Name Michael Plusmeier **Period** 3 4 **October** 1 **2004**

National Geographic Video Presentation: Cyclone

Anyone at anytime, can fall victim to nature's raging furies. Around the globe, hurricanes, tornadoes, and typhoons strike – without mercy and often without warning. During the 20th century, more than half a million lives have been lost to the violent forces of cyclones, tropical storms, and the wicked weather swirling in and around them.

National Geographic chronicles some of the world's most shocking storms with gripping footage and scenes of heart-thumping, real-life drama: roofs ripped from houses, trees snapped like toothpicks, and trucks tossed about like children's toys. From twisters sweeping across the Midwest's "Tornado Alley," to the vicious force of Florida's Hurricane Andrew, to the deadly powerful typhoons of the pacific, the forces of nature are among the most powerful forces on earth.

Directions: In the space provided below, write five (5) facts that you learned while watching this video. *TURN THIS PAPER IN BEFORE LEAVING.* Thanks so much ☺

1. Cyclones occur on every content except Alaska,
2. 1/2 a million people died in 20th century
3. Most US tornados occure on Tornado Alley
4. The National Weather Service tracks and warns about hurricans
5. Hurricans have a narrow but powerful field

Volcano Video

Michael Plasmeier Notes

1. Earth is lit by 2 fires, one above, one bellow.
2. In the past 100 (1000) years, volcanos have killed 3000 (300,000) people
3. Scientists can be wrong about when volcanos erupt.
4. In the past decade, 20 (3 decades, 30) scientist have died.
5. The core of Earth reaches temperatures of 12,000°F (12,000)
6. 80% of volcanos are under water
7. Hot springs are 700°F
8. New islands forms from Volcanos
10. Hawii is the best place to watch activity.
11. A Volcano in Japan (Sakurajima) is reported in the weather
12. [illegible] ash is most dangerous after it cools.
13. In 1860, it was winter all summer long.
14. Mt. St Helen's 1980 erruption was equal to 80 (5) atomic bombs
15. Pyroclastic Flows are unpredictable and dangrous
16. The Krafts film and study volcanos
17. The Krafts die doing what they love best on Mt. Unzen

Michael Plasmeier, Pat Maloney, Meredith O'Neil, Melissa McGowan

Meredith- Hey Melissa, what's up?

Melissa - Nothing much Meredith

Meredith-Did you know that the San Andreas fault moved six feet in fifteen seconds!

Melissa: No fooling That was the date of the California earthquake!

Merdith: Did you know that normally the plates move only a few CM a year!

melissa: Wow!! The earthquake must have occurred because the pressure built up between the plates.

meredith: well, you know how the old saying goes!

both: If it hasn't moved, watch out!

Meredith: Whoa! You know Earthquakes are dangerous.

Melissa: Did you know that buildings can fall down during earthquakes

Meredith: Yea, you don't want to be on bridge because you know what can happen!(nudge elbow)

Melissa: BAM

Meredith: lets say you on the ground with a large concrete block falling down towards you very fast!

Melissa: SPLAT! That's the end of it!

meredith: So remember, watch out because eathquakes are dangerous!

Melissa: Do you know about the ricter scale??

meredith: Sure do! It tells you how much energy is released in an earthquake.

melissa: And each step is 32 times more powerful than the next. Golly, all this talk about earthquakes are reminding me about Volcanos which are equally dangerous!

Meredith: Got that one right! Did you know that a single volcanic eruption can knock down trees 25 km away like Mt. St. Helens.

melissa: Wow! I would have never guessed!

meredith: Melissa did you know that volcanos shaped our earth billions of years ago??

Mellisa: And is still rapidly changing our earth's surface! This is more then any other land feature.

Meredith: And did you know there are over 1,500 volcanoes, just on land.

Melissa –Wow that's interesting. But, did you know that an underwater earthquake near could cause a tsunami in California and did you know that tsunami are huge waves ???

(pat and mike enter the room)

Pat- We heard you guys talking about our favorite things, earth quakes and volcanoes.

