

COMPOSITION

MODERN®

NAME Michael Plasmeier

SUBJECT Science Log GRADE 3

BOOK

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MTH Michael Plasmeier
HR 130

1. I think space (not air, which is made of particles) is between the particles
2. They visualize it being made of particles because it must be made of something. They also have high powered microscopes.
3. Doesn't the water evaporate and turn to vapor and float away (did this last year)

Going Further Qv

1/3

1. What will you end up with if you keep breaking a rock into smaller pieces?

you will end up with particles \rightarrow then \rightarrow atoms \rightarrow quarks,

* Compound \rightarrow made of more than 1 element

HW
Observations & Inferences

1/3

1. I see (observe) ice and can infer that it's cold to the touch.
2. I see water and can infer that it's wet.
3. I see the stove is orange so it must be hot.
4. I smell spaghetti sauce, so spaghetti must be for dinner.
5. I saw my dad come in with his coat wet, so it is probably raining.
6. I hear pitter-patter on the roof, so it is probably raining.

Particle Theory

+ Notes

1/6

All matter is made of small pieces. (particles)

Notes

1/6

1. A particle model of matter can be used to explain observations of dissolving, pouring and mixing substances.

2. A case favoring the particle nature can be made based on observation and inferences

Lesson 2: Atomic Structure

Notes

1/18

1. All matter is made of atoms.
2. There is a finite number of elements that occur naturally on Earth (92).
3. Atoms of the same element have the same properties.
4. Atoms combine to form molecules.

Terms:

- atom - the smallest particle into which an element may be divided and still be the same substance
- compound - a substance consisting of two or more elements that are chemically combined
- element - a substance that consists of only one type of atom and that cannot be separated into other substances by ordinary chemical changes
- molecule - the smallest unit of a substance that has all of the physical and chemical properties of the substance and that is composed of 2 or more atoms

Concept Map

John Dalton

1/20

Observations

When passing electric current through water the elements are separated
water can be separated into 2 elements
which are always recovered in the same proportion

Questions

What could be inferred from this?

Inference

The particles of different elements have different masses because the mass of oxygen in water is different from the mass of hydrogen in water.

Explanation

The particles of atoms or a single element have identical masses and properties because the same ratio of oxygen to hydrogen was obtained everytime. An atom of element can not be changed into an atom because 2 different substances were found to make up water.

Model

The balls of modeling clay represents atom



1. The model oxygen atom is 8x heavier than the model hydrogen alone supporting his theory
2. The mass is always 8x greater
3. There will always be 8x more than hydrogen

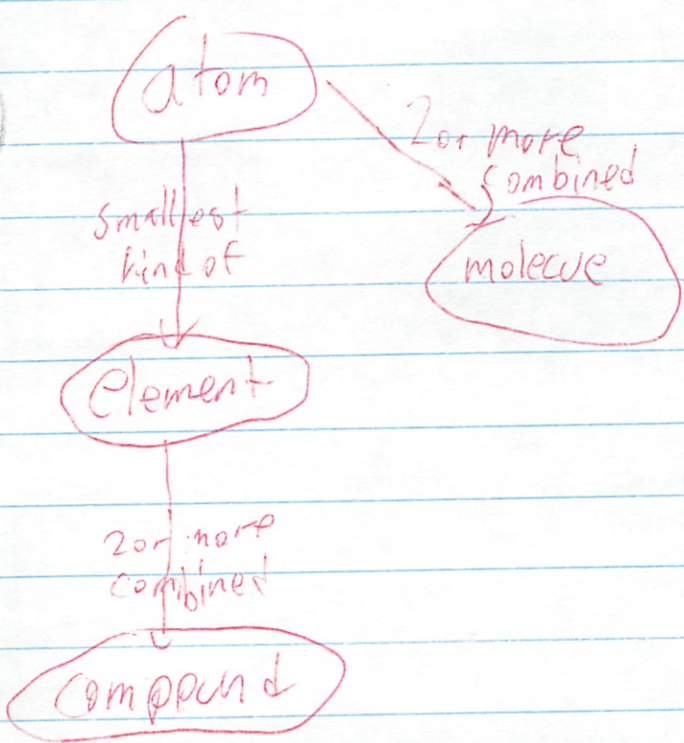
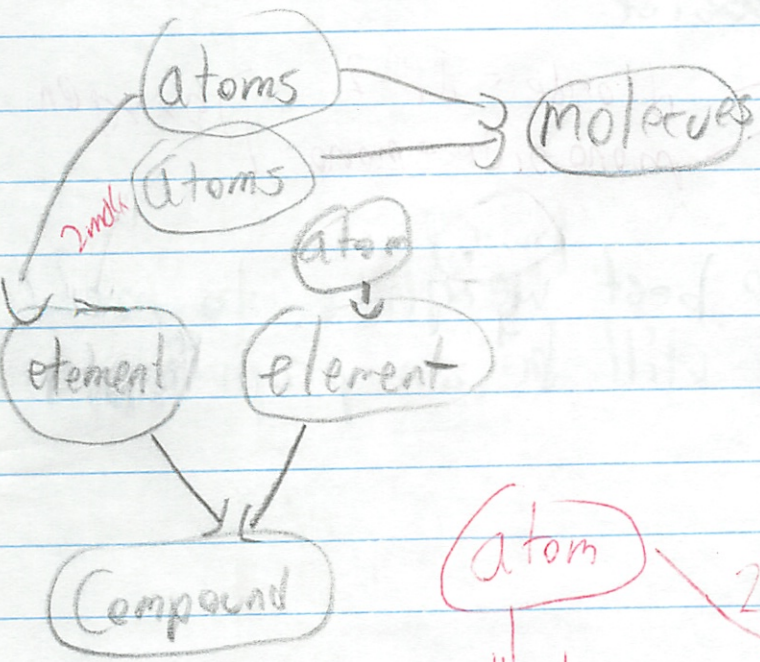
Testing Understanding

