

# Science STAAR Study Sheets

## Physical Properties of Matter



- M**y ~ MASS → The amount of matter in an object. GRAMS  
**D**og ~ DENSITY → FLOAT or SINK  
**P**hil ~ PHYSICAL STATE → solid, liquid, gas  
**C**an ~ CONDUCTOR → thermal or electrical  
**S**mile ~ SOLUBILITY → dissolve or does not dissolve  
**M**agnificently ~ MAGNETISM → magnetic or nonmagnetic

**C**lassify  
 allows energy to pass through  
**L**iquid  
**A**ir  
 m  
**S**olid  
**S**olid  
 • solid  
 • liquid  
 • gas  
**I**nsulate  
 does not allow energy to pass through  
**F**loat  
**V**isity  
 density

- thermal (heat)
- electricity
- sound

- thermal (heat)
- electricity
- sound

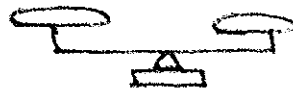
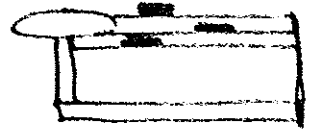
MATTER - anything that has mass & takes up space

MASS

The amount of matter in an object.

TOOLS USED

- triple beam balance
- pan balance



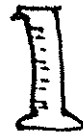
GRAMS

VOLUME

The amount of space an object or substance takes up

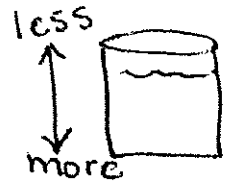
TOOLS USED

- graduated cylinder
- beaker



MILLILITERS

Relative Density



FLOAT or SINK

less

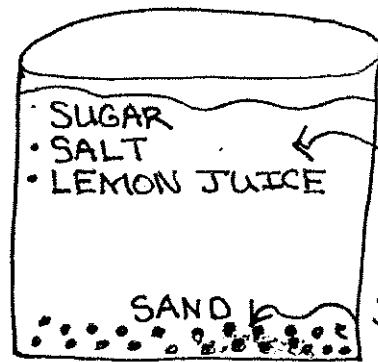
more dense

"More junk in the trunk goes to the bottom."

# Solubility

Soluble: salt, sugar, honey, syrup, lemon juice

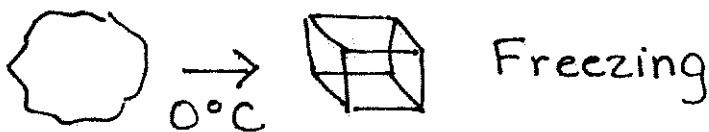
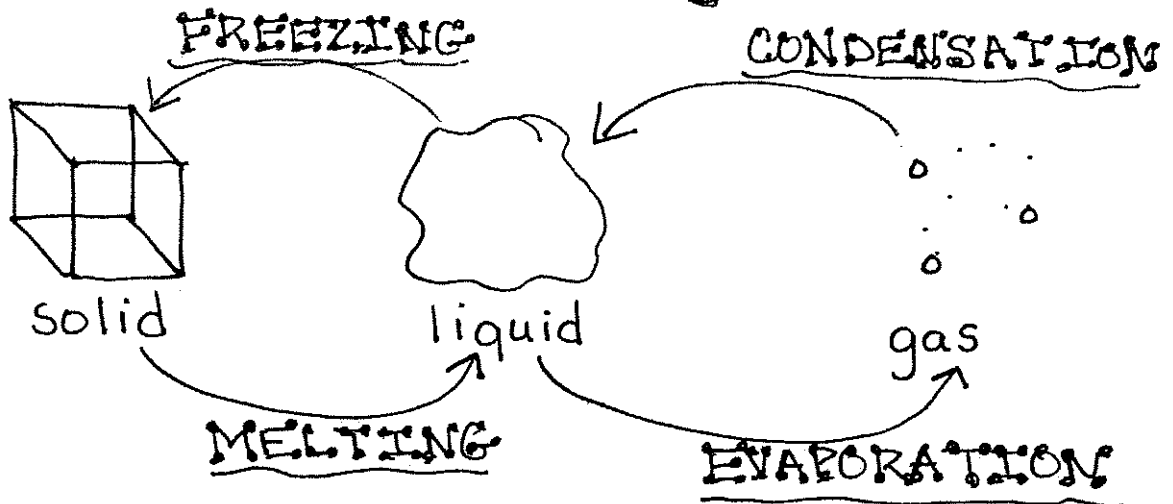
Insoluble: oil, iron filings, sand



SOLUBLE  
Spreads out evenly

INSOLUBLE  
does not dissolve

## PHYSICAL STATES



# MAGNETISM

I am attracted to my boyfriend

**N**ickel  
**I**ron  
**C**obalt  
**S**teel

**M A C**  
Metals are conductors

## Mixtures and Solutions

**Mixtures** →

- maintain physical properties
- easy to separate
- heterogenous

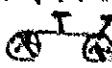
### TOOLS USED

Some ~ SIEVE or STRAINER  
Monkeys ~ MAGNETISM  
Have ~ HANDS  
Fun ~ FILTER PAPER  
Lying ~ FLOATING  
Very where ~ EVAPORATION

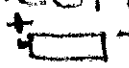
**Solutions** →

- change physical properties
- not easy to separate
- \* MUST USE EVAPORATION!
- homogenous

# Types of Energy

**M**echanical  
(moving parts)  



- turbines
- dams
- hammer

**E**lectrical  
(electrons)  



- computers
- lamps

**L**ight  
(visible - see)  


- solar panels
- photosynthesis

**T**hermal  
(heat transfer)  


- ovens

**S**ound  
(air vibrations)  


- alarms

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# Circuits

If it is open, it is broken.  
If it is closed, it flows.