Melissa- Yeah!

Michael

~~Meredith~~- Do you know how volcanoes form?

Melissa- No?

Michael- Well, let's tell you.

Pat- Ok, to know how volcanoes form, you need to know about how the plates move under the Earth. And then you will find out how Earthquakes occur.

Michael- You ready to get started!

Everyone else- Yes!

Michael- Ok. Let's go! Underneath the earth there are many layers. The deepest layer is the core. Did you know that the core is hotter than certain parts of the sun?

Girls: Wow! That's hot. You must need a lot of sunscreen.

Pat: Then in some layers the rock is so hot that it flows. That layer is called the ~~lithos~~phere. And then on top of that is he atsenosphere.

Michael: Which is divided into continental plates. The plates move around on top of the lithosphere. They can move together. When 2 continental crust plates move together they form mountains.

Pat: And when an oceanic plate move together the oceanic plates subduction under the contental plate.

Michael Wow! Did you know that subduction zones are the leading cause of volcanos? When the oceanic plate subducts, lava gets trapped underneath.

Pat; And gets pushed up And that's how volcanoes form.

Meredith: So we (point to Melissa) talked about Earthquakes, and how dangerous they are. We even managed to give you an example an earthquake.

Mellisa: and then we talked about volconos, where lava spues out and creates more land

Pat: And then we worked on the contental plates

Michael: And showed how the plates move to form volcanos

~~The End~~ Meredith: And so you can remember ...

Mellisa, there's a little song

Earthquakes + Volcanos

Michael Plasmeier Video 11/12

Earthquakes do much damage to bridges
Trees 25 km away blown down during Mt. St Hellens

Surface changes fast

Core is hotter then surface of sun

Plates are always moving

Edges are where plates meet

When pressure builds up, plates may sudden (Earthquake)

when their is no movement, earthquake may happen

Island is part of Mid-Atlantic Ridge

Richter Scale is energy released

Magma occures when their is a weak spot in crust

1,500 Volcanos on land

* Subduction causes Volcanos

Volcanos made the land billion's years ago

Video presentation script 11/12/04

Meredith: Hey Melissa whats up.

Melissa: Nothing much Meredith.

Meredith: Did you know the St ~~Andreas~~ fault moved 6ft. in 15 seconds. in ~~1894~~ 1989

Add - 1

Melissa: ~~We~~ I would have never guessed I actually just found out that volcanos and earthquakes usually occur at plate boundaries.

Meredith: ~~Duh!~~ Thats nothing, ~~so~~ they can also occur in hots pots which is a part of the core. The core is 3,400 Km thick.

Melissa: Goodness gracious

Pat and Mike: ~~did~~ ~~we~~ need you talking about volcanos and earthquakes.

Add - 2

~~Pat~~: Did you know that plates move under another.

Pat: ~~Yes~~, how ~~bout~~ them subduction zones. their the lead cause of volcanos.

Pat2: Wow thats fascinating

Pat: demonstration.

Meredith- hey melissa what is up

Melissa - nothing much meredith and yourself

Meredith- oh i am okay but i just watched a movie in science

Meredith- we learned about volcanoes, plates , how the plates were once arranged, earth quakes,as well as how these all form , and even what the plates will look like in another million or so years.

Melissa- is that that movie where it gives all of the great information on volcanoes, mountain forming, earthquakes , and plate techtonics.

Meredith-my favorite fact was the one about the San Andreas fault when it moved six feet in a span of fifteen seconds.

Melissa -oh that is interesting, but did you know that an underwater earth quake near alska could cause a tsunami in california (tsunami are huge waves)

(pat and mike enter the room)
pat and mike -we heard you guys talking about about our favorite things, earth quakes and volcanoes.

pat- i bet you three did not know that a thing called subduction zones is a cause of volcnoes and earth

mike-wow! that is fascinaing

(pat does demonstration)

Melissa; No fooling that was the date of the California earthquake!

meredith: alot of people must have died.

melissa: Wow!! That must have occured because the pressure built up between the plates.

meredith: well, you know how the old saying goes!

both: If it hasnt moved, watch out!