p 96

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1. 9/10/2011

- 2 like make element
- 2 unlike make compound



other way around

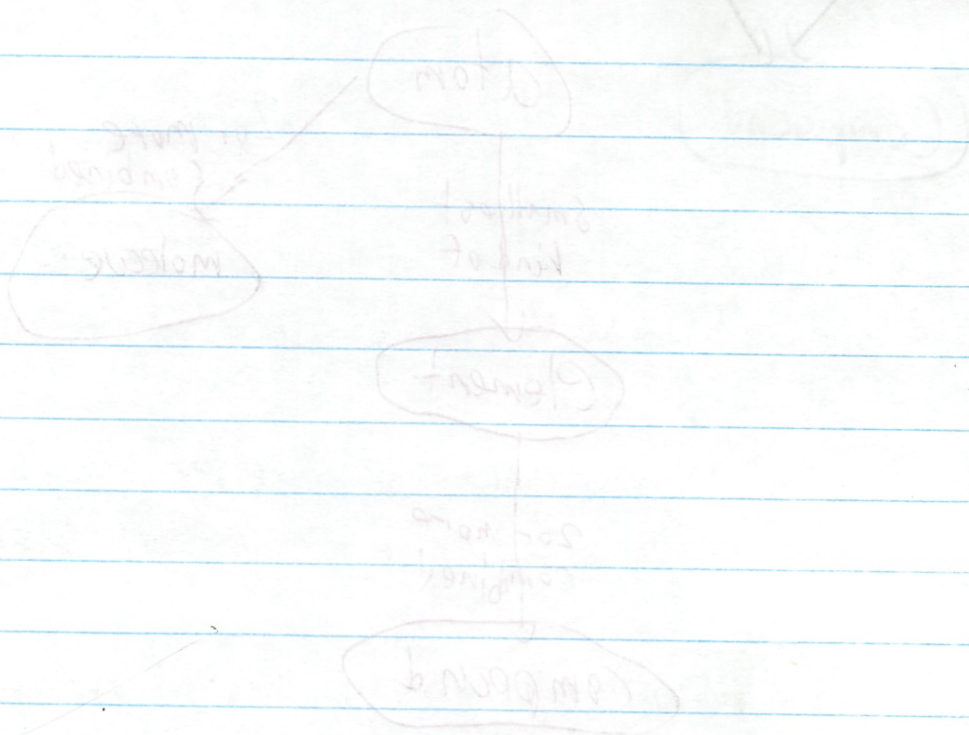


in carbon monoxide

b. There is 1 less oxygen so it would be less massive

(1) carbon $\left\{ \begin{array}{l} \text{dioxide} = \text{di} = 2 \\ \text{monoxide} = \text{mono} = 1 \end{array} \right\}$ oxygen

3. These were the best weights to make a model and still be in proportion



Particles in Motion

Summary

2/1

1. Joseph Black studied the effects of heat on matter.
2. Cohesion ^{is the} force when molecules attach to like particles.
3. Adhesion is force of attraction between unlike particles.
4. The surface of water forms a curve called a meniscus.
5. Water appears to glass to move up the side of a glass.
6. Surface tension hold the molecules in a drop and lets insects walk on water.
7. The kinetic theory of matter says that the particles are in constant motion.
8. Solids have a orderly fixed arrangement.

of molecules.

9. Liquid molecules can move around but are always in contact w/ other molecules.
10. Gas molecules have a lot of kinetic energy and move freely from place to place.
11. In a solid the particles don't have enough kinetic energy to break free.
12. If they get enough energy they will start to move.
13. Diffusion is the mixing of particles because of the mixing of particles.
14. Diffusion occurs quickly in gasses because the particles can move around quickly.

15. Particles move faster at higher temperature, so diffusion is more rapid at higher temps.

16. Liquid stays at 100°C even when heated faster

17. This can be explained because the particles can not move faster without breaking out of cohesion that holds them together.

18. Ice melts when the ice particles gain enough energy to move freely.

19. When substances cool down, it's particles loose kinetic energy and slow down.

20. The cohesion pulls them together and it condenses to a solid.

In 3 Dimensions

p 98

2/2

1. They are all round and bond together not with sticks, The different atoms seemed to be spaced evenly out.
all made of atoms biggest in center

They are different because there are different sizes of different sizes and colors. There are also different numbers of atoms different kinds of atoms

2. 3, 4, 3 There are ^{about} 87 elements not shown and 3 shown.