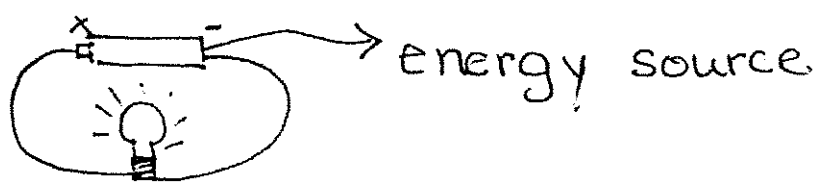
**CONDUCTOR** - allows flow

metal, penny

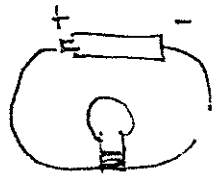
**INSULATOR** - stops/slows flow  
plastic, wood

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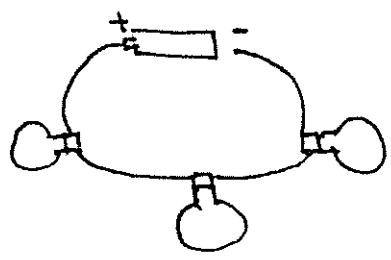
### Complete circuit (closed)



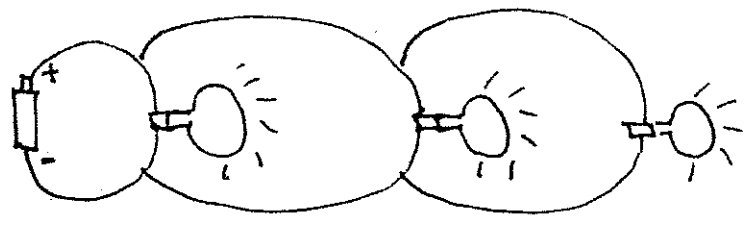
### Incomplete circuit (open)



Series Circuit → only 1 path  
when 1 goes out they all go out



Parallel Circuit → more than 1 path  
when 1 goes out others will still work



# Force and Motion

Force - a push or pull

Motion - movement

Friction - a force that works against motion

Gravity - the force that pulls two objects toward each other

**F**ricition

smooth = less friction  
rough = more friction

**M**agnetism

S | N    S | N    opposites ATTRACT  
S | N    N | S    likes REPEL


**G**ravity




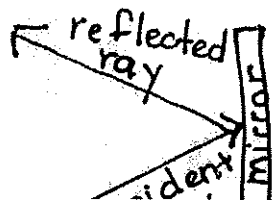
invisible force that pulls to the center of the Earth

# Light

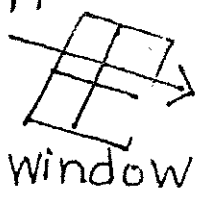
Light always travels in a straight line until it hits an object.

**R**efraction → light bends as it passes through a new medium  looks bent large

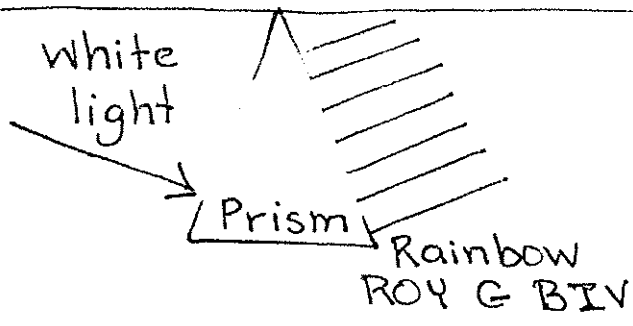
**R**eflection → light bounces off  light bounces off at the same angle



