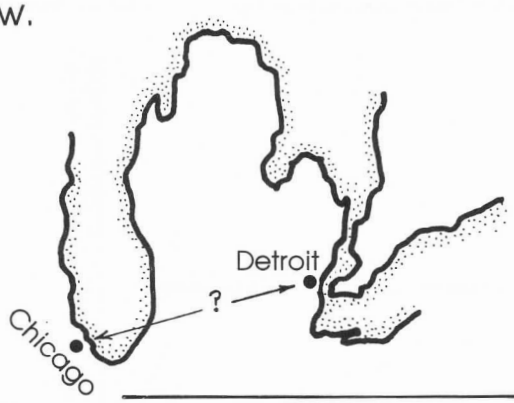
How Long Is It?

Name_____

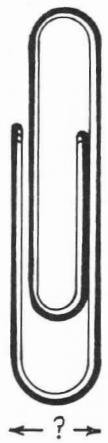
The meter is the standard unit of measurement when measuring the length of an object or the distance between two objects. Use either kilometer, meter, centimeter or millimeter to label the unit that would be used to measure the objects in the pictures below.



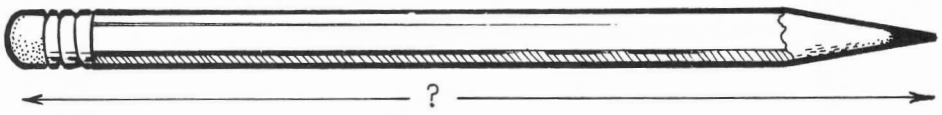
_____



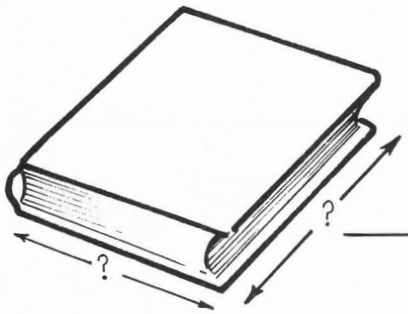
_____



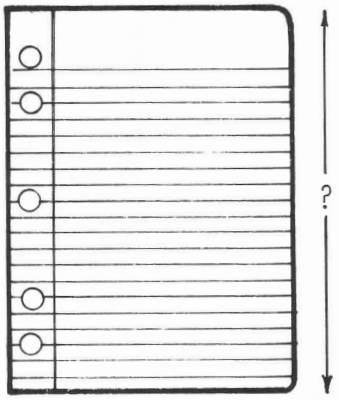
_____



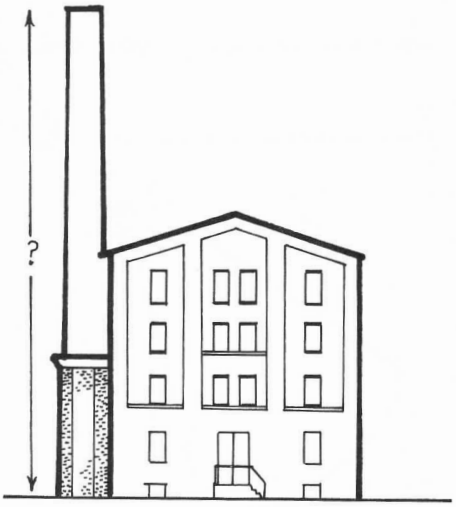
_____



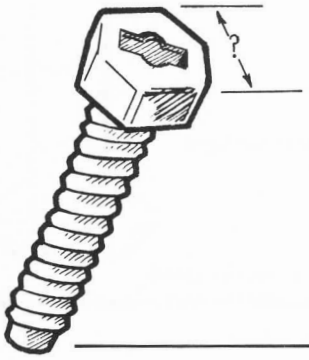
_____



_____



_____



_____

WORD BANK

meter kilometer centimeter millimeter

The Long and Short of It

Name_____

Weight, length, area and volume are properties of matter that scientists can measure. Scientists use the units of grams, meters and liters to measure these properties.

Write the abbreviation for each of these units of measurement.

Unit of Measure	Abbreviation
gram	
kilogram	
milligram	
meter	
kilometer	
centimeter	
millimeter	
square centimeters	
cubic centimeters	
liter	
milliliter	

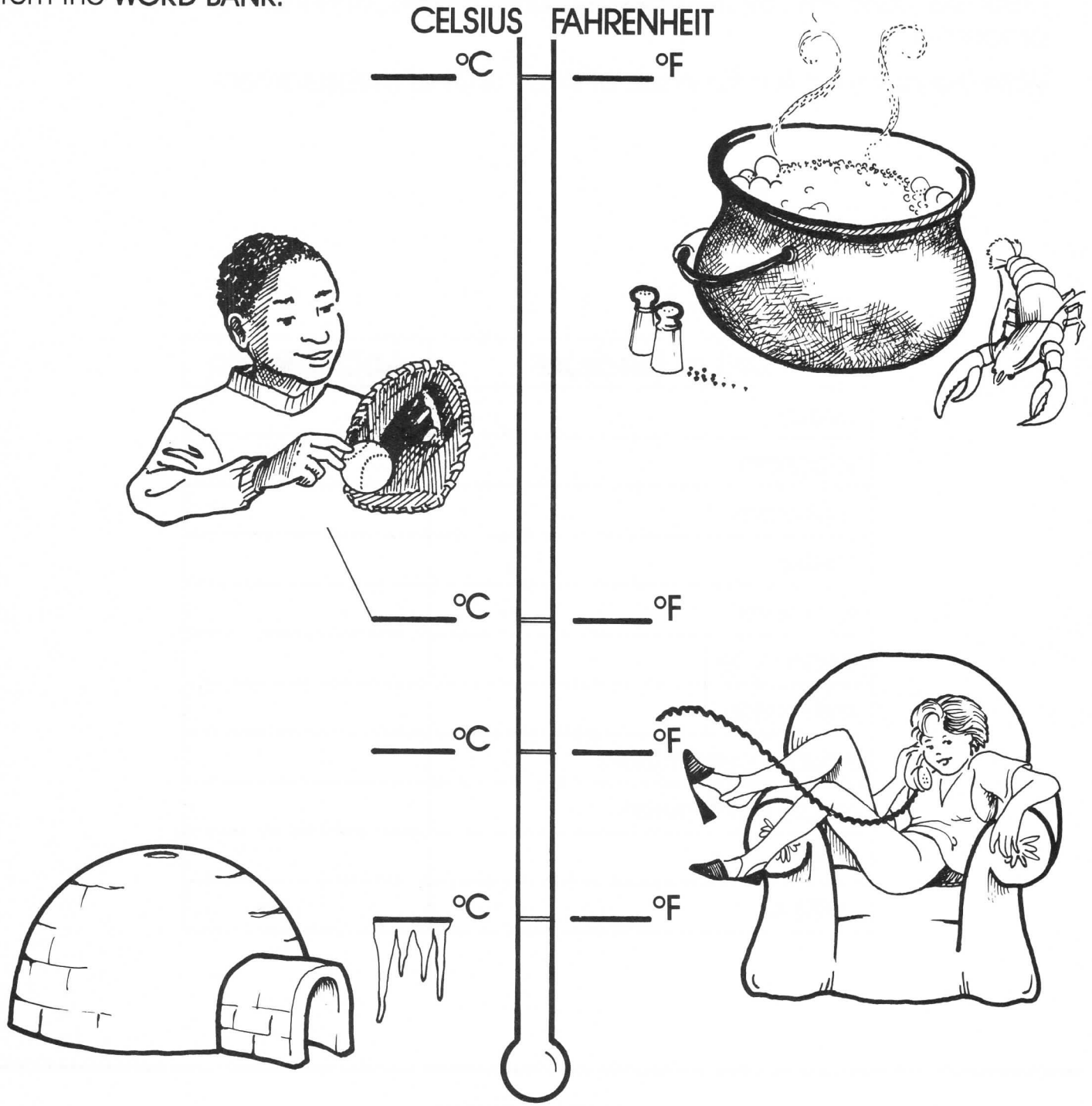
WORD BANK

g	kg	mg	m	km	cm
mm	cm^2	cm^3	l	ml	

Celsius vs. Fahrenheit

Name_____

The thermometer on this page compares the Celsius and Fahrenheit scales. Label the temperatures on the Celsius and Fahrenheit scales using the temperatures from the **WORD BANK.**



WORD BANK

0	20	32	37
98.6	100	212	70

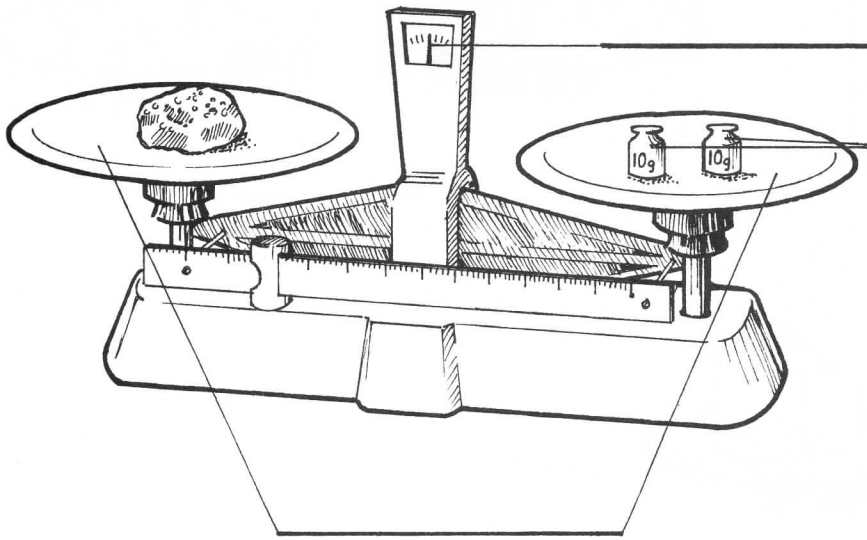
Balances

Name _____

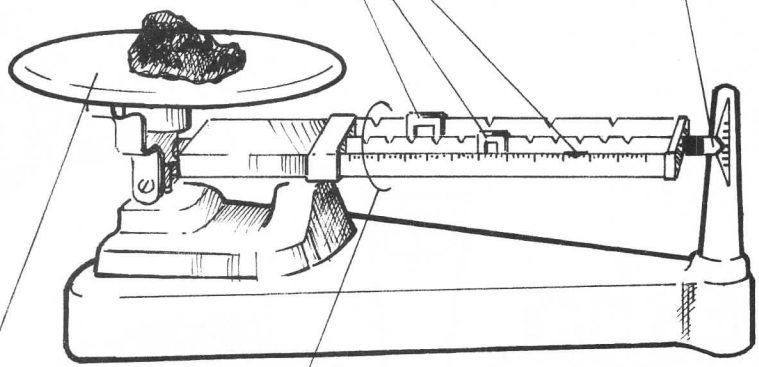
The mass of an object can be measured using a balance. Two common types of balances are the triple beam balance and the double pan balance.