Meredith: Whoa! earthquakes are dangerous.

Melissa: Did you know that buildings can fall down.

Meredith: Yea, you dont wanna be on bridge because you know what can happen!(nudge elbow)

Melissa: BAM

Meredith: lets say you on the ground with a large concrete block falling down very fast towards you!

Melissa: SPLAT! Thats the end of it!

meredith: so remember, watch out because eathquakes are dangerous!

Melissa: Do you know about the ricter scale??

meredith: Sure do! It tells you how much energy is released in an earthquake.

melissa: And each step is 32 times more powerful than the next.Golly, all this talk about earthquakes are reminding me about Volcanos which are equally dangerous!

Meredith: Got that one right! Did you know that a single volcanic eruption can knock down trees 25 km away like Mt. St. Helens.

melissa: Wow! i would have never guessed!

meredith: Melissa did you know that volcanos shaped our earth billions of years ago??

Addendum 1

No Fooling

(1) That was the date of the California Earthquake

A lot of people must have died.

Wow that must have occured because the pressure built up between the plates.

Well you know how the old saying goes

Both If it hasn't moved, watch out.

Wo (Jump back) Earthquakes are dangerous

Did you know that buildings can fall down.

Yeah and don't be on a bridge. You know what can happen...

Bam

You on the ground with large concrete block

Falling very fast towards you

Splat! That's the end of it.

So remember, watch out,

Earthquakes are dangerous

Do you know about the richter scale

Yes, it tells you how much energy is released in an earthquake.

And Each step is 32× more powerful then the last

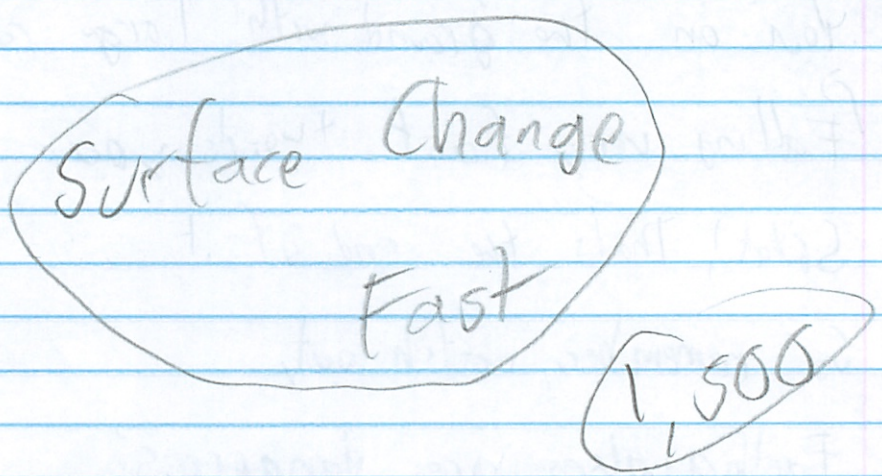
All this talk about Earthquakes, remind me about Volcanos, which are equally dangerous

Yeah Did you know that a single volcanic eruption can knock down trees 25 km away like Mt. St. Hellens

Wow! I would have never guessed.

Ya you know that volcanos shaped our Earth billions of years ago.

Back to Sheet



Addendum 2

(2) Girls Yeah!

Do you know how volcanos form

Girls: No?

Well, lets tell you

Ok, to know how volcanos form, you need to know about how the plates move under the Earth,

and you will then ~~You will tell~~ find out how Earthquakes occure,

(M) You ready to get started

Everyone Else: Yes!

(M) Ok, Lets go. Underneath the Earth there are manny layers,

The depest layer is the core Did you know the the core is hotter than certain parts of the sun.

Girl: Wow!

Then in some layers the rock is so hot that it flows.

That layer is called the lithosphere.

And then on top of that is the atsnasphere...

Which is divided into 7 contenal plates.

The plates move around on top of the lithosphere.