Transmit → light goes through

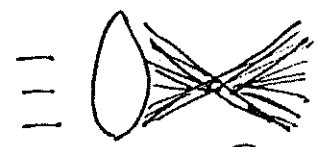


Absorption → light stops or goes into  
• dark colors absorb more light



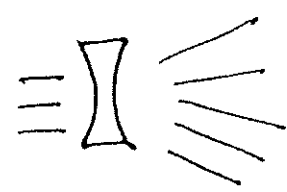
white light bends in a prism

CONVEX LENS



appear Bigger

CONCAVE LENS



appear Smaller

**P**etroleum/oil  
**U**nder pressure & heat \*MUST HAVE\*  
**N**atural gas  
**C**oal  
Takes millions of years

# Sedimentary Rock ~ WEDCoCe

**W**eathering → breaking down - BREAKS IT

**E**rosion → carrying it away - MOVES IT

**D**eposition → dropping sediments - DROPS IT

**C**ompaction → pressing together

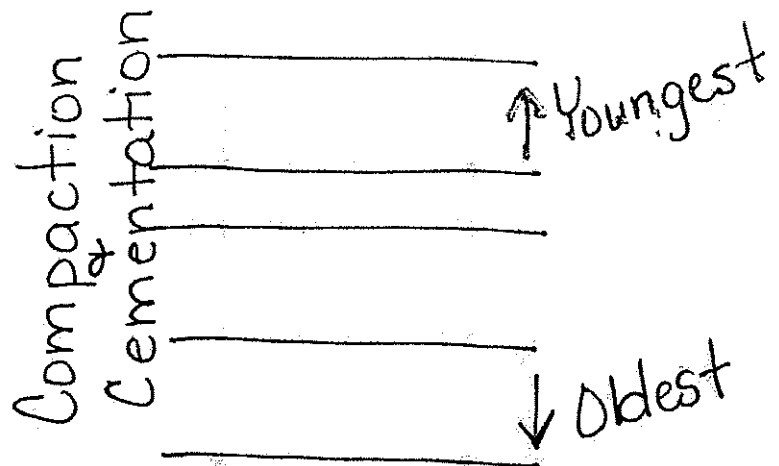
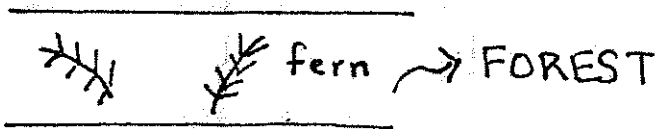
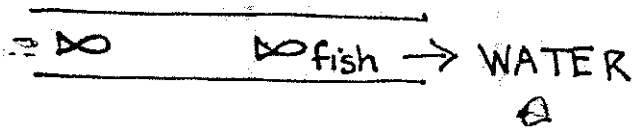
**C**ementation → gluing together

Sedimentary Rock - rock made of sediments

Fossils - remains of organisms turned to stone  
takes millions of years

## F.O.S.S.I.L.S

tell us about the past



Fossil Fuels

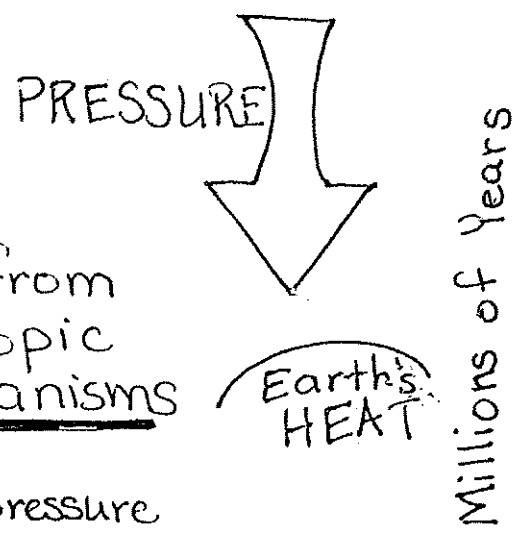
~~~~ FFCON

Fossil Fuels }  
Fossil Fuels }

Nonrenewable  
• can not be used again

Coal → made from peat in swamps

Oil → made from microscopic sea organisms  
Natural gas → more heat & pressure (extreme)



Alternative Energy

~~~~ BiG WiSH

Biofuels → plant/animal

Geothermal → Earth's heat

Wind → air

Solar → sun

Hydropower → water

Renewable  
• can be replenished

## Landforms

CANYON → water weathering rock & eroding  
sediment

DELTA → water depositing sediments at the mouth  
of a river

SAND DUNE → wind depositing sediments in a  
hill

U-SHAPED VALLEY → moving glacier

V-SHAPED VALLEY → moving water

## Planets

M  
y → MERCURY

V  
e  
r  
y → VENUS

E  
d  
u  
c  
a  
t  
e  
d → EARTH

M  
o  
t  
h  
e  
r → MARS

J  
u  
s  
t → JUPITER

S  
e  
r  
v  
e  
d → SATURN

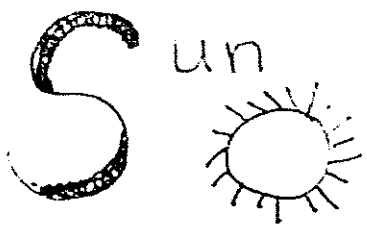
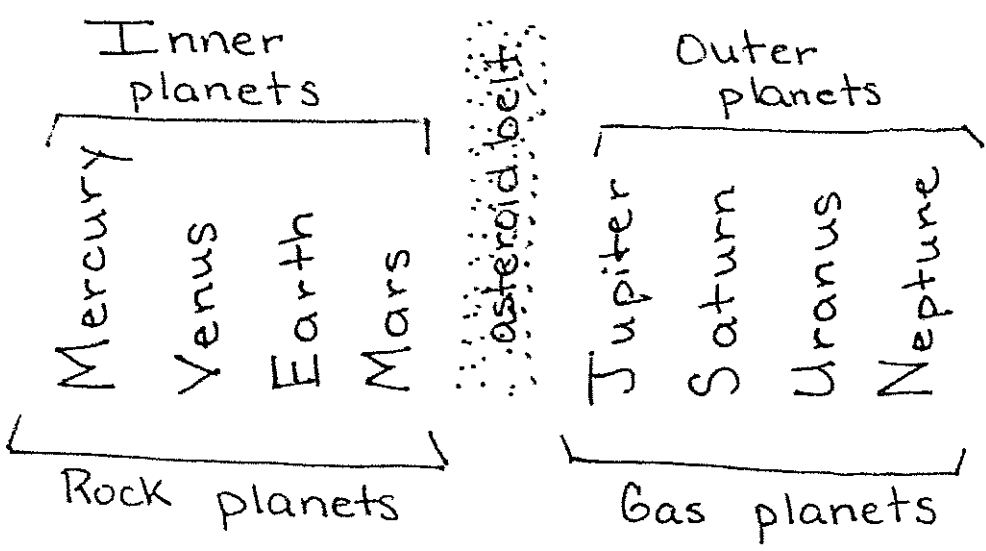
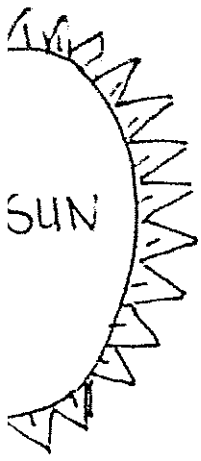
U  
s → URANUS