3. No, they just bond like this

1/5

The Size of Particles

Sugar and Starch Molecules

p 98

2/4

- Sugar (dextrose) and ^(corn) Starch are made of carbon, hydrogen, and oxygen compounds.
- Iodine Solution is a chemical indicator. It is used to indicate or show the presence of starch by turning the sample 'inky blue to black'.
- Benedict's solution is a chemical indicator. It indicates or shows the presence of sugar by turning a heated sample bluish, greenish, yellow.

Data

Exploration 2 Sugar and Starch Molecules

2/9

Period 3

Properties

Dextrose (Sugar)

- white
- powder dry
- granular
- has small grains
- looks like smell
- no odor

Corn-starch

- wet looking
- white
- powder dry
- lumpy
- no odor
- soft

Results

No corn starch molecules
moved through the membrane

Summary, Ex 2

size of Sugar and starch Molecules

2/10

1. The molecules of different substances are different sizes
2. Atoms and molecules are extremely small.
3. Some materials allow certain molecules to pass through while blocking others
4. Sugar molecules are smaller than starch molecules
5. Starch turns blue-black in the presence of iodine, while sugar does not.
6. Sugar turns yellow in the presence of Benedict's solution, while starch does not.

3/10
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- blank -

More Ideas play

2/17

1. Particles in gasses are far apart.
2. Particles that make up solids and liquids must be as close together as possible.
3. Particles move.
4. Particles in hot substances move faster than particles in cold substances.
5. The faster gas particles move, the more pressure they exert on a ball on.
6. Liquid particles can become gas particles, and gas particles can become liquid particles.

Picturing An Atom

127-129

2/24

1. John Dalton proposed that matter is made of tiny, invisible particles called atoms.
2. J.J. Thomson conducted experiments that led to his "plum pudding" model, a refinement of Dalton's original particle theory.
3. Current model: The atom is a hazy region consisting of a central nucleus surrounded by moving electrons. Atoms differ from one another in the number of protons contained in the nucleus. Gold atoms contain 79 protons while oxygen atoms contain 16 protons.
4. Atoms do not have definite shapes.
5. Atoms do contain identifiable parts (subatomic particles)

(cont ->)

p2

Picturing an Atom

127-129

2/29

6. Dalton's model represents the atom as indivisible,
Thomson's model shows the atom contains
smaller parts (electrons).

Reflection p128

1. What are main characteristics of an atom as John Dalton

- indivisible - tiny - hard - spherical

Each has own mass.

John + JJ
Script

2/24

Thompson: You know a lot has changed in the years since you died

Dalton: Well what happened?

Thompson: My experiments shows me that atoms are more like pudding than a sphere.

Dalton: Why?

Thompson: Atoms have protons and neutrons in their nucleus, Electrons are spinning around the outside

Dalton: So there are things smaller than atoms?

Thompson: Yes, and also atoms aren't completely round.

Dalton: There not??

Pudding = soft

ball = hard

Measuring in Science

3/3

Need units to measure

Everything is measured

know things, will fit

Use instruments to provide measurement

- lets you measure

North pole - Equator's 10 million⁶ m iter

metric sysy

$$\text{Area} = l \times w$$

$$\text{Volume} = l \times w \times d$$

a volume of $1\text{m} \times 1\text{m} \times 1\text{m}$ is 1L of water

1L of water weighs 1kg

au = 150 million km (astronomical unit)

300 thousand km a second - light = 1sec

9.5 trillion ? in light year

race times are measured to hundredth of

a second

thermometers measure temp - w/ mercury

Conservation of Matter

Conclusion

3/7

1. What is visible substance was in the funnel when you first placed in the water air

2a. When you placed finger over the funnel and put it in the water, no water → to funnel.

The air takes up place in the funnel - can't escape. Water can't coexist w/ air in same place

3/8

2b. How would you explain what happens when you remove your finger.

The water pressure pushes the air out of the top of the funnel.

3a. Why does the balloon inflate?

The water pushed the air up as before and the air was caught in the balloon.

Conservation of Matter - Cont

3/8

3 b. When you squeeze a balloon, the air is forced out of the balloon and the air pushes the water out of the funnel.

Burning Race

Notes

3/10

1. Oxidation occurs when elements combine w/ oxygen to form compounds.
2. 2 familiar oxidation reactions are Combusting (burning) and rusting.
3. Combustion is an oxidation reaction in which oxygen combines rapidly with carbon to form carbon dioxide.
4. Typically, the oxygen in oxidation reactions is taken out of the air.
5. Fanning a fire makes it burn more rapidly by increasing the air flow and therefore the amount of oxygen available in the immediate area around a fire. The fact that combustion is an oxidation reaction also makes it possible to put out a fire by covering it.

Burning Race

Cont

3/10

6. Oxygen makes up approx. 20% of the total volume of the air. Oxygen is a very reactive element and forms compounds w/ nearly every other element. Compounds that include oxygen make almost 50% of the earth's crust.

Conclusion on pg.

Solution + Mixture

Notes

3/10

Homogeneous - mixture that is uniform throughout. The composition is the same in all directions in the substance. The types of particles observed in 1 direction are the same that are observed in all others. A solution of sugar in water is homogeneous.

(opposite is muddy)

Heterogeneous - mixtures that are not uniform. There are pockets of one substance surrounded by pockets of different substances. A mixture of soil in water to make mud is heterogeneous.