Name each balance pictured below and then label the parts. The words in the Word Bank may be used more than once.

Balance: _____



Balance: _____



WORD BANK

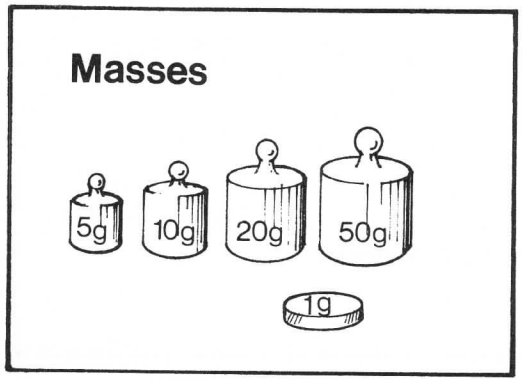
pointer	mass (10g each)	beams
pans	riders	pan
triple beam balance	double pan balance	

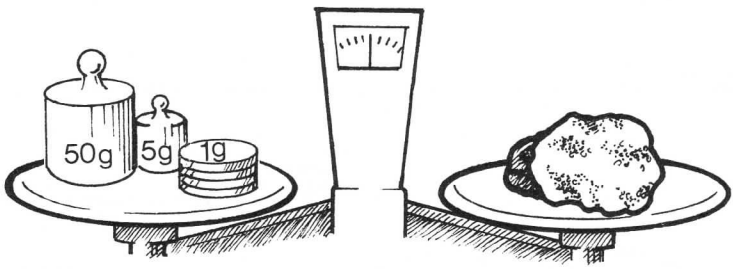
Reading a Double Pan Balance

Name _____

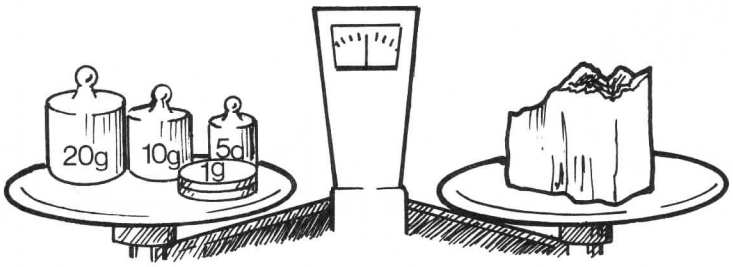
To determine the weight of an object using a double pan balance, find the sum of masses needed to balance the two pans. Do this by making the pointer on the balance line up with the indicated line.

Find the mass of each of the objects pictured below.

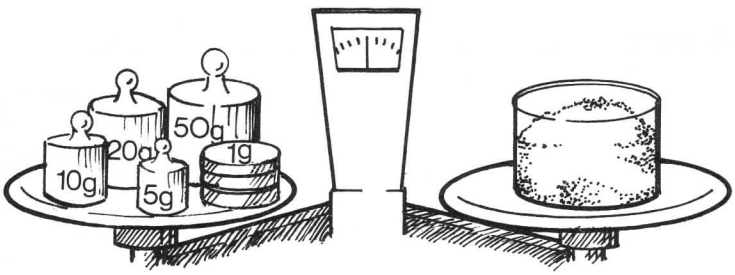




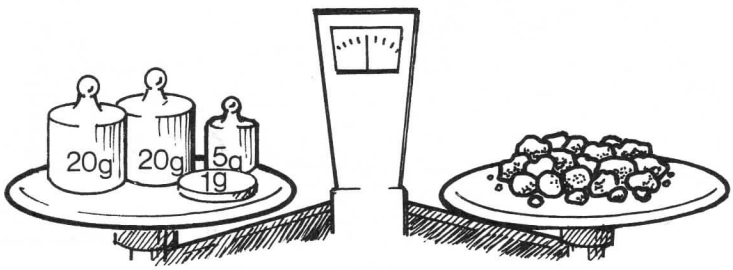
1. _____ g



2. _____ g



3. _____ g



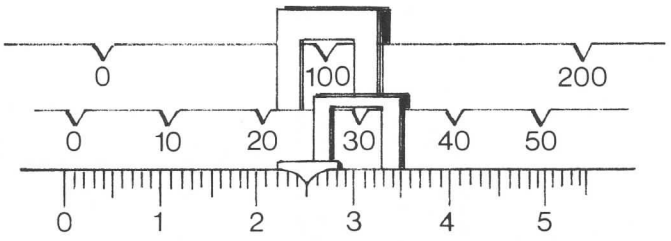
4. _____ g

Reading a Triple Beam Balance

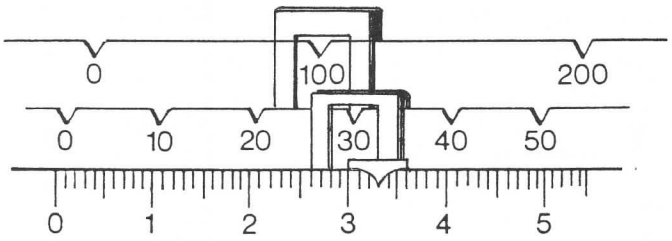
Name _____

To determine the mass or weight of an object using a triple beam balance, find the sum of the masses shown on all the riders.

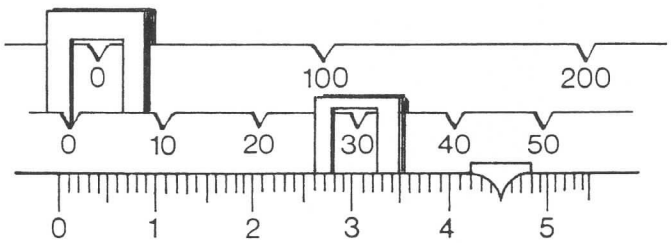
Find the mass indicated on each of the triple beam balances pictured below.



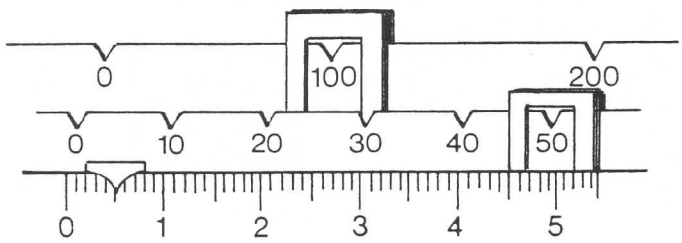
1. _____



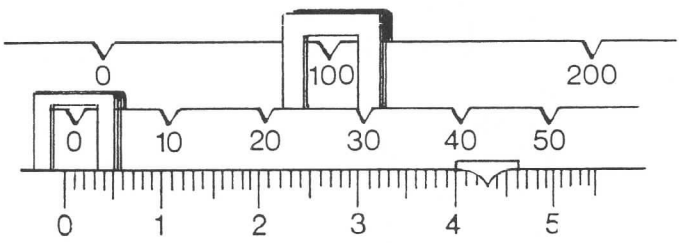
4. _____



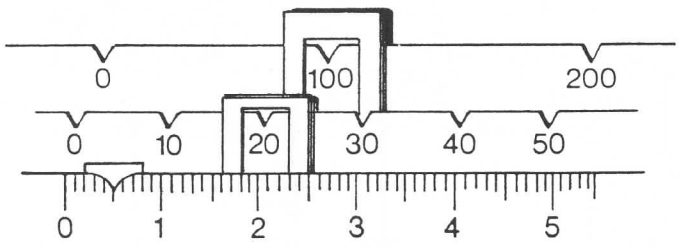
2. _____



5. _____



3. _____



6. _____

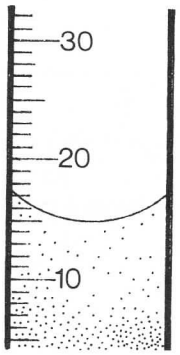
Reading a Graduated Cylinder

Name _____

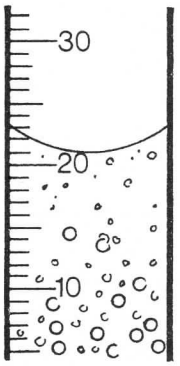
Small quantities of a liquid can be measured using a graduated cylinder. You may notice how the liquid curves up the side of the cylinder. To get an accurate reading, read the measurement at the bottom of the curve, or *meniscus*.

Read the following volumes.