N  
a  
c  
h  
o  
s → NEPTUNE

Inner  
Rocky  
Terrestrial

Asteroid Belt

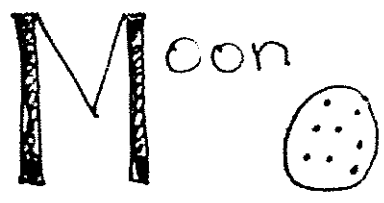
Outer  
Gaseous



- sphere of gas
- medium sized star
- center of solar system
- no real surface
- provides heat & light



- sphere of rock
- 3<sup>rd</sup> planet from the sun
- has life & water
- has an atmosphere

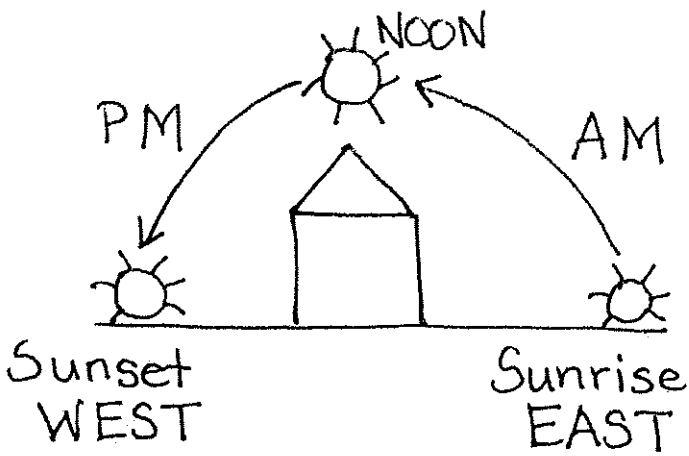


- sphere of rock
- NO life
- very little atmosphere
- many craters
- 29 days to revolve around the Earth
- natural satellite

# Rotation

**R** rotate  
**A** axis  
**D** day  
 24 hours

Causes SHADOWS



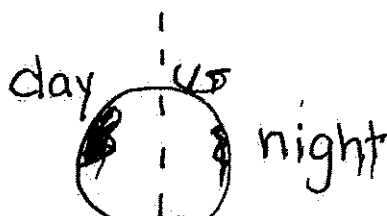
The Sun goes EW!

**R**otate  
**A**round  
**T**he  
**I**onosphere  
**O**ne  
**N**ight  
**D**aily



- to spin
- takes 24 hrs or 1 day

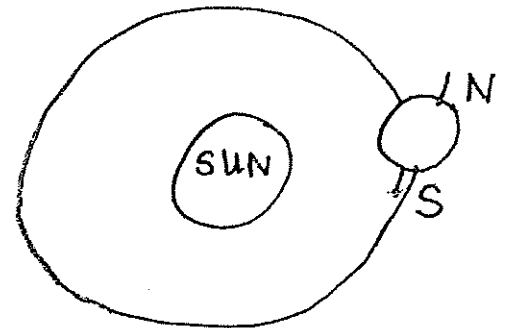
Causes: DAY and NIGHT SHADOWS



# Revolution

**R**evolve  
**O**rbital  
**Y**ear  
 365 days

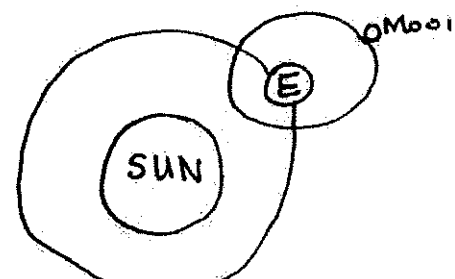
Causes SEASONS



**R**evolve  
**O**rbital  
**R**evolution  
**I**nter  
**T**errestrial

- to go around
- takes 365 days or 1 year

Causes: SEASONS



Gibbous = more moon than shadow  
 $\frac{3}{4}$  of moon visible

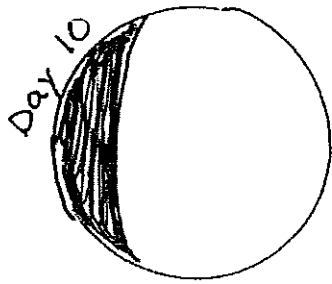
Crescent = more shadow than moon  
 $\frac{1}{4}$  of moon visible

## Moon Phases

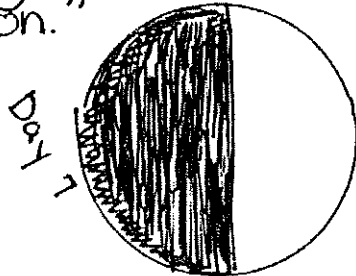
WAXING = growing moon  
"WAX on more moon."