Partners

3/14

Jordan T.

Ethan

Rosie

Eric

Andrew

Pat

Mark C.

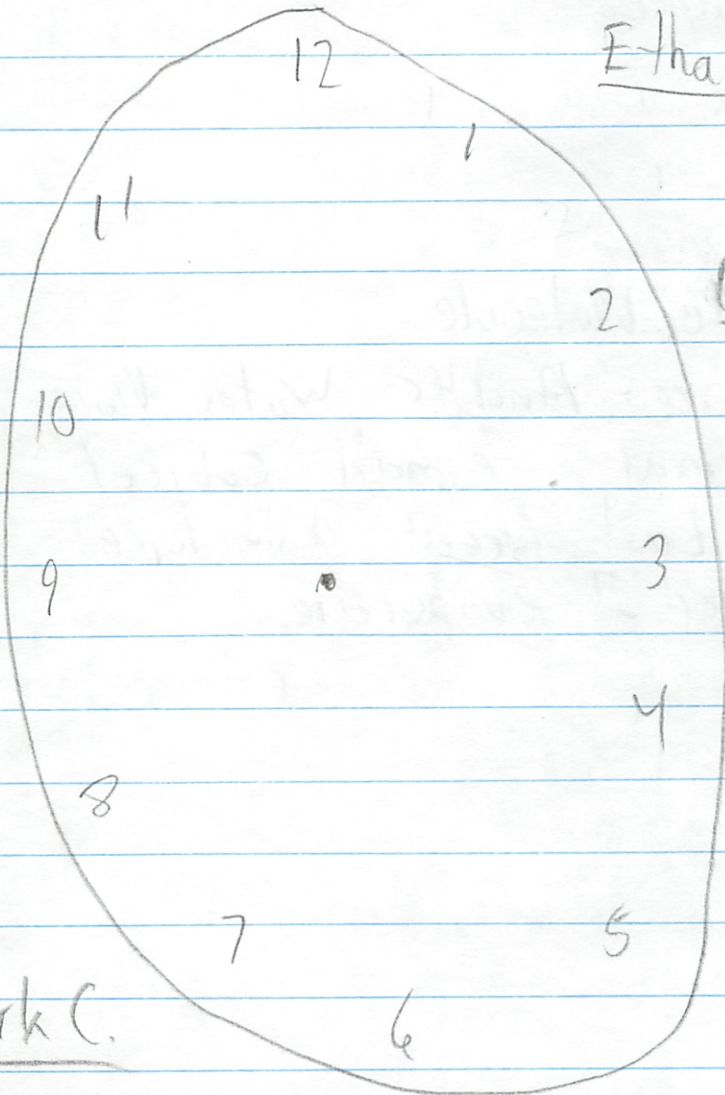
Mark C.

Cathy

Louise

Nick

Greg



Raft Instructions

Due Wed 3/16

R - Role

A - Audience

F - Format

T - Topic

R - Water Molecule

A Audience - Another Water Molecule

F: Format - e-mail subject:

My Last Great Adventure

T: Before I evaporate.

Raff E-mail

3/15

From: Water Molecule # 20,759,541,375,947

To: Water Molecule # 975,401,769,857,321,759

Subject: My Last Great Adventure # 3,571,075

Message: Hi, Did you here about my last adventure before I evaporated. In fact this is my 3,571,075 time that I will make the great journey of being evaporated. Well after my last journey, # 3,571,074, I condensed in a cloud. I then rained down out of the cloud. I was falling and falling through the blue sky. Splat I finally landed on the roof of my house. I was frantically looking for you, my friend, but I couldn't find you. However before long, I was surrounded by millions of other molecules in a drop of water. We rolled what seemed

Raft cont

3/15

like forever down the side of the roof.
We clanged into a gutter and we
began to roll again. This time we were
getting swept along the swift current
to the gigantic hole in the gutter. Finally
our turn came to go down the gutter.
We were swept down and we took a wild
ride downward. It was almost as thrilling
as my last big adventure # 1,875,964
when I was stuck on a roller coaster ride
at the theme park. Well anyway, soon
I ~~rolled~~ fell out of the gutter and
rolled into a puddle. For a little while
I was joined by many more molecules,
but soon it stopped raining. It was a warm
day so soon it was time for me to make
the great journey once again.
of evaporation

Regards # 20,759,541,375,947

Notes

Exp. Design

1. For the dependent variable you can use quantitative or qualitative data.

a. quantitative include measurements w/ standard scales, such as %

b. qualitative include verbal description or measurement w/ non-standard scales for example, the color or clarity

1. IV
2. DV
3. Rep Trials
4. C
5. Control

Exp Design Cards

3/29

Gloria 1. color of mashed potatoes

2. ^{# of} students choosing

3. 100

4. same bowl

same food - type (peel, instant)

same school

same age kids

Scoop size

could change
order of
bowls
type of food

5. none (should use white potatoes)

Susie 1. Height of the hole

2. How far the water squirts

3. 1

4. Same cartons

same size holes

same amt of water

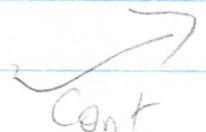
5. None (no hole)