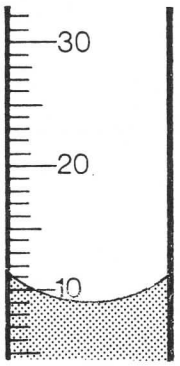
1. _____ ml



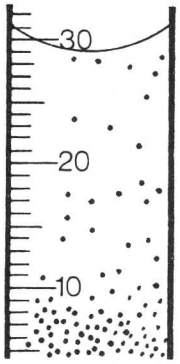
2. _____ ml



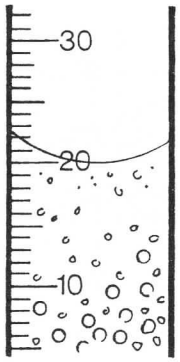
3. _____ ml



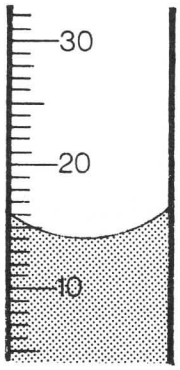
4. _____ ml



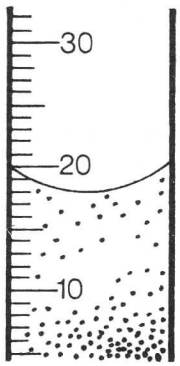
5. _____ ml



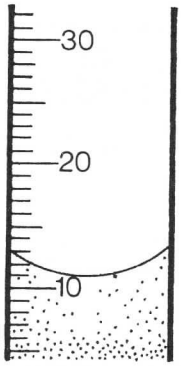
6. _____ ml



7. _____ ml



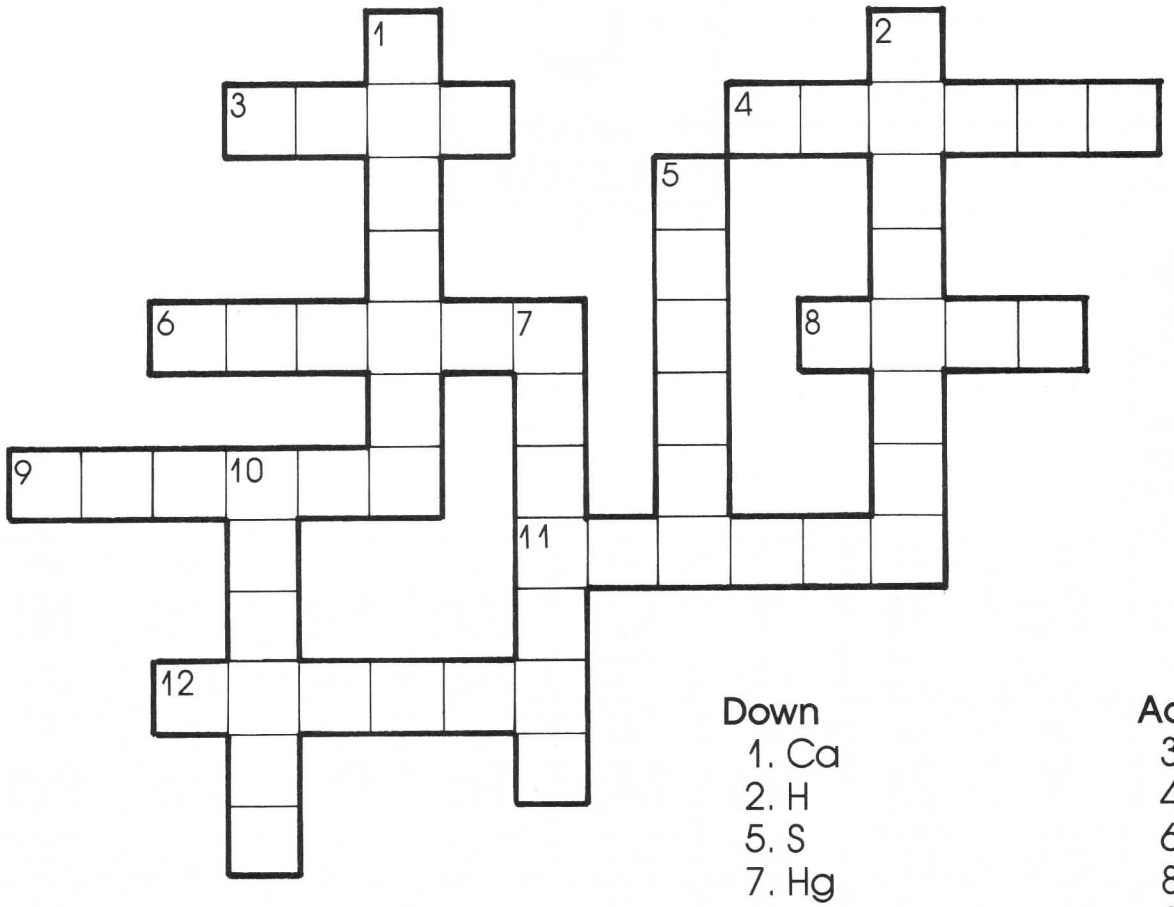
8. _____ ml



Chemical Symbols

Name_____

Use the symbols to find the names of the elements needed to complete the puzzle.



Down

1. Ca
2. H
5. S
7. Hg
10. I

Across

3. Pb
4. O
6. He
8. Au
9. Na
11. C
12. Ag

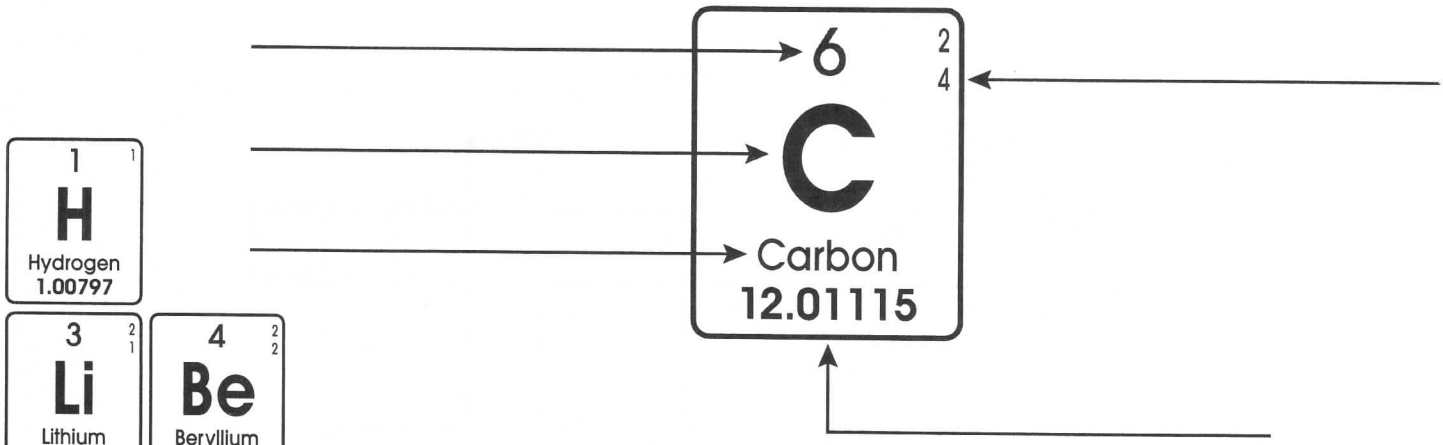
WORD BANK

lead	oxygen	helium	gold
sodium	carbon	silver	iodine
calcium	mercury	sulfur	hydrogen

Periodic Table of Elements

Name_____

The periodic table can give you a lot of information about each of the elements. Use the **WORD BANK** to label the type of information that the symbols, names and letters represent for each of the elements.



1 H Hydrogen 1.00797									
3 Li Lithium 6.941	4 Be Beryllium 9.0122								
11 Na Sodium 22.9898	12 Mg Magnesium 24.305								
19 K Potassium 39.0983	20 Ca Calcium 40.08	21 Sc Scandium 44.956	22 Ti Titanium 47.88	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.9380	26 Fe Iron 55.847	27 Co Cobalt 58.9332	28 Ni Nickel 58.69
37 Rb Rubidium 85.4678	38 Sr Strontium 87.62	39 Y Yttrium 88.905	40 Zr Zirconium 91.22	41 Nb Niobium 92.906	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.905	46 Pd Palladium 106.4
55 Cs Cesium 132.905	56 Ba Barium 137.33	57–71 Rare Earth Elements	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.85	75 Re Rhenium 186.2	76 Os Osmium 190.2	77 Ir Iridium 192.2	78 Pt Platinum 195.09
87 Fr Francium (223)	88 Ra Radium (226.0254)	89–103 Actinide Series	104 Rf Rutherfordium (261)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (262)	108 Hs Hassium (265)	109 Mt Meitnerium (266)	110 Uun Ununnilium (269)