WAXING - appears larger  
WANING - appears smaller

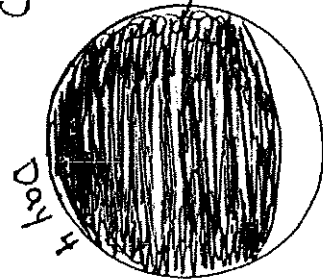
WANING = less moon  
"WANE/WAVE good bye."



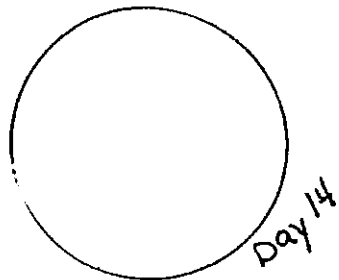
Waxing Gibbous



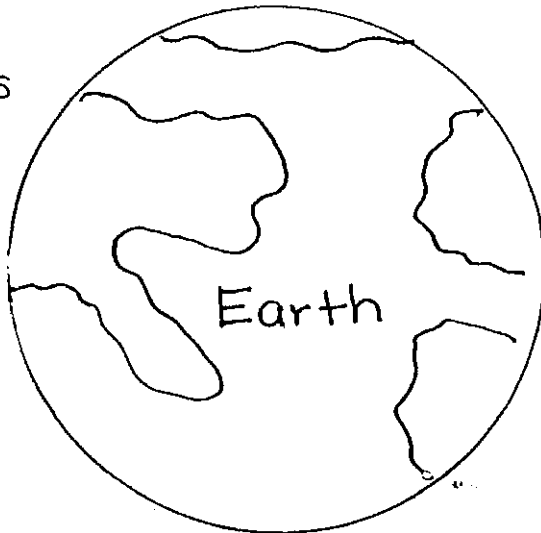
First Quarter



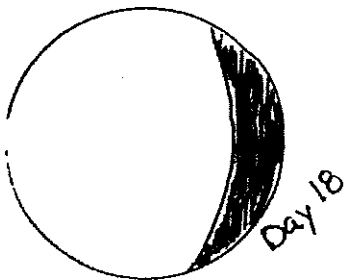
Waxing Crescent



Full Moon



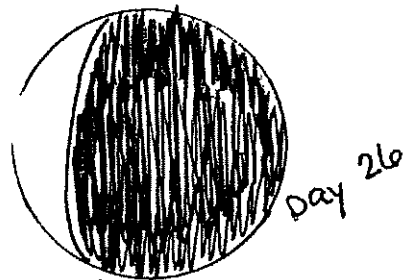
New Moon



Waning Gibbous



Last Quarter  
(Third)



Waning Crescent

SUN

The moon orbits around the Earth.  
**PHASES** are the changes in the amount of sunlight reflecting off the moon. There are 8 phases.  
It will take about 1 month to cycle.

# Cycles

## LUNAR CYCLE

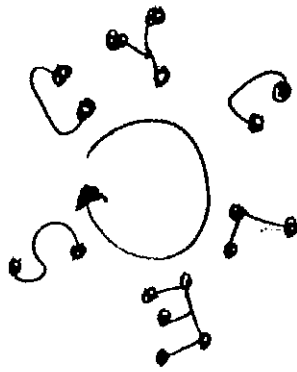
- every 28 days
- caused by the moon revolving around Earth

## DAY/NIGHT CYCLE

- every 24 hours
- caused by Earth's rotation on its axis

## SEASONS

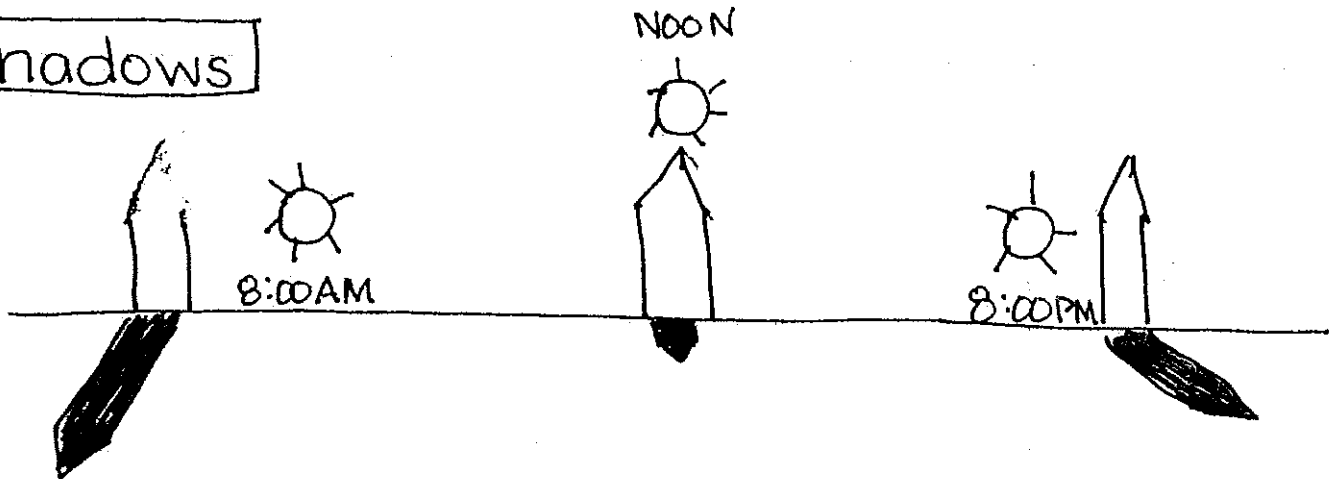
- 4 seasons a year
- caused by the tilt of Earth's axis as it revolves around the Sun