Improvements

do more trials

specify liquid (type, temp) and specify container, hole shape & size

have a control



Sandy 1, amt of seeds

2, which ways it looks ebad

3.1
4. Same cups
same mixture of seeds
same time periods
amt water

Imp use 1 type of seed
control
define cup
better DV-specify
light, temp, water
procedure

5. None (d'ld plant multiple cups)

Esther 1, type of insulation

2, temp of water in cup

3, 1

4, same jar

same lid
amt

same type of water

same ^{amt of} sunlight

same lids

same amt of
insulation

5. None (should have jar w/ no insulation)

Improvement
add control

add repeated trials

specify shape, color of jars

initial temp

time in sunlight

Cont
→

Petes

Exp Design Cards cont

1. amt of distilled water in ml
2. height of plant should have defined
3. 10 ~~mm~~ amt of seeds types of pots
4. same type of water - same amt of soil ^{type}
should have same sunlight time - watering freq.
5. pot w/ recommended amt of water (150ml)

Her

Improvements

- type of seed (age, brand, species)
- Pots must be identical
- Specify light, temp, location
- Make more measurements of DV
- define how to measure height

Writing Data Pairs

4/1

Points on a graph are represented by a set of data (ordered pair). The values for horizontal (x) axis is written 1st, followed by corresponding value for (y) vertical axis.

$(10, 48\frac{1}{2})$

The 2 numbers (a pair) are separated by a comma. Both values are placed in parentheses.

How did it happen

Tsunami,

On Dec 26, 2004 at a subduction zone, a piece of the Eurasian plate rushed upwards and displaced a lot of water quickly. The water shot upwards and gravity pushed it back down forcing it to expand out in all directions. It travels as a huge wave expanding faster and faster till it broke on the coast of South Asia. The massive wave flooded many homes and killed many people. 280,000 people died because they weren't warned. Could this have been prevented?

Determining Scales for Axis

4/6

x - take largest value - smallest #

then / 5 and round to convenient #

ex $40 - 10 = 30 / 5 = 6$ round to 5

Do same to y

Summarizing Trends

4/6

Because experimental data are subject to error, data points on a graph are not directly connected. Instead a line-of-best fit that communicates the general data pattern used.

To construct a line-of-best fit draw a line about which an equal number of points fall to either side.

* Underneath graph write a summary statement:
As the paper towel is submerged in a water for longer, the water-level will rise.

Investigating Human Traits

Invest 54

4/15

How much variation is shown by students in your class

1. What causes variation among humans that you observe in this activity?

We noticed that some traits occurred more than others. For example 18 people could roll their tongues, while only 4 could not.

We think these changes are caused by genes.

2. What patterns do you see in the data for the different characteristics?

Some traits a lot of people have like tongue rolling, and finger rolling. Most people could do both things. We did not take specific measurements for people being able to do both.

3. What characteristics are easier to categorize. Why?

How? In what way. ~~Rolling~~ Finger, and Tongue Rolling are easier to graph because you can or you can't, there is no in between. Height + Armspan wasn't collected on the group data table right, so it is hard to graph.

Invest 54
Final Conclusion Notes

4/27

- We get traits from our parents or grandparents, and differences in the environment or during development and growth.
1. Nature vs. Nurture or heredity vs. environment is used to distinguish between traits that an individual is born w/, either due to heredity or other factors, and traits that an individual acquires as a result of experiences, such as family experience or education.
 2. Skin color and height both have a basis in heredity, but skin coloring can be affected by the amount of sunlight which a person is exposed, and height can be affected by dietary factors.
 3. Age and what a person has eaten recently are 2 factors that might affect PTC tasting, which does have a genetic basis.
 4. Heredity (or genetics), is the study of how traits are passed from parents to their offspring and subsequent generations.
 5. PTC tasting is an all-or-nothing trait while height shows

54 Notes cont.

Continuous variations over a long range, and eye color shows 4 or 5 distinct color families, but variation of those colors exist as well. Tongue rolling maybe difficult to categorize.

Invest 55

Plants have Genes too

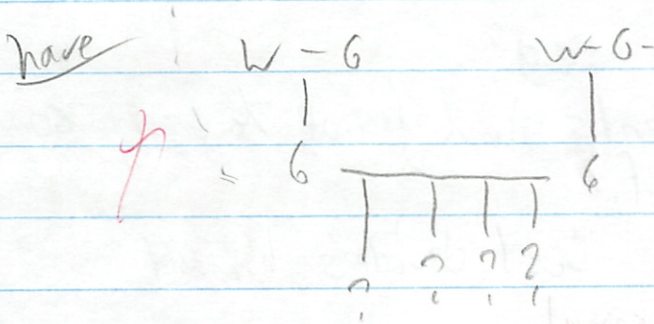
4/27

Prediction

I think that $\frac{1}{4}$ of the plants will be white and $\frac{3}{4}$ would be green. This is because dominate recessive genes. The green trait is dominate so about

		Parent	
		w	G
Parent	w	ww	wG
	G	Gw	GG

$\therefore \frac{1}{4}$ would have both be white



But that is for parents, then will the GG, not count
Parents = Gw Gw

yes that is what diagram shows
so prior conclusion \rightarrow stands

Invest 57 Copycat

Analysis

1. Classify as asexual or sexual reproduction

a. Orange cat w/ black cat

- Would be sexual - 2 parents.

b. Cutting from flower in water

asexual - 1 parent

c. w/ geranium bred w/ another

sexual - 2 parents

d. sperm fertilizes an egg

sexual - 2 parents - don't have to make contact

e. worm splits in half.

asexual - 1 parent - just divides himself

f. cloning. Cloning is asexual

asexual - DNA is from only 1 parent

2. Would you clone yourself?

That's a big controversy. Do you clone humans. The technology is not there today to clone humans. I want to be unique, + could be complicated.