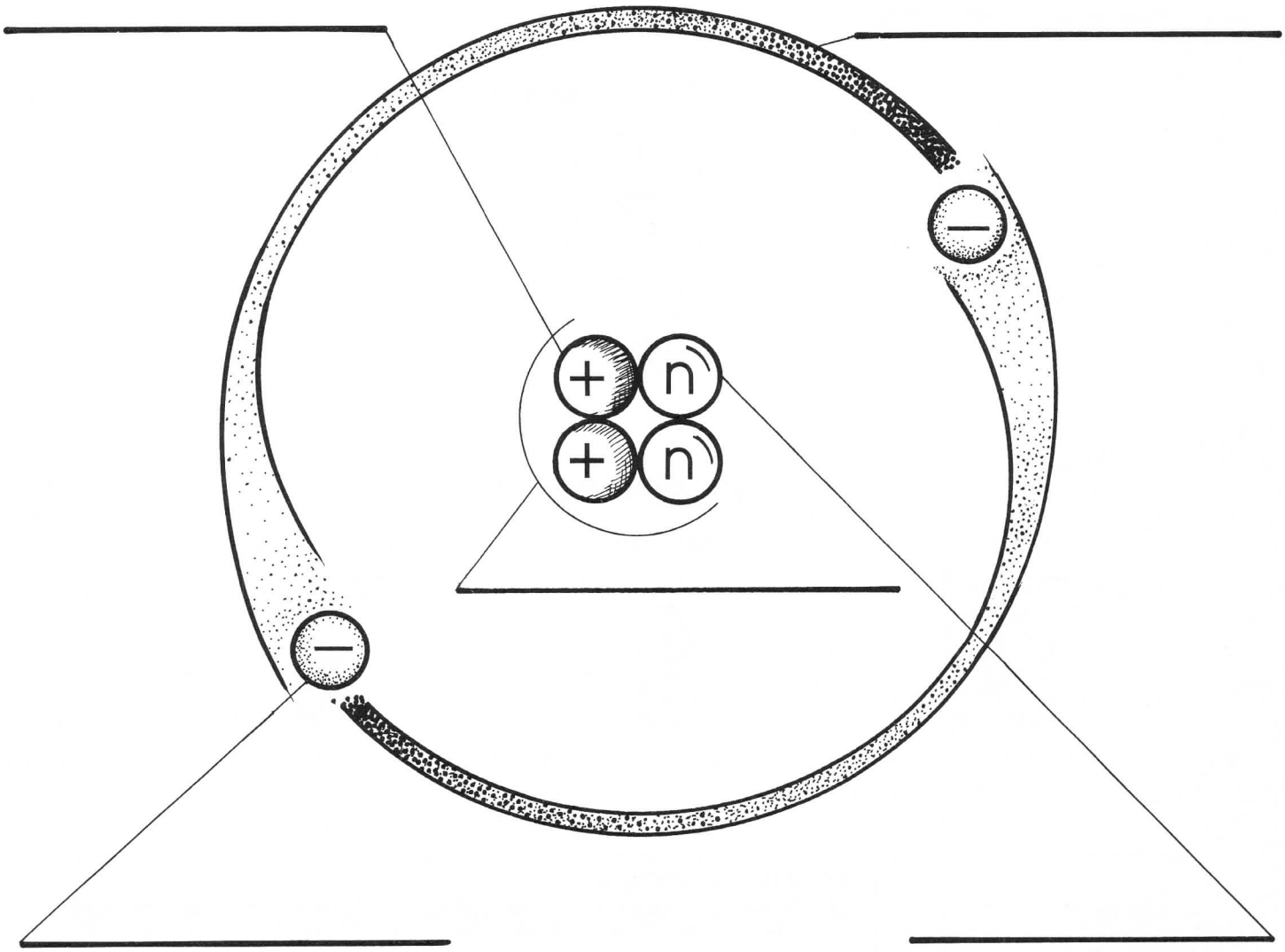
Word Bank

atomic number
atomic mass
element's symbol
element's name
electrons in outer shell

Atoms

Name_____

Label the parts of the helium atom pictured below.



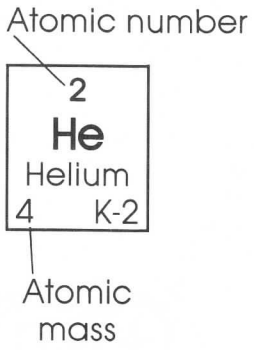
WORD BANK

proton	nucleus	neutron
orbit (shell)		electron

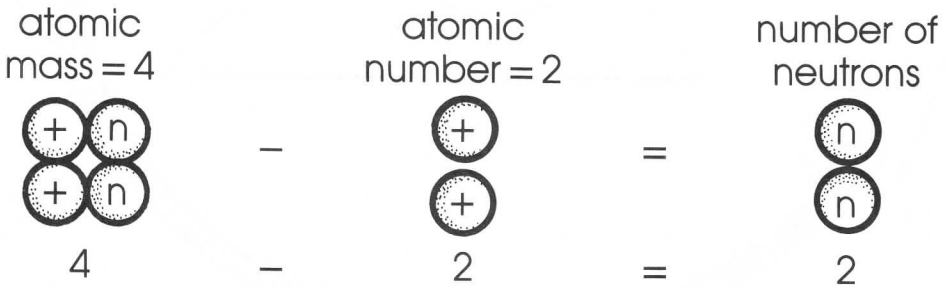
Protons, Neutrons and Electrons

Name_____

The atomic number of an atom is the number of protons in each atom of that element. Because atoms are electrically neutral, the atomic number is also the number of electrons. The atomic mass tells the number of protons and neutrons in an atom. By subtracting the atomic number from the atomic mass you can find the number of neutrons.
Complete the chart below.



HELIUM ATOM

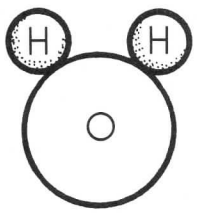


ELEMENT	SYMBOL	ATOMIC NUMBER	ATOMIC MASS	PROTONS	NEUTRONS	ELECTRONS
helium	He	2	4			
nitrogen	N	7	14			7
carbon	C	6	12			
sodium	Na	11	23			
iron	Fe	26			30	
copper	Cu		64	29		
silver	Ag	47	108		61	

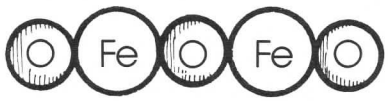
Name That Molecule!

Name_____

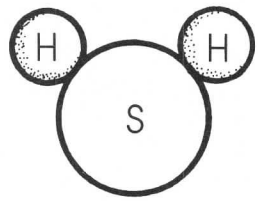
Write the chemical formula for each molecule pictured below.



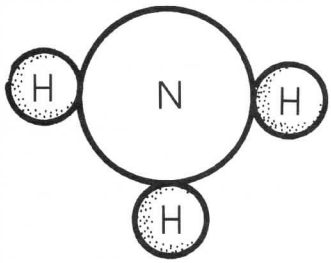
_____



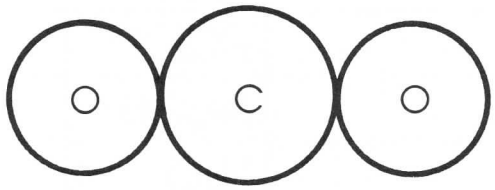
_____



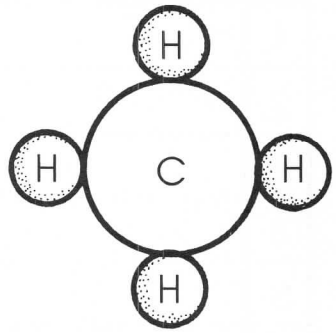
_____



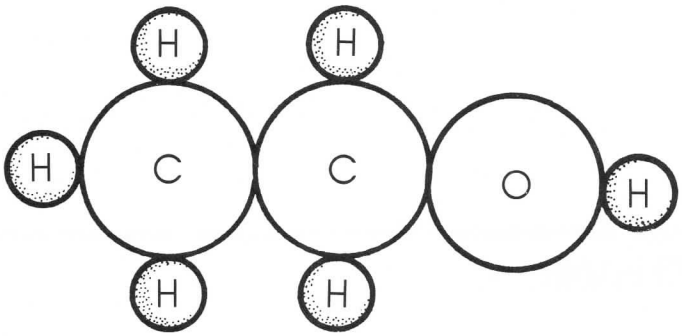
_____



_____



_____



_____

WORD BANK

H_2O	CH_4	H_2S	Fe_2O_3
C_2H_5OH	CO_2	NH_3	

Chemical Formulas

Name_____

A chemical formula is a shorthand way to write the name of a compound. Complete the chart below for each of the formulas.

	Compound	Formula	Elements
1.		$NaCl$	
2.		HCl	
3.		$NaOH$	
4.		H_2O	
5.		CO_2	
6.		H_2SO_4	
7.		$CuSO_4$	
8.		C_2H_5OH	

WORD BANK

sodium chloride
water
sulfuric acid
sodium
copper

hydrochloric acid
oxygen
copper sulfate
chlorine
sulfur

sodium hydroxide
carbon dioxide
alcohol
hydrogen
carbon

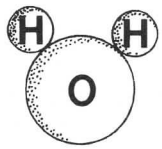
Chemicals

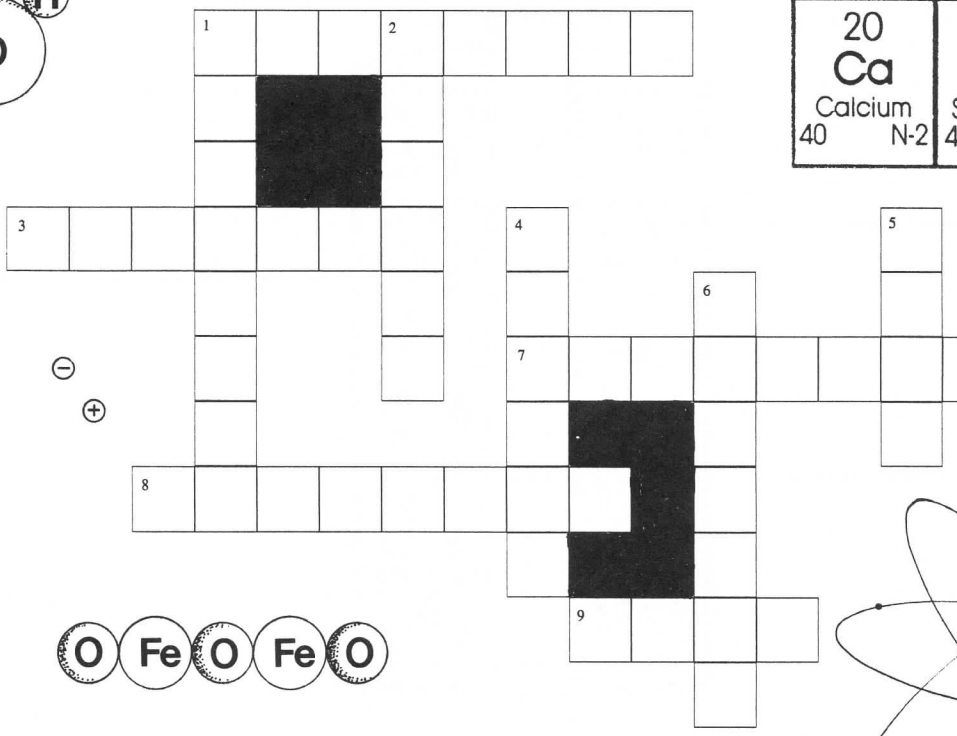
Name _____

Use what you have learned about chemicals to complete this puzzle. You may need to refer to your science book or encyclopedia.