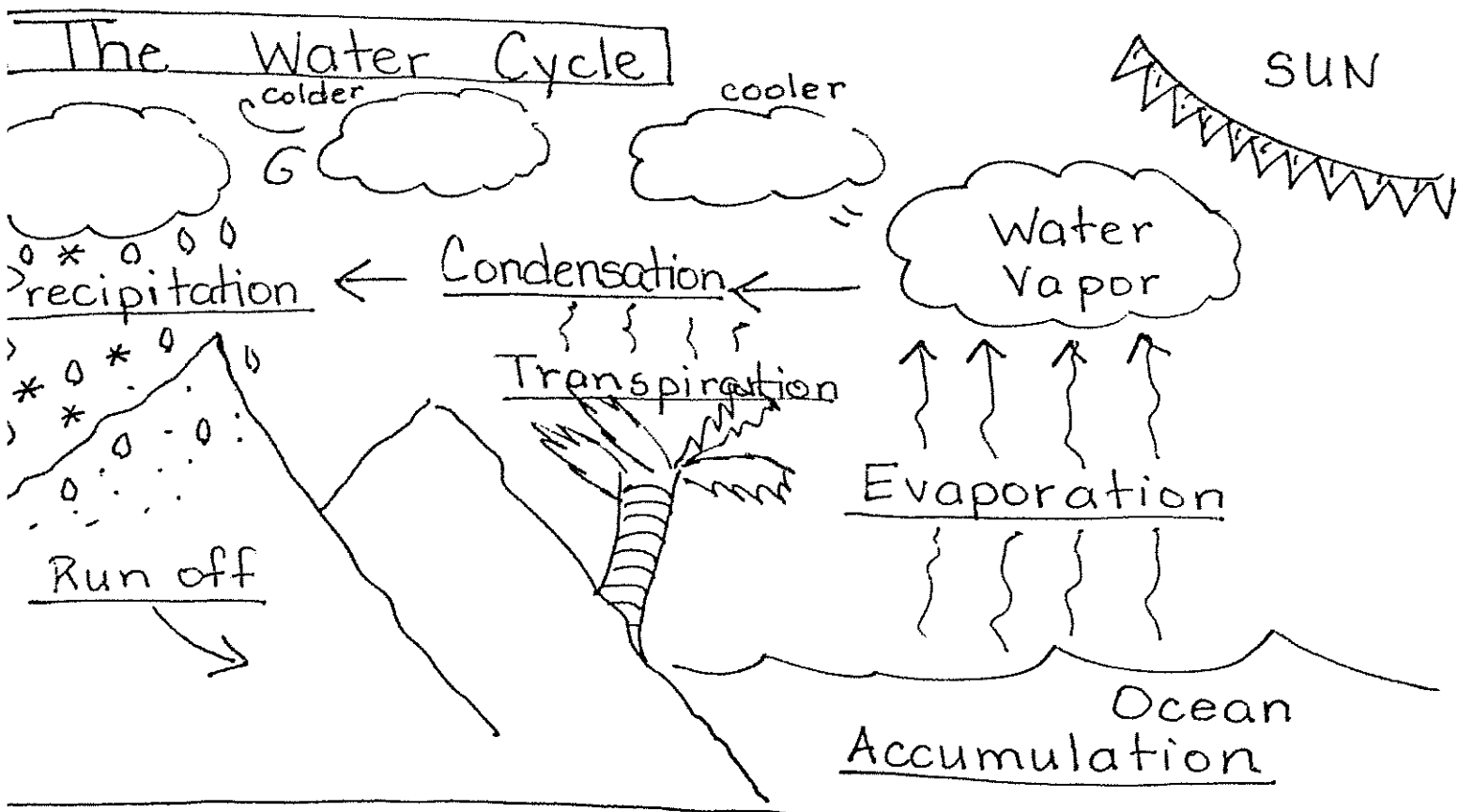
## TIDES

- change between high and low every 13 hours
- caused by the moon's gravitational pull

# Shadows



- Caused by something blocking source of light
- longer in winter due to angle of Sun
- SHADOWS are longest in the early morning and in late afternoon
- close to light source = large shadow