They can move toghter. When two contental crust plates mov toghter they form mountains

And When an ocanic plate and a contenal plate move toghter they ocean plate subducts under another.

Did ya know that subduction zones are the leading cause of Vdranos

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Edit It
OCR Pats
Add
subduction
Transform
Ridges
Occur
Closes
Song

Rock Map

Michael Plasmeier 12/9

1. Granite is intrusive ignours rock.
2. 75% of rock is setmentary.
3. Metamorfic rock changed when exposed to extream temp.
4. Sandstone is setmentary rock.
5. Organic setmentary rock is formed with foccils.
6. The rock cycle is when rock changes.

To heat or not to heat (student sample)

Purpose

To design an experiment on conduction, convection, radiation, or insulation using the equipment listed.

Materials (circle the ones you choose to use)

- stirring rods
- foam cups
- plastic cups
- glass beakers
- tin cans (with different coatings inside and outside)
- hot water
- paper towels
- cloth rags
- thermometers
- cold water
- graduate
- tape
- lamps
- ruler
- room temperature water
- timer
- paper cups

Title

Insulation

Statement of problem

How will the type of material used affect the amount of time it takes for hot water to drop 10 degrees Celsius?

Hypothesis

If a glass beaker full of hot water is insulated with different types of materials, then the cloth rag will keep the water hot for a longer period of time than a paper towel because ~~because~~ the cloth material is thicker.

Independent variable

The independent variable is the different materials (cloth rag and paper towels).

Dependent variable

The dependent variable is the time it takes in minutes for the hot water to decrease 10 degrees Celsius.

Constants, or controlled variables (at least three explained constants)

1. Same starting temperature of water.
2. Same thermometer and units of measure.
3. Three beakers of same type.

Should tell hot water temp

Standards of comparison, or control (if you had one)

Our standard of comparison is the beaker of hot water without insulation because then we can compare how well each material actually insulates the beaker of water based on the reference.

Procedure (draw a set up picture and list your procedure step by step)

1. Fill a beaker with hot water up to 150 mL.
2. Make sure you have taken the starting temperature of the water.
3. es for the water in the beaker to drop 10 degrees. Repeat two more times.
4. Repeat steps, but wrap this beaker in a cloth rag first.
5. Repeat steps again, but wrap a paper towel around this beaker first.
6. With the data, find the total time for each material and beaker by itself. Then, calculate the average.
7. Make a graph with your averages.