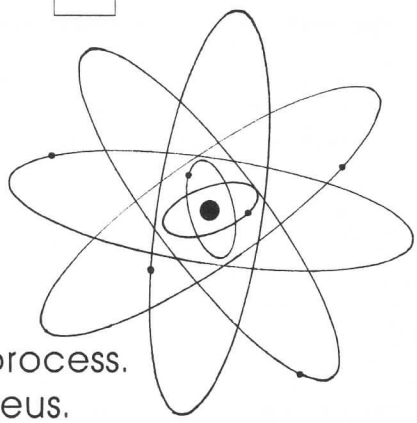
Across

1. A substance that contains two or more chemical elements.
3. A simple substance made of one type of atom.
7. The smallest particle that displays the physical and chemical properties of a compound.
8. A negatively-charged particle that orbits the nucleus of an atom.
9. What everything is made of; the smallest unit of an element.





20	21	22
Ca	Sc	Ti
Calcium	Scandium	Titanium
40 N-2	45 N-2	48 N-2



Down

1. Any substance obtained by or used in a chemical process.
2. A positively-charged particle found free or in a nucleus.
4. It stands for the name of an element.
5. **Au** is the symbol for _____ .
6. A particle in an atom or by itself with no electrical charge.

WORD BANK

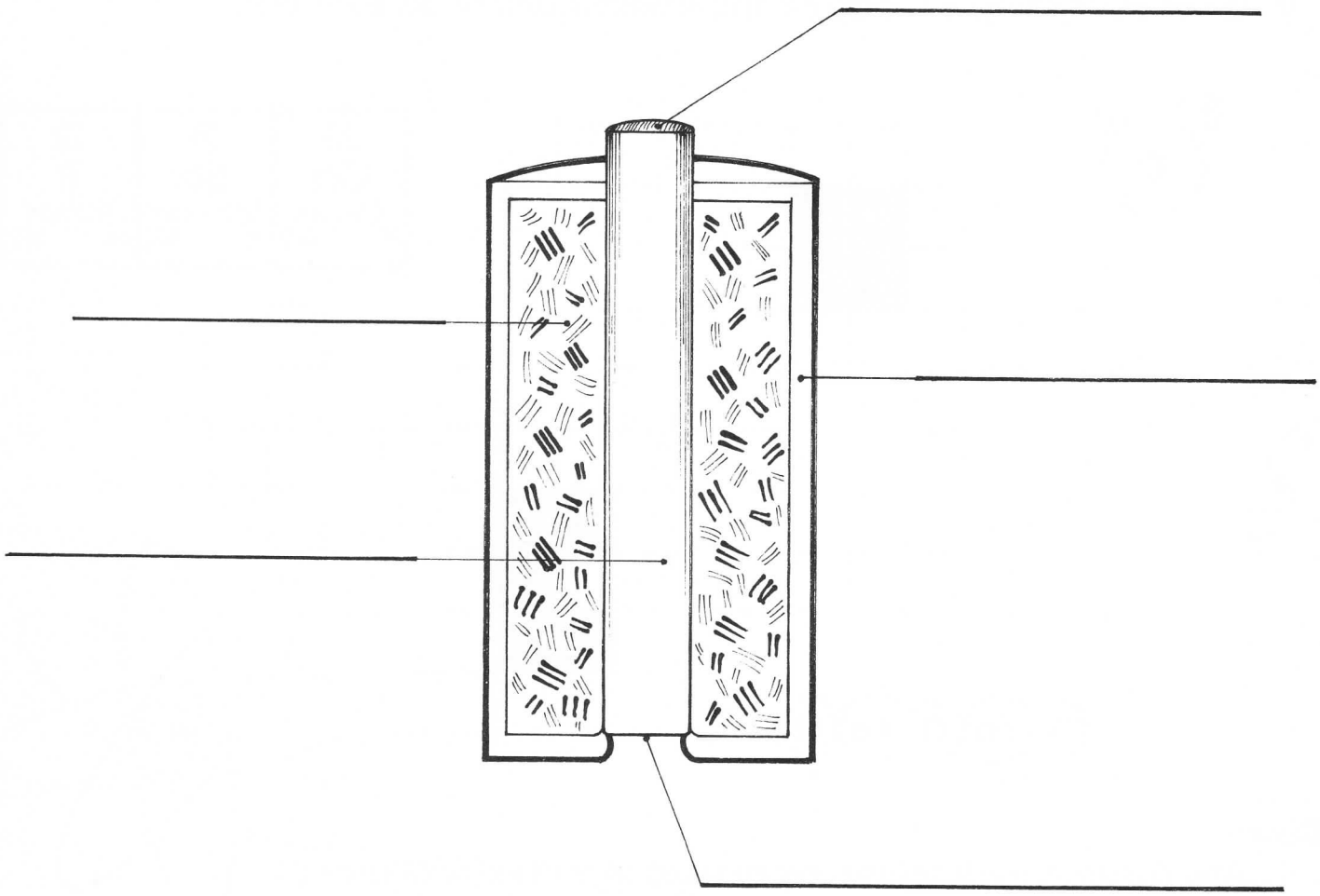
compound	proton	symbol	neutron	chemical
electron	atom	element	gold	molecule

Dry Cells

Name _____

The dry cell is a source of portable power used in flashlights, toys, and radios. There are three basic kinds of dry cells that are commonly used—carbon-zinc, alkaline, and mercury.

Label the parts of this carbon-zinc dry cell illustration.



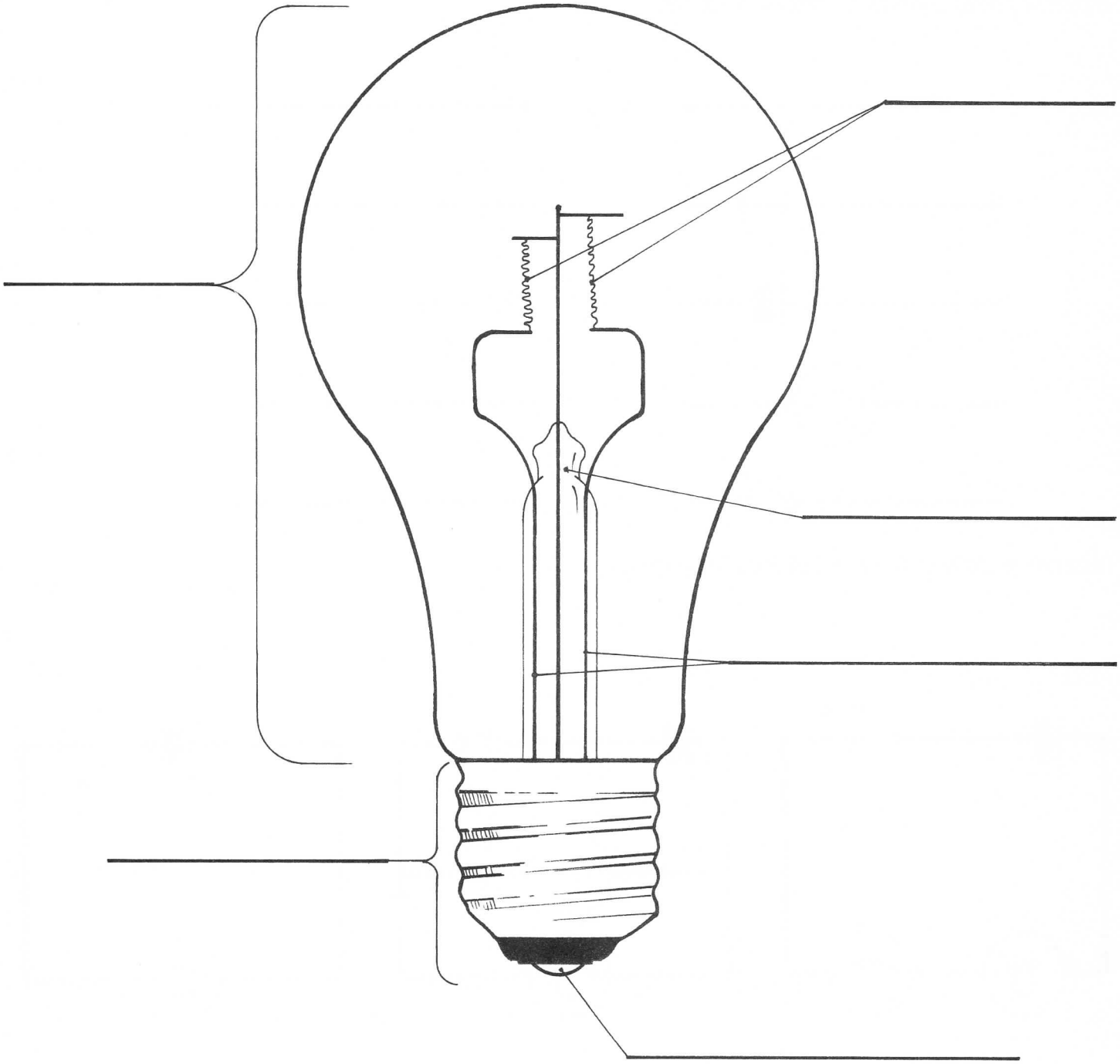
WORD BANK

positive terminal
negative terminal
zinc container
carbon rod
chemical paste

Light Bulb

Name _____

Label the parts of the incandescent light bulb pictured below.



WORD BANK

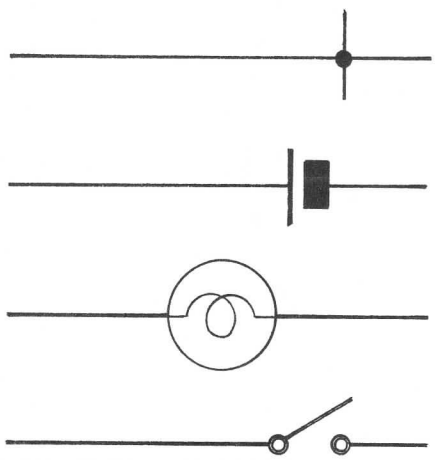
bulb	filaments	base	contact
glass support	connecting and supporting wires		

Circuits and Switches

Name _____

To be useful electricity must flow in a circuit. Electric circuits can be illustrated with the help of symbols.