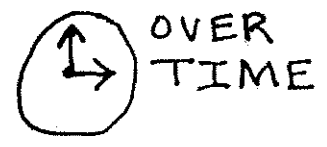


# Weather

atmosphere at  
 a specific time  
 † place  
 condition of the  
 air outdoors  
 today  
 this week  
 yesterday

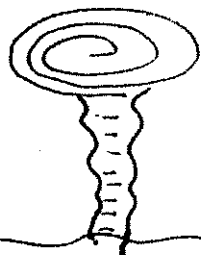
# Climate

- atmosphere over a long period of time
- average or typical weather condition
  - usually
  - annually
  - decade
  - 30 years



# Environmental Changes

NATURAL CHANGES - hurricane



- tornado
- flood
- drought
- sandstorm
- earthquake

MAN-MADE CHANGES - roads built



- homes built
- pollution
- oil spill
- move species

# Non-living Things

Abiotic = non-living  
Biotic = living

Sun

Temperature

Rocks

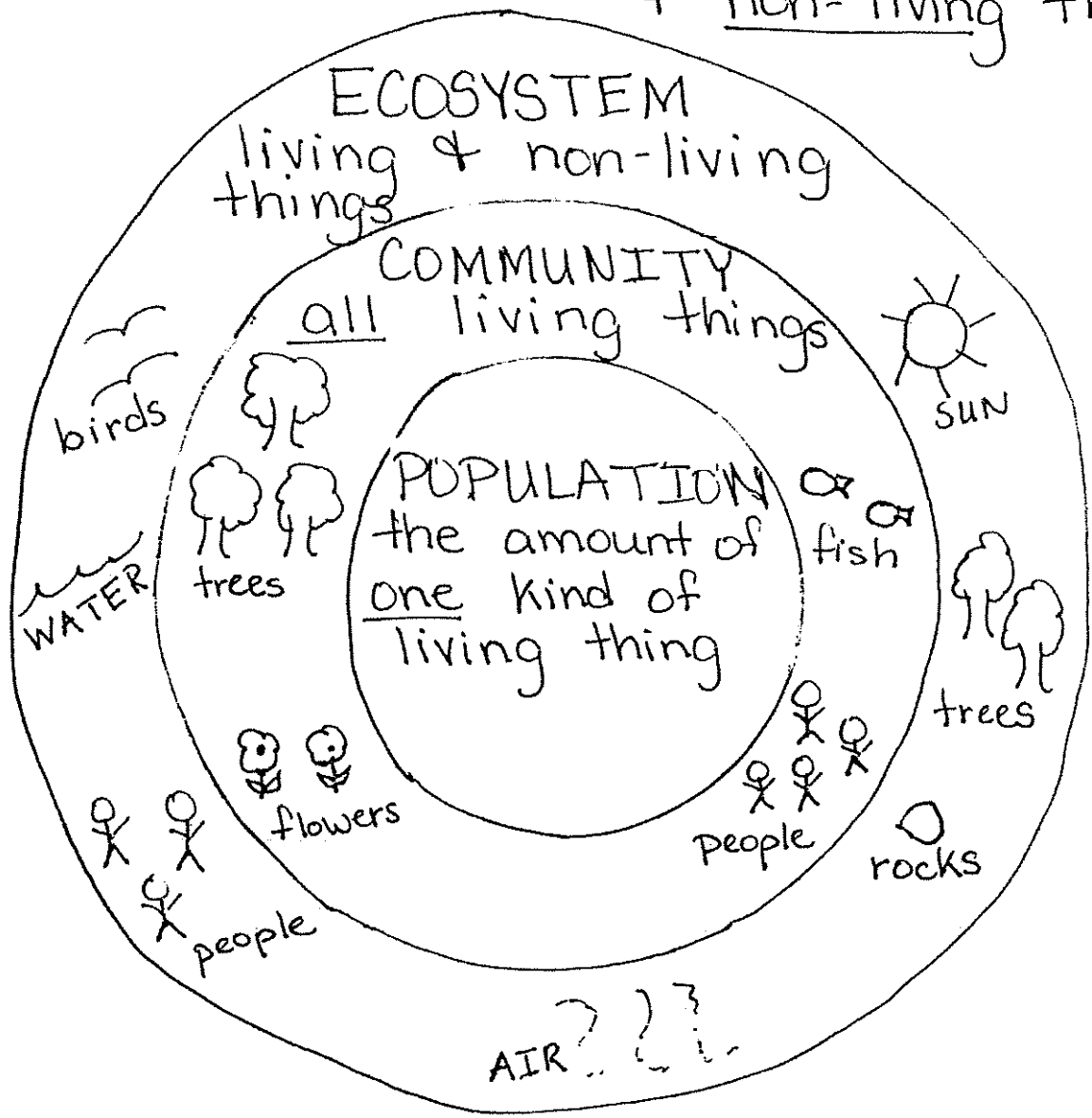
Air

Water

Soil

# Ecosystems

ECOSYSTEM- a community of living & non-living things



## LIVING things

- plants
- animals
- fungus
- bacteria

## NON-LIVING things

- Sun
- Temperature
- Rocks
- Air
- Water
- Soil

# Elements of an Ecosystem

## PRODUCER

- uses suns energy to make its own food



mmmm(plants)

## HERBIVORE

- eats plants



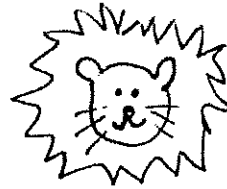
## CONSUMER

- eats other living things



## CARNIVORE

- eats only meat



## DECOMPOSER

- breaks down DEAD organisms



Returns nutrients back into the soil.

## OMNIVORE

- eats both plants & animals



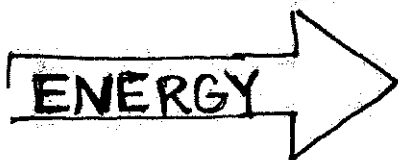
INTERDEPENDENCY - when organisms depend on each other

ALL energy comes from the SUN



FOOD CHAINS  
the flow of

FOOD WEBS  
lots of  
food chains



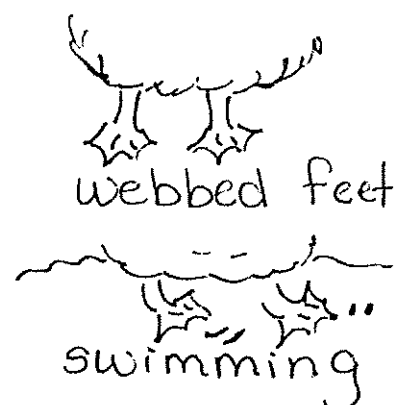
If an ecosystem changes animals must get MAD.

Migrate (move)  
Adapt (change)  
Die

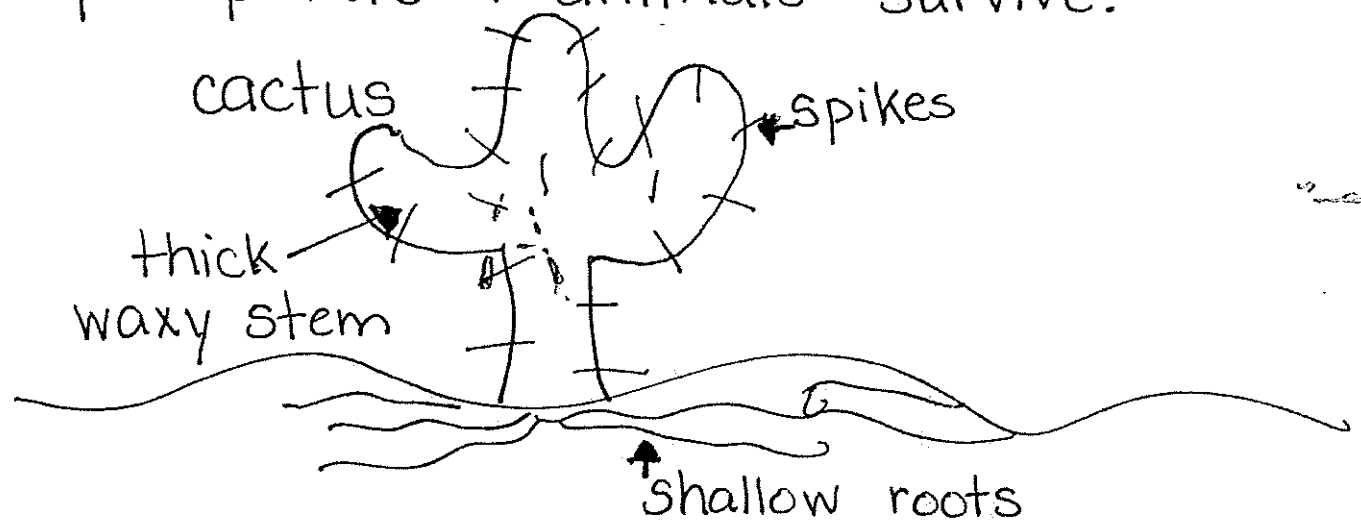
Adaptations

STRUCTURE - the body part

FUNCTION - what it does



Helps plants & animals survive.



# Metamorphosis

## Complete Metamorphosis

1. egg
2. larva
3. pupa
4. adult

4

stages

- butterflies
- moths
- bees

## Incomplete Metamorphosis

1. egg
2. nymph
3. adult

3

stages

- grasshoppers
- crickets

# Traits and Behaviors

**T**RAITS - Physical Characteristics

**I**

nherited

• genetically passed down from parent to offspring

• "I got it from my Mama,  
I got it from my Daddy,  
I got it from my Granny."



- hair color
- bird beaks
- leaf shape

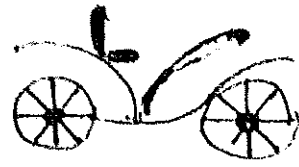
**A**cquired

• influenced by experience or the environment

- scar
- pink hair
- ear torn

# L earned Behaviors

- learn to do it
- something taught
- reading
- writing
- riding a bike

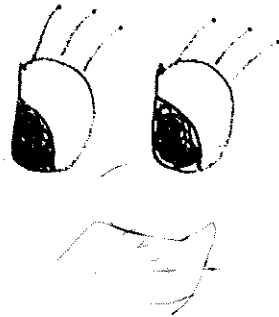


Don't worry you will do SUPER!

**S**how vocab

**U**nderline key terms

**P**ictures and diagrams



**E**liminate answers

**R**echeck work