Invest 56 Marfan Syndrome

Analysis

1. Signs have Marfan Syndrome:

loose arms + joints bending fingers tall

long face slender stature easily tired out curve of spine

2. What causes it? $\frac{3}{4}$ case - inherit it $\frac{1}{4}$ cases - spontaneous mutation during reproduction

Genes - you inherit it

3. Can you catch "it"?

No. You need to inherit it from your parents!

4. Can't exercise too hard, ^{Marfan} have more frequent heart attacks, can show off to friends (Effect on your life)
Maybe lost eyesight

5. Question to ask ourselves \rightarrow See ^{2nd} Next Page #1

is it dominant or recessive - chance that I would have it - chance kids would have it

6. How would behave towards kid w/ Marfan?

Just the same. He wouldn't be as good as sports, just like me, so just the same.

Invest 56: Joe's Dilemma

Qu

Would you want to find out if you had a genetic disease?

Yes, so I would know if my kids could get it ~~so~~ so that way I can avoid dying because if I knew I had a disease like Marfan syndrome I wouldn't play Basketball too hard so I wouldn't have a heart attack and die.

Have condition \rightarrow What's causing it

SG: Soes' Dilema

Questions

1. What questions would you ask before being tested. I 2

- is it dominate or recessive
- what is the chance I would have it
- chance kids would have (could be still) play soccer.
- chance kids have it if married g'l w/ Marfan
- how much \$ cost the test 'Are there any medicens'
- ed'iger way? If I have it - be further costs?
- is it covered by insurance Do I have to visit hospital"

2. Advantages

- change lifestyle
- make kids not have it
- live life to fullest
- don't over expect myself
- know if medison comes along in future
- believe in scienc
- know what it is when can't see

Dissadvantages

- \$\$
- can't change it
- don't know that you will die
- keep to nature
- can't play soccer

56. Revisit Analysis

5. It seemed like it was dominated

50% chance kids will have it

b I already seen movie before - so results invalid

Dr says would have more doctor visits

Do I get out of
gym class.

6. I could care less ... that he is different.

It's not all that serious of a disease, and in school
we always are told to accept others' differences.

57 Copy Cat

Question

5/9

Difference between sexual + asexual

Sexual - 2 parents - traits from both parents (2 unlike cells)

Asexual - 1 parent - (clones) identical from parent

57 Copy Cat

Stop to think

5/9

1. If bacteria divide, which is original.

Hard to tell. One one \rightarrow mutations or a smaller size. If both have identical DNA to the original, and both same size - can't tel.

Or say that both halves are "children"

2. How do multi-cell organisms reproduce asexually?

They break parts of themselves off or

they produce "runners" or when you take cuttings

3. Why are identical twins similar then fraternal twins.

The DNA mixes in egg, and egg is the same, so because identical from same mixture = same fraternal - sperm gets 2 eggs and 2 separate mixtures occur

4. How is clone different from identical twin

An identical twin is still a mixture from 2 parents.

A clone is from 1 parent.

G2 Analyzing Genetic

Data

5/10

1. Seeds are the result of sexual reproduction

Green	Yellow	Non Sprout
4	3	-

We can distinguish between these 3 seed coats

58 Creature Features

Challenge Q

5/11

How are traits passed from parents to offspring, through genes. The sex cell contains half of the chromosomes, but a sperm meets an ova, the zygote has 56 chromosomes, a combination of traits from the mother + father

Step to think 1 - all of 1 color - what ever color is dominate

Step to think 2 - Blue is a dominate trait over orange

ST 3 - I was correct

Alt Hyp 58.2 - Picked C - because I know what these investigations are about

G2 Plant Genes

Follow-Up

1. The grandparents are a normal green flowering tobacco gene (GG) and a purebreed strain of albino mutants (gg), which do not produce the chlorophyll responsible for the green color of plants.

2. The parents of seeds germinate are the cross between the GG and gg plant

GG × gg

Gg	Gg
Gg	Gg

ni savore

G/g	G	g
G	GG	Gg
g	Gg	gg

3. The parent offspring (Gg) get the G from the green grandparent and the g from the albino grandparent.

4. Next Generation

1/4 are albino

Gg × Gg	G/g	G	g
GG = green	G	GG	Gg
Gg = green	g	Gg	gg
gG = green			
gg = albino			

62 Follow up

Cont

5. These parents (Gg) all appear green + totally normal but they have a hidden recessive genes and thus called a carrier of the pale yellow traits (Also called hybrid or heterozygote)
(See diagram - 1 pg)

6. Since GG and Gg are both green in the ratio of $\frac{3}{4}$ green and $\frac{1}{4}$ albino (3:1 phenotype) the phenotype describes the physical characteristics it is a $\frac{1}{4}$ GG, $\frac{1}{2}$ Gg, $\frac{1}{4}$ gg genotype (1:2:1 genotype) A genotype is the genetic makeup of characters. Genotype + environmental conditions determine phenotype.