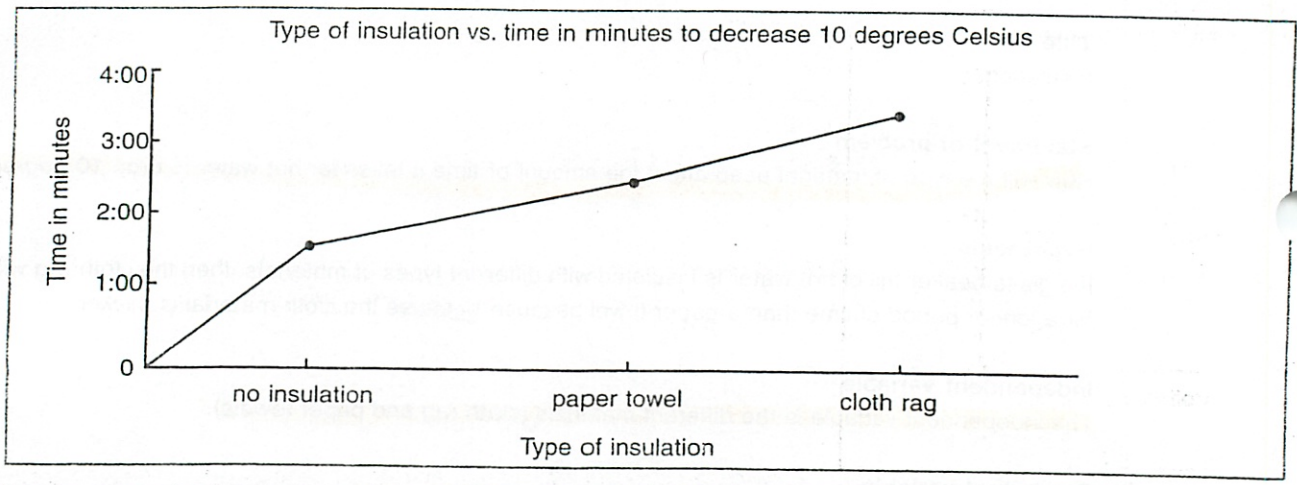
Wait

Measure

Data table

Type of material	Trial #1	Trial #2	Trial #3	Total	Average
Beaker without insulation	1:56 minutes	1:55 minutes	1:55 minutes	4:66 minutes	1:55 minutes
Cloth rag	3:02 minutes	3:30 minutes	3:34 minutes	9:66 minutes	3:22 minutes
Paper towel	2.46 minutes	2:37 minutes	2:51 minutes	7:34 minutes	2:44 minutes

Graph (if possible)



Results or conclusion (use complete sentences and explain how your hypothesis is supported or refuted)
The hypothesis stated that if a glass beaker full of hot water is insulated with different types of materials then the cloth rag will keep the water hot for a longer period of time than a paper towel. The hypothesis was supported by our results because the cloth rag insulated the hot water longest before it dropped 10 degrees Celsius. It took 3 minutes and 22 seconds compared to the paper towel which took only 2 minutes and 44 seconds.

Background Info

Analysis (why do you think this happened?)
The cloth rag probably insulated the hot water the longest because the material is thicker than a paper towel. Since the paper towel is thin, it can't hold in the heat very well compared to the thicker cloth rag. Also, the materials in the rag are compacted together better than the paper towel.

Experimental errors (use complete sentences and list at least three errors that may have affected your results)
1. A potential error could be that measurements were not accurately recorded.
2. A potential error could be that the hot water cooled as it was poured into the beaker, affecting the results.
3. A further source of error could be that the trials had different starting temperature points.

Recommendations or extensions (what other experiments would you now like to do using the same equipment list)
Some recommendations for further experimentation could be using other materials as an insulator, such as paper, foam, tape, etc.; using cold water instead of hot water but trying to raise the temperature 10 degrees; or testing how long it takes room temperature water to heat up 5 degrees Celsius using a lamp, but still using insulation.

FIGURE 1 Scoring guide

_____ 1. Title—1 point
_____ 2. Statement of problem—2 points
- State the problem in question form, but it cannot be a question that you answer with a "yes" or "no."

_____ 3. Hypothesis—up to 6 points.
- Correct grammar and punctuation—1 point
- An "If . . . then...because" statement—1 point
- Independent and dependent variables correctly placed in the "If . . . then...because" statement—4 points

_____ 4. Independent variable—1 point
_____ 5. Dependent variable—1 point
_____ 6. Constants, controlled variables—3 points
- At least three constants, or controlled variables, listed and explained (ex. 100 mL of hot water, not just water)

_____ 7. Control or standard of comparison—1 point
- Listed and explained

_____ 8. Procedures and materials—up to 6 points
- Materials listed—1 point
- Procedure is easy to follow
- Procedure is listed as a step-by-step process (ex. step 1, step 2, step 3, etc.)
- A picture is drawn of the set up and labeled correctly
- Tells *how* to do the experiment.
- Included "record data" as one of the steps

_____ 9. Data table—up to 10 points
- Title on the top line, such as "Insulation vs. loss of temperature"—1 point
- Neatness of drawing—2 points
- Variables listed on the correct sides of the data table—6 points
- Correct units given in headings, such as "cm" for centimeters—1 point

_____ 10. Graph—up to 10 points
- Title on the top line, such as "Type of container vs. heat loss"—1 point
- Neatness—2 points
- Variables listed on the correct axes and clearly spaced—6 points
- Units appropriate and correct—1 point

_____ 11. Results or conclusion—up to 5 points
- The results are based on several trials
- Give a conclusion on your experiment using complete sentences—3 points
- Include why your results did or did not support the hypothesis (explain how your hypothesis was *supported*, you have not done enough experimentation to prove or refute it entirely)—2 points

_____ 12. Analysis—up to 2 points
- Why did your results occur or why do you think the results turned out the way they did? What is the science principle behind the results?