Identify the symbols shown here.



_____ _____

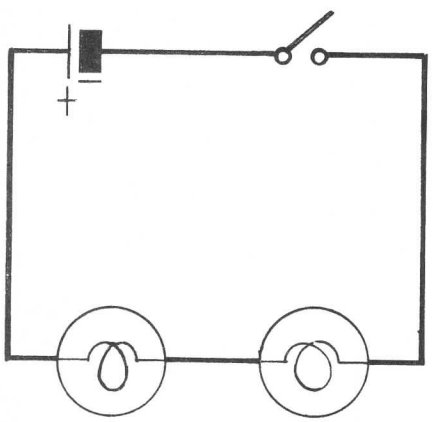
_____ _____

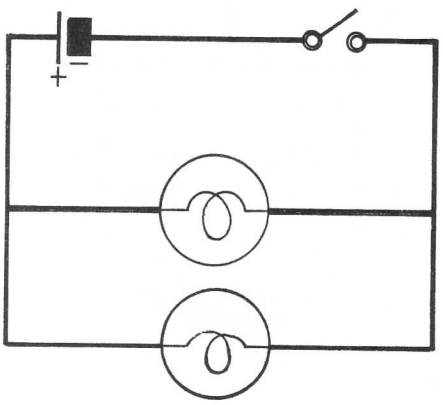
_____ _____

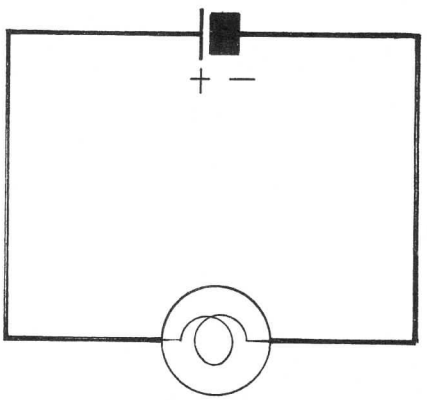
_____ _____

_____ _____

Name each circuit pictured below.







_____ _____ _____

WORD BANK

wire	battery	simple circuit
connection	light bulb	series circuit
switch	parallel circuit	

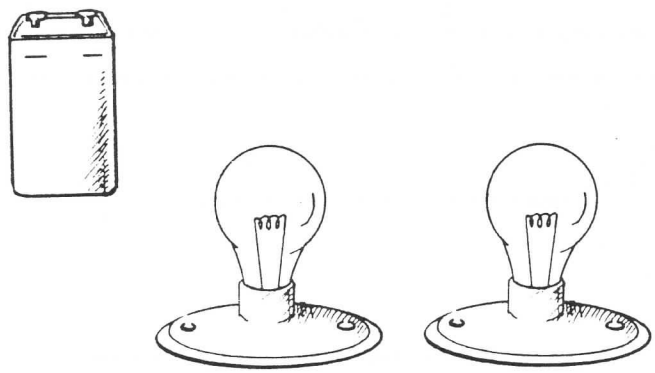
Drawing Electrical Circuits

Name _____

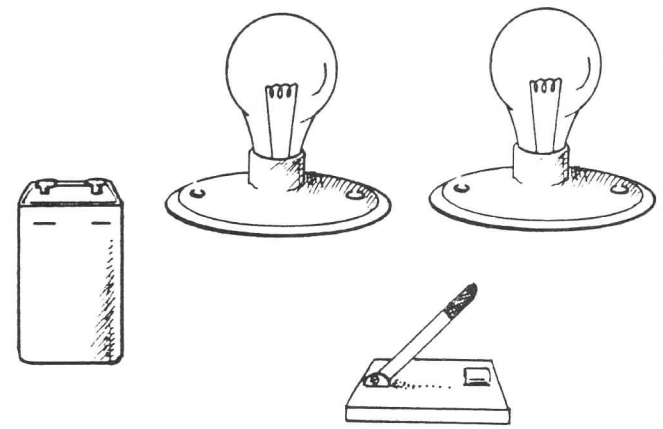
There are three types of simple electrical circuits: a closed circuit, a parallel circuit, and a series circuit. Each type can be set up in more than one way.

Draw lines to show where the wires should connect to make the following circuits.