7. Gg x Gg

60: Mendel's

Notes

5/24

Why do we breed dog, cats, etc...?

People want the best traits in the animals so they hope to combine + breed 2 animals to take the best traits from each,

Breeding ~~is~~ refers to the process of selecting 2 parent individuals to mate (animals) or cross (plants) in order to produce a desired outcome or improvement in the offspring

Ques cont

Stop to think 3: How is 59 like Mendel's plants.

The coins model Mendel's' experiment by giving a trait at random from both parents to offspring

Analysis p. 38

1. What dominate/recessive traits

See page

Sci Def for

Dominant

5/24

A dominant trait is a trait that you can always observe if at least 1 allele for the trait is present. For example, if the blue-tail trait is dominant and observed even if an allele for the other trait (orange tail) is present.

59: Gene Combo

5/20

O Tails - blue tail (T)

H Heads - orange tail (t)

Blue tail is dominate to orange tail color

Reminder T = blue tail gene

t = orange tail gene

Analysis

5/23

1a. blue = 89

$$\text{ratio} = \frac{89}{31} = 2.87$$

orange = 31

b. 3:1

c. About $\frac{3}{4}$ (3:1) of the offspring have blue tails and $\frac{1}{4}$ (1:3) have orange tails

↓ Blue is dominant 3 combos for blue, 1 for orange

2. a-d = 25

H	HT	HT
t	tH	tt

3. No, it's just the expected probability, actual is different

4. Yes, because the coin-tossing gives $\frac{1}{2}$ chance like a parent giving a gene at random

60: Mendel

5/19

Stop to Think 1: What qualities did Mendel have?

He must have had patience, persistence, good observation skills. He could not have been too shy to share his findings. He had to be good at science + math

Stop to Think 2: advantages to using pea plants

- grow quickly
- make lots of seeds
- simple traits that come in 2 variations + don't blend

Stop to Think 2b: Why so many crosses?

To have a high # of repeated trials

(cont.)

60. Mendel

5/24

	Flour	Seed	Wrinkled	Pod
Ratio	Purple vs White	Green vs Yellow	Wrinkled vs Smooth	Green vs Yellow
	Purple	Yellow	Smooth	Green

500
Paper

- Again actual vs. theoretical - error factors may contribute
- 1:3 means it happens 1 time ever (1/3) times or $\frac{1}{3}$
ratio one:another *frac. Part whole*
- More samples, etc - to get more conclusive data
- Math is important in every science and also other subjects

6:1 Analysis

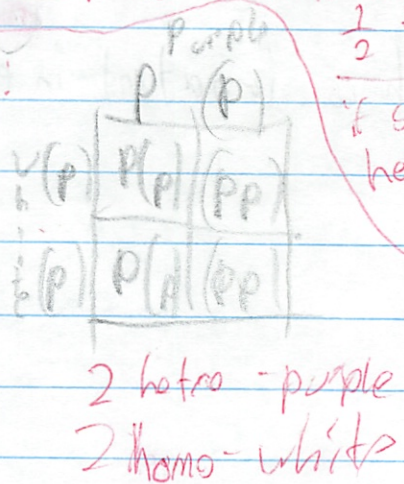
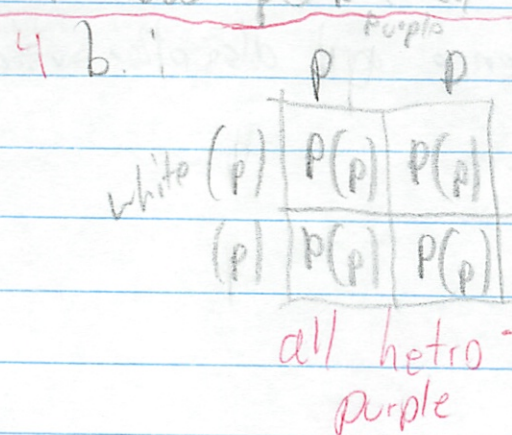
1. They were both written to be similar, and it's a different way to do the same thing (1 chart, 1 flip) (1 homo, 1 actual)

2. F = purple f = white
 b. S = smooth s = wrinkled

3. The phenotypic ratio has an = chance of pe, eg passed on and it is sometimes

3. The dominant trait is stronger or darker (is a trans)

4. a. ^{a few} cross purple w/ white or look at family to see if white offspring com



1/2 the time
if so, then hetro...

63: Show Genes

Stop to think Questions

5/27

Stat 1 - Cell division in single cell org. is asexual reproduction. In multi-celled org it is to create new cells to replace or add to old ones.