_____ 13. Experimental errors—up to 3 points
- Explain in complete sentences at least three possible experimental errors that could have occurred.

_____ 14. Recommendations or extensions—up to 2 points
- Describe in complete sentences another experiment you would like to try with this equipment.

_____ TOTAL SCORE

Name Michael Plasmeier Period 3 Date 12/15

Investigation 6: Earth's Moving Continents – Internet Research

www.agiweb.org/ies
Click on: Dynamic Planet
Click on: Investigation 6
Click on: On the Move – Continental Drift and Plate Tectonics
Read this page
Click on: Test Your Knowledge
Copy each question (1-5) and record the correct answer

1. Who was 1st to notice S. America + Africa fit together
   2. Sir Francis Bacon
2. How are Nasa scientis measuring earths land masses
   1. Satlite Laser Ranging (SLR)
3. What is the name of super continets during dinosaurs
   2. Pangea
4. How does rock that make up continents differ from rocks that make up ocean floor
   ~~1. Content~~ 1. Contents is older than ocean
5. What mountain range formed from Indian-Australian Eurasian
   3. Himalayas

Click on: Find out about Continental Drift at the bottom of the page
Scroll down and Click on: Evidence Supporting Continental Drift
Read this page
Answer the following questions:

1. What happened in 1912?

In 1912, Alfred Wegener and Frank Taylor first proposed that continents were once together.

2. What was the most compelling evidence (in Wegener's opinion) that South America and Africa were once joined?

We thought the most compelling evidence is that there are identical fossils on the coast of South America and Africa

3. Why did so few people believe Wegener's Continental Drift Theory?

So few people believed in his thorey because it seemed impasable for the contents to plow through the ocea

Click on: Back
Click on: Why Should Continental Drift Matter to Me?
Read this page
What can scientists predict about some of the features of the Earth existing today?

Scientists can predict that the Atlantic Ocean will continue to expand while the Pacific Ocean will shrink. The Mediterian Sea will close up linking Africa and Europe. Mt. Everest will get higher. The oceans are being recycled every 150 years.

12/16

Name Michael Plasmeier

Gisting for: Why Ice Floats

Paragraph 1

Ice	is	less	dence	then
water	so	floats,	Dence	is
how	many	molcees	in	space.
Dencity	is	almost	like	weight

Paragraph 1 & 2

Ice	is	less	dence,	less
molcees	in	Space.	Dencity	changes
varing	on	temp.	Increase	in
temp	eqcils	decrease	in	dencity

Paragraph 1, 2, & 3

Ice	is	less	dense	than
water	Dencity	depends	on	temp
with	water,	at	4°C	water
begins	to	expand -	Unique →	water

4 Ice is less dence then water. At 4°C, water expands
Only water does this. Because molcaces are so tight.
water

5 Ice is less dence then water. Expands at 4°C.
Water molcues are tight. world would be different
if ice sank.

Michael Plasmeier PD 3

Science – Ms. D'Andrea
Grade 8

Directions: Read two (2) selected articles from the magazine given you. Pull out the **interesting information and the important details** and record this information on the enclosed sheets. Sometimes the same information will be in both columns. It is possible to have more facts on the interesting side than the important side. **Summarize the important information from each article, on the back of this sheet. Hand in at the end of class.**

Homework: **None Assigned**
Monday's final assessment on Dynamic Planet has been rescheduled for 12/22.