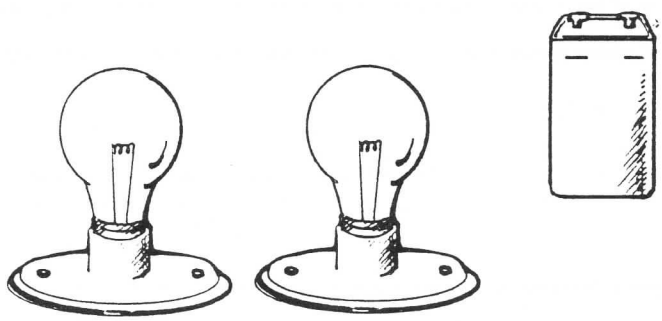
Series Circuit



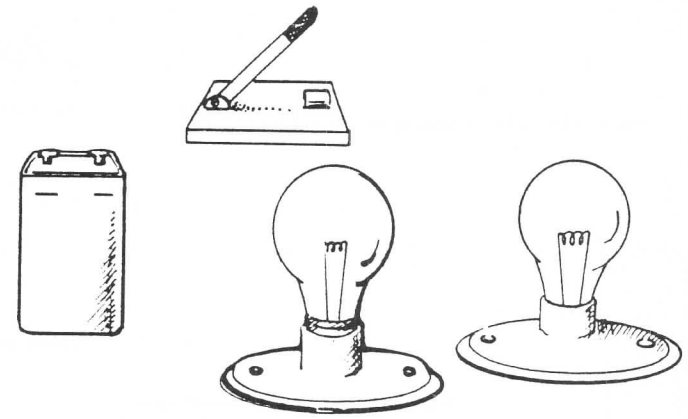
Another Type of Series Circuit



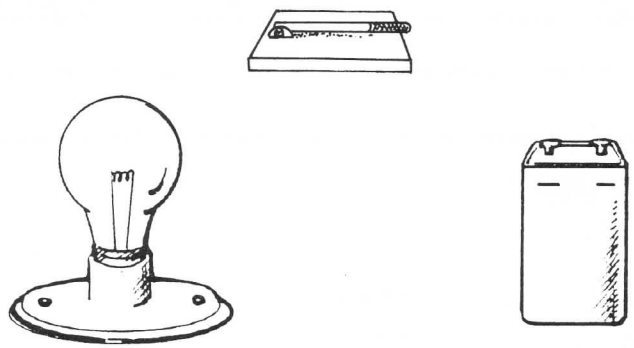
Parallel Circuit



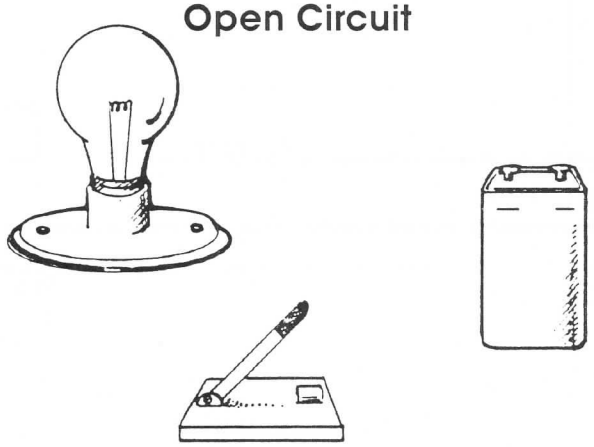
Another Type of Parallel Circuit



Closed Circuit



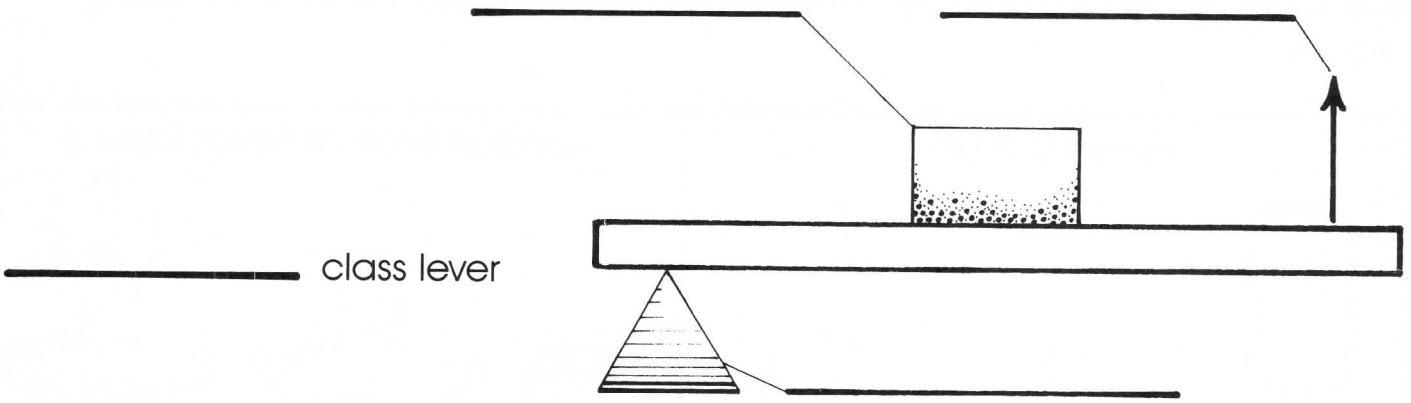
Open Circuit



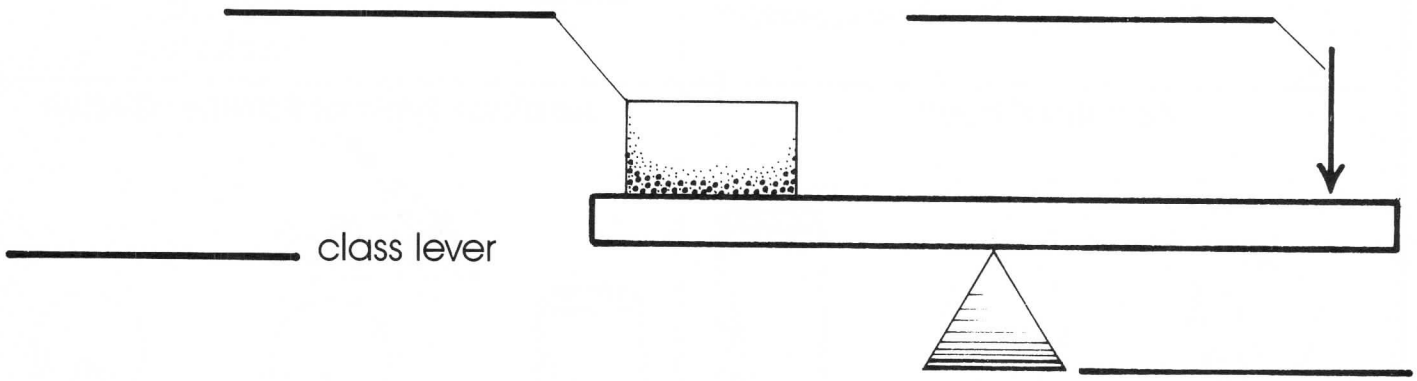
Classy Levers

Name_____

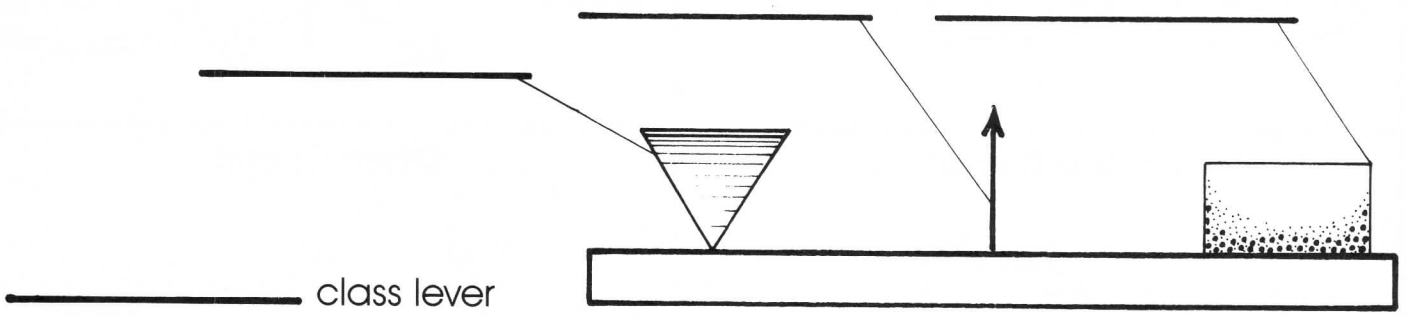
Three classes of levers are pictured below. Label each class of lever and the three lever parts.



_____ class lever



_____ class lever



_____ class lever

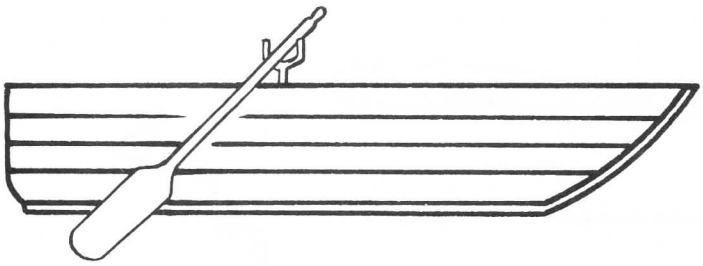
WORD BANK

first	second	third
load	force	fulcrum

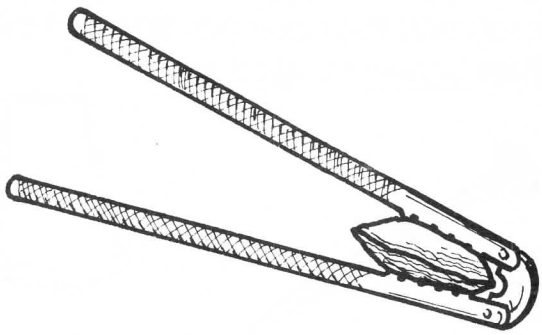
Practical Levers

Name_____

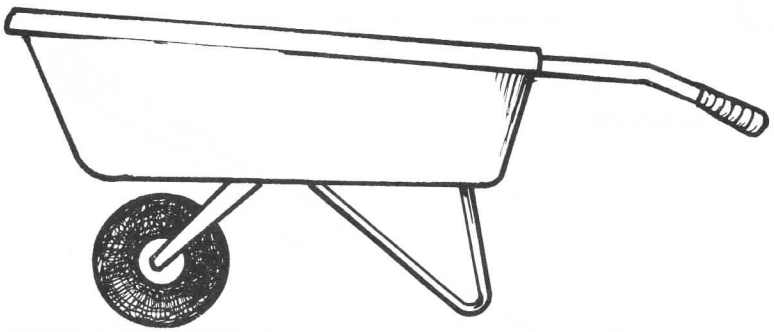
In the space under each picture below write first, second or third to tell the class of the lever.



_____

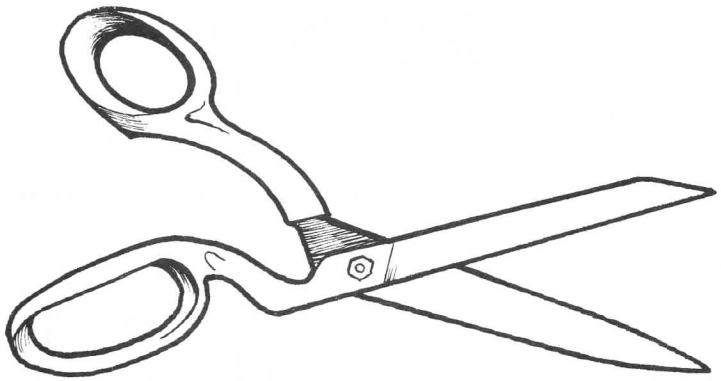


_____

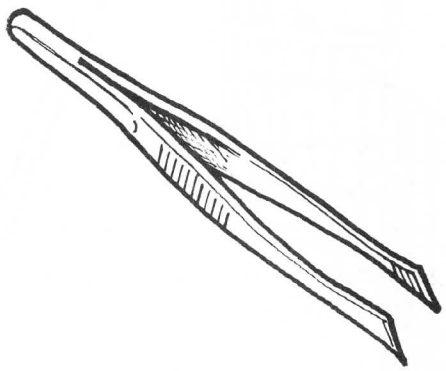


_____

_____



_____

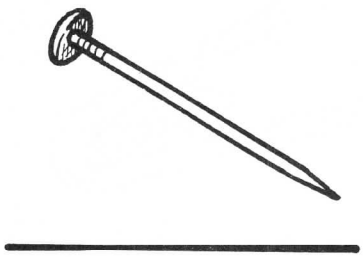


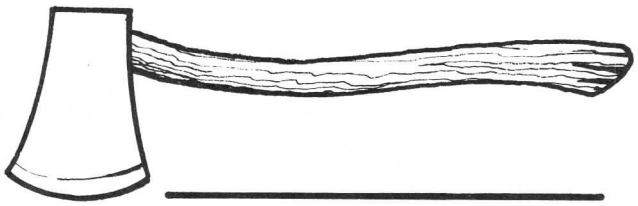
_____

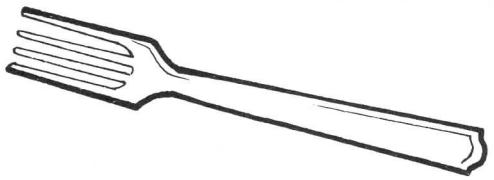
Special Inclined Planes

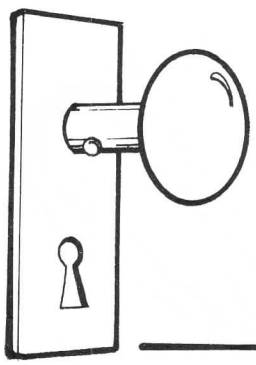
Name_____

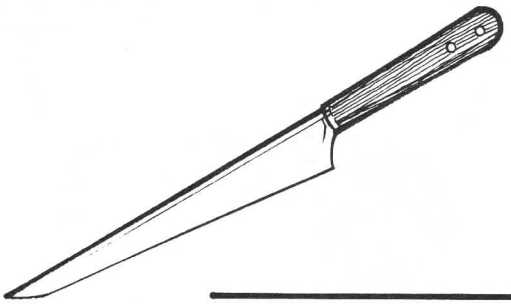
Some simple machines are pictured below. Some of these simple machines are special inclined planes, called wedges and screws. Put an "X" on the simple machines that are not special inclined planes. Label the special inclined planes either screw or wedge.