Stat 2 - The # of chromosomes would keep being cut in half till none are left

Stat 3 - That way when they join, there would be 46 not 92

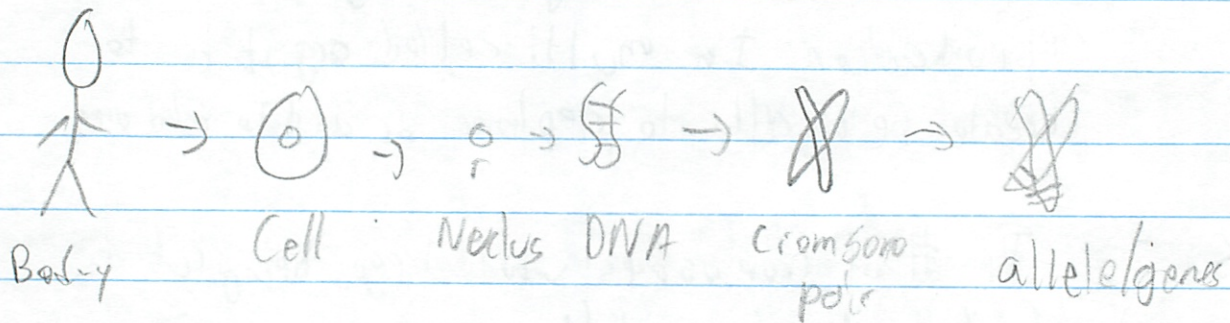
Stat 4 - Which chromosome is given is random and also enviro factors, and multiple genes for a trait

Stat 5 Mutations occur when the DNA is copied and a mistake occurs

Analysis 1

Next pg

63: Andls's



A person's body contains many cells, In the middle of it is a nucleus - inside is the DNA, This is made of 23 chromosome pairs which have many genes on them.

Useful Information

MULTIPLICATION TABLE

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

METRIC MEASURE

Measures of Length

10 millimeters	= 1 centimeter, cm
10 centimeters	= 1 decimeter, dm
10 decimeters	= 1 meter, m
10 meters	= 1 decameter, dam
10 decameters	= 1 hectometer, hm
10 hectometers	= 1 kilometer, km
10 kilometers	= 1 myriameter, mym

Measures of Weight

10 milligrams, mg	= 1 centigram, cg
10 centigrams	= 1 decigram, dg
10 decigrams	= 1 gram, g
10 grams	= 1 decagram, dag
10 decagrams	= 1 hectogram, hg
10 hectograms	= 1 kilogram, kg
10 kilograms	= 1 myriagram, myg
10 myriagrams	= 1 quintal, q
10 quintals	= 1 millier or ton, MT or t

Measures of Capacity or Volume

10 milliliters, ml	= 1 centiliter, cl
10 centiliters	= 1 deciliter, dl
10 deciliters	= 1 liter, l
10 liters	= 1 decaliter, dal
10 decaliters	= 1 hectoliter, hl
10 hectoliters	= 1 kiloliter, kl

1 liter = 1 cubic decimeter;
1 kiloliter = 1 cubic meter

CONVERSION TABLE

When You Know:

Inches
Feet
Meters
Yards
Miles
Kilometers

You Can Find:

Millimeters
Meters
Feet
Meters
Kilometers
Miles

If You Multiply By:

25.4000
.3048
3.2809
.9144
1.6093
.6213

Sq. Inches
Sq. Feet
Acres

Sq. Centimeters
Sq. Meters
Hectares

6.4515
.0929
.4047

Cu. Inches
Cu. Feet
Cu. Yards

Cu. Centimeters
Cu. Meters
Cu. Meters

16.3866
.0283
.7650

U.S. Gallons

Liters

3.7854

Quarts

Liters

.9460

Pints

Liters

.4730

Ounces

Grams

28.3495

Pounds

Kilograms

.4536

Tons

Metric Tons

.9072

TEMPERATURE

Under the Metric System, temperature is recorded in degrees Celsius instead of Fahrenheit.

Some ideas of the difference between these can be realized if you consider room temperature of about 68° Fahrenheit, would be 20° Celsius. Water would freeze at 0° Celsius, which is 32° Fahrenheit.

U.S. MEASURE

Long Measure

12 inches	make 1 foot
3 feet	make 1 yard
6 feet	make 1 fathom
5/2 yards	make 1 pole or rod
40 poles	make 1 furlong
8 furlongs	make 1 mile
69/6 miles	make 1 degree
320 rods	make 1 mile

Miscellaneous

12 units	make 1 dozen
12 dozen	make 1 gross
20 units	make 1 score

Solid or Cubic Measure

1728 cu. in.	make 1 cu. foot
27 cu. ft.	make 1 cu. yard
128 cu. ft.	make 1 cd. wood
24 1/4 cu. ft.	make 1 perch stone

Note: - A cord of wood is a pile 8 ft. long, 4 ft. wide and 4 ft. high; therefore, 8 ft. x 4 ft. x 4 ft. = 128 cu. ft.

A perch of stone or brick is 16 1/2 ft. long, 1 1/2 ft. wide and 1 ft. high.

Liquid Measure

2 cups	make 1 pint
2 pints	make 1 quart
4 quarts	make 1 gallon
31 1/2 gallons	make 1 barrel
63 gallons	make 1 hogshead

Square Measure

144 sq. in.	make 1 sq. ft.
9 sq. ft.	make 1 sq. yd.
30 1/4 sq. yds.	make 1 sq. pole
40 sq. poles	make 1 rood
4 roods	make 1 acre
640 acres	make 1 sq. mile