People are just finding out what happened when the Shuttle exploded. A chunk of foam broke off during launch. One employee thought something went wrong and failed to get permission to have a satellite check it out. It happend that a hole in the shuttle let hot air come into the wheel well and melted the shuttle, leading it to break-up. Some think the shuttle is outdated and not be launch

Most experts predict California is overdue for a major earthquake. One hasn't occurred for 146 years when they usually come every 105 years. One expert thinks there is a 62% chance an earthquake will occur in 30 years. So people are preparing a 20-sec warning system based off P-waves

Topic Damage Report - How Shuttle Broke

What's Interesting?	What's Important?
- Some people think the shuttle shouldn't fly again - NASA has been trying to fix falling foam for 20 years - Many more engine parts then modern rockets - It costs $640 million per launch - It was 5,000°F in the wheel well	- Foam broke off during launch - Someone saw foam fall off and requested a satlight look at hole - no one did - The hole caused hot air to enter the wheel well and melted the structure inside causing breakup - Space shuttle is out of date - Other types of lifting things: cheaper + no humans: safer - NASA should set sights on Mars

Topic Wailing for big one

What's Interesting?	What's Important?
• San Andreas Fault runs 800 mi. in California So much goes on in California - 1989 = 7.1 - 63 dead - 1994 = 6.7 - 58 Dead - San Francisco is on soft soil making it vunable • They can predict a Percent of if it would occure	- San Adreas Fault runs through California - Major Earthquake may come in future - An earthquake comes every 105 years. last one was 146 years - 62% chance in 30 years - They are deVoleping a 20-sec early warning System using P-Waves

Atom Notes
Bill Nye

everything made of stuff - matter
All different
matter made of atoms

atoms - greek uncuttable small

heavy in middle - light on edge

+ = in nucleus
- electrons around edges

electrons very far away in comparison
mostly empty space

very small - million or in head

atoms - letters
molecules - words
} matter

H2O ← some of these use electricity to explode in

1 cup of everything isn't the same

difference is # of protons in nucleus
so different elements

atomic # = # of protons in nucleus

NaCl - salt

Different combos - very different things

study inside - huge machine

to break nucleus - must go very fast
radio active
hits target + breaks up

everything is energy or matter

carbons in living things

quiz

Reference Values for Nutrition Labeling

(Based on a 2000 Calorie Intake; for Adults and Children 4 or More Years of Age)

Nutrient	Unit of Measure	Daily Values
Total Fat	grams (g)	65
Saturated fatty acids	grams (g)	20
Cholesterol	milligrams (mg)	300
Sodium	milligrams (mg)	2400
Potassium	milligrams (mg)	3500
Total carbohydrate	grams (g)	300
Fiber	grams (g)	25
Protein	grams (g)	50

Nutrient	Unit of Measure	Daily Values
Vitamin A	International Unit (IU)	5000
Vitamin C	milligrams (mg)	60
Calcium	milligrams (mg)	1000
Iron	milligrams (mg)	18
Vitamin D	International Unit (IU)	400
Vitamin E	International Unit (IU)	30
Vitamin K	micrograms (µg)	80
Thiamin	milligrams (mg)	1.5
Riboflavin	milligrams (mg)	1.7
Niacin	milligrams (mg)	20

Vitamin B_6	milligrams (mg)	2.0
Folate	micrograms (µg)	400
Vitamin B_{12}	micrograms (µg)	6.0
Biotin	micrograms (µg)	300
Pantothenic acid	milligrams (mg)	10
Phosphorus	milligrams (mg)	1000
Iodine	micrograms (µg)	150
Magnesium	milligrams (mg)	400
Zinc	milligrams (mg)	15
Selenium	micrograms (µg)	70
Copper	milligrams (mg)	2.0
Manganese	milligrams (mg)	2.0
Chromium	micrograms (µg)	120
Molybdenum	micrograms (µg)	75
Chloride	milligrams (mg)	3400

REV. Jan 30, 1998

Nutrients in this table are listed in the order in which they are required to appear on a label in accordance with 101.9(c)

This list includes only those nutrients for which a Daily Reference Value (DRV) has been established in 101.9(c)(9) or a Reference Daily Intake (RDI) in in 101.9(c)(8)(iv).

About

Reading Food Labels

From Vincent Iannelli, M.D., Your Guide to Pediatrics.

Nutrition Facts

Food labels provide nutrition facts and information about the foods that your family eats.

From the amount of calories, fiber, and total fat grams, to the food's ingredients, the food label is your key to the nutrition information in the foods you provide to your family.

It can help you to increase the healthy nutrients that you want your family to eat, like calcium and fiber, and limit nutrients that can be unhealthy, like fat, saturated fat, cholesterol, and sodium.

And reading food labels can you to compare foods that you are going to buy and choose foods that are more healthy than others.

Nutrition Facts

Serv. Size 1 cup (249g)
Servings About 2
Calories 250
Fat Cal. 110
*Percent Daily Values (DV) are based on a 2,000 calorie diet.

Amount/serving	%DV*	Amount/serving	%DV*
Total Fat 12g	18%	**Sodium** 940mg	39%
Sat. Fat 6g	30%	**Total Carb.** 24g	8%
Polyunsat. Fat 1.5g		Dietary Fiber 1g	4%
Monounsat. Fat 2.5g		Sugars 1g	
Cholest. 60mg	20%	**Protein** 10g	20%

Vitamin A 0% • Vitamin C 0% • Calcium 6% • Iron 8%

INGREDIENTS: WATER, CHICKEN STOCK, ENRICHED PASTA (SEMOLINA WHEAT FLOUR, EGG WHITE SOLIDS, NIACIN, IRON, THIAMINE MONONITRATE [VITAMIN B1], RIBOFLAVIN [VITAMIN B2] AND FOLIC ACID), CREAM (DERIVED FROM MILK), CHICKEN, CONTAINS LESS THAN 2% OF: CHEESES (GRANULAR, PARMESAN AND ROMANO PASTE [PASTEURIZED COW'S MILK, CULTURES, SALT, ENZYMES], WATER, SALT, LACTIC ACID, CITRIC ACID AND DISODIUM PHOSPHATE), BUTTER (PASTEURIZED SWEET CREAM [DERIVED FROM MILK] AND SALT), MODIFIED CORN STARCH, SALT, WHOLE EGG SOLIDS, SUGAR, DATEM, RICE STARCH, GARLIC, SPICE, XANTHAN GUM, CHEESE FLAVOR (PARTIALLY HYDROGENATED SOYBEAN OIL, FLAVORINGS AND SMOKE FLAVORING), MUSTARD FLOUR, ISOLATED SOY PROTEIN AND SODIUM PHOSPHATE.

Nutrition Label

Serving Size

The serving size and amount of servings per container is your real key to knowing how many calories and other nutrients are in the foods your family eats.

In general, a food with:

- 40 calories per serving is low in calories
- 100 calories per serving is moderate in calories
- 400 calories or more per serving is high in calories

Remember that many packages contain more than one serving and a typical serving is not necessarily the amount you can e at one time.

For example, the nutrition label pictured above contains two servings in each container. So if you eat the whole thing by yourself, you are actually eating 500 calories (250 calories per serving X two servings), and not just 250 calories as the label makes it appear.

A common way that people overeat is by consuming oversized portions and underestimating how many calories are in the foods they eat. To help avoid this, you might choose to buy single serving packages or remove a single serving from a larger package and don't eat out of the bag or box itself. Repackaging large bags or boxes of food into smaller, single serving packages can also be helpful.

Nutrition Facts	Amount/serving	%DV*	Amount/serving	%DV*
Serv. Size 1 cup (249g)	Total Fat 12g	18%	Sodium 940mg	39%
Servings About 2	Sat. Fat 6g	30%	Total Carb. 24g	8%
Calories 250	Polyunsat. Fat 1.5g		Dietary Fiber 1g	4%
Fat Cal. 110	Monounsat. Fat 2.5g		Sugars 1g	
*Percent Daily Values (DV) are based on a 2,000 calorie diet.	Cholest. 60mg	20%	Protein 10g	20%
	Vitamin A 0% • Vitamin C 0% • Calcium 6% • Iron 8%			

Serving Size and Calories