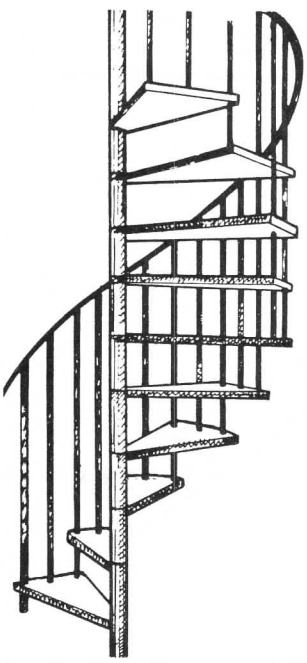


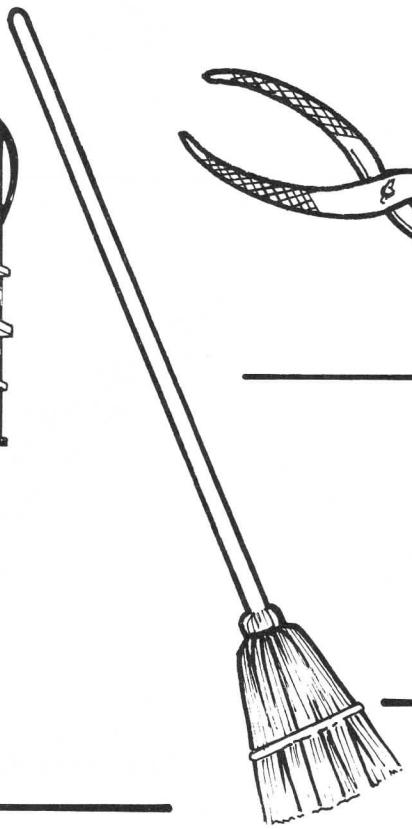


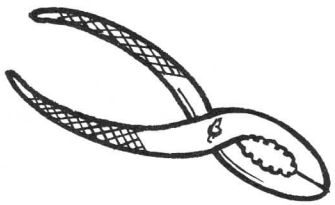


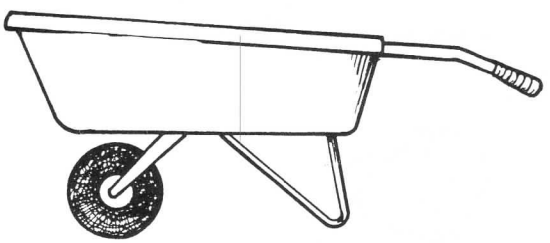


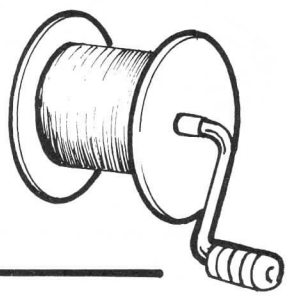








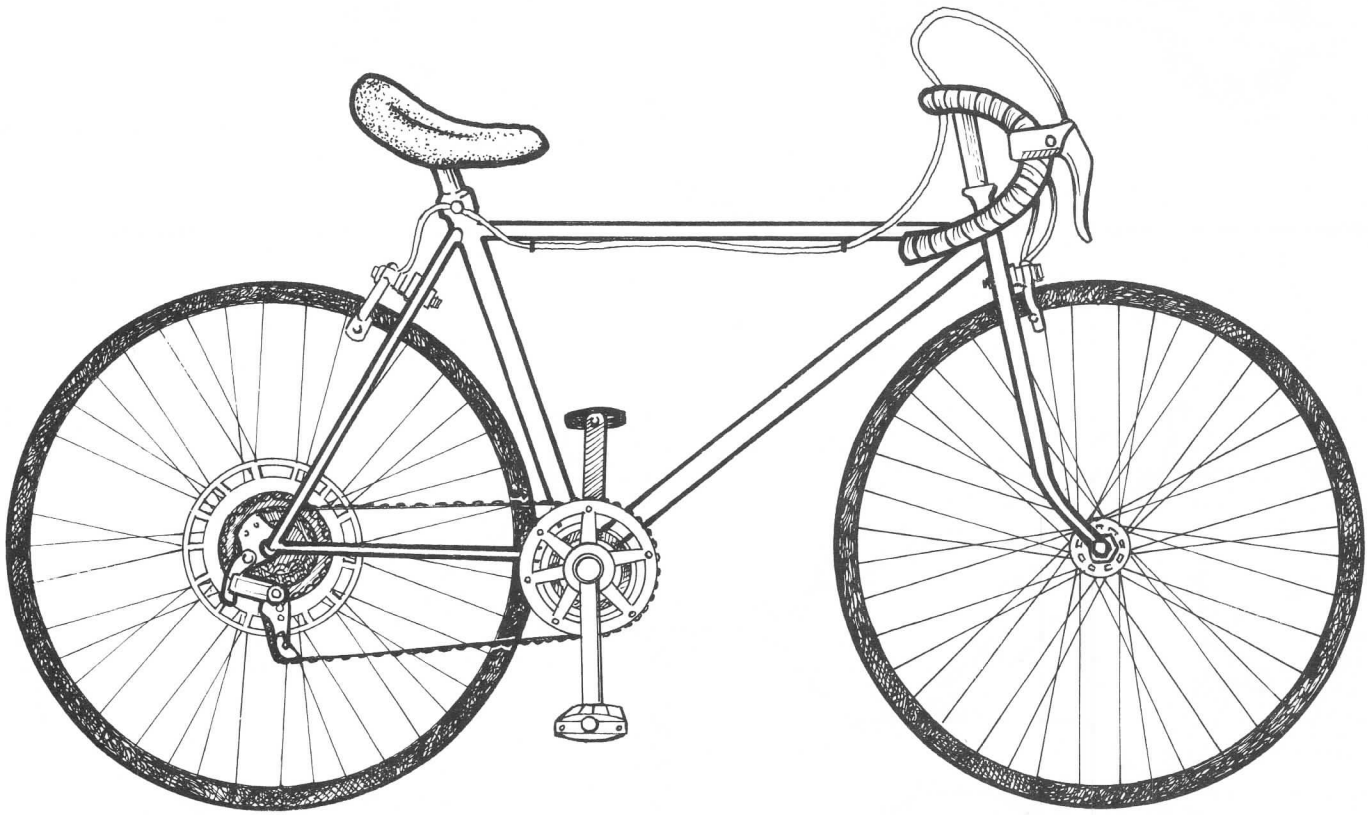




Pedal Power

Name_____

Your bicycle is a combination of many simple machines. Study the bicycle on this page. Circle and label as many simple machines that you can find on the bicycle shown.



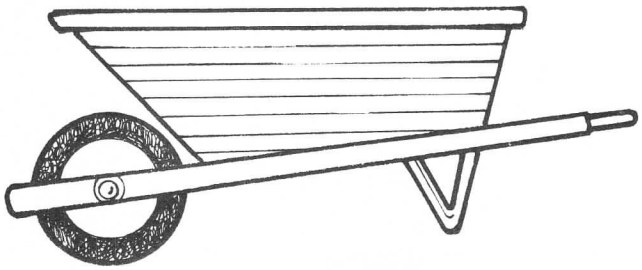
WORD BANK

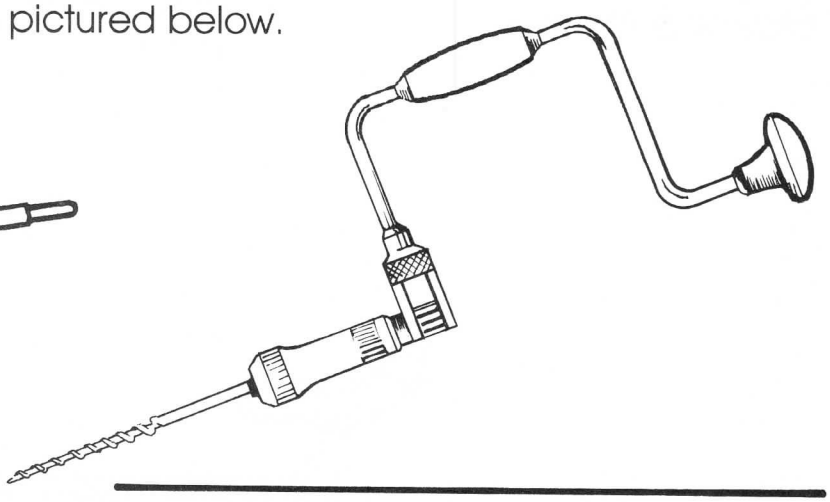
lever wheel and axle inclined plane (screw)

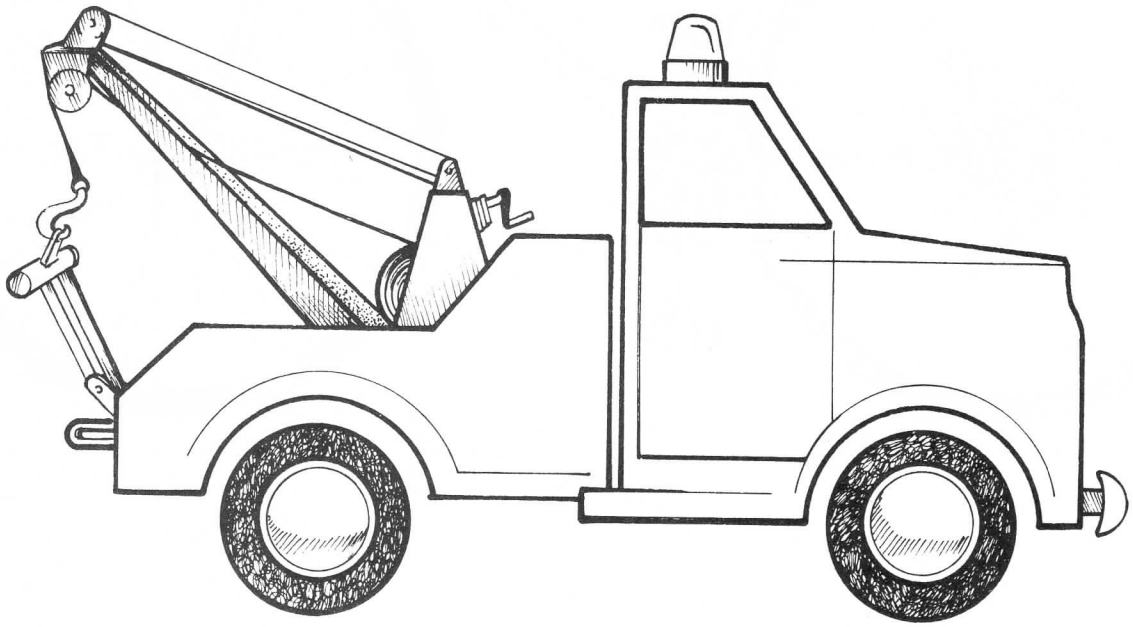
Compound Machines

Name_____

Often two or more simple machines are combined to make one machine called a compound machine. Name the simple machines that are combined to make each of the compound machines pictured below.







WORD BANK

wheel and axle inclined plane (wedge, screw) pulley
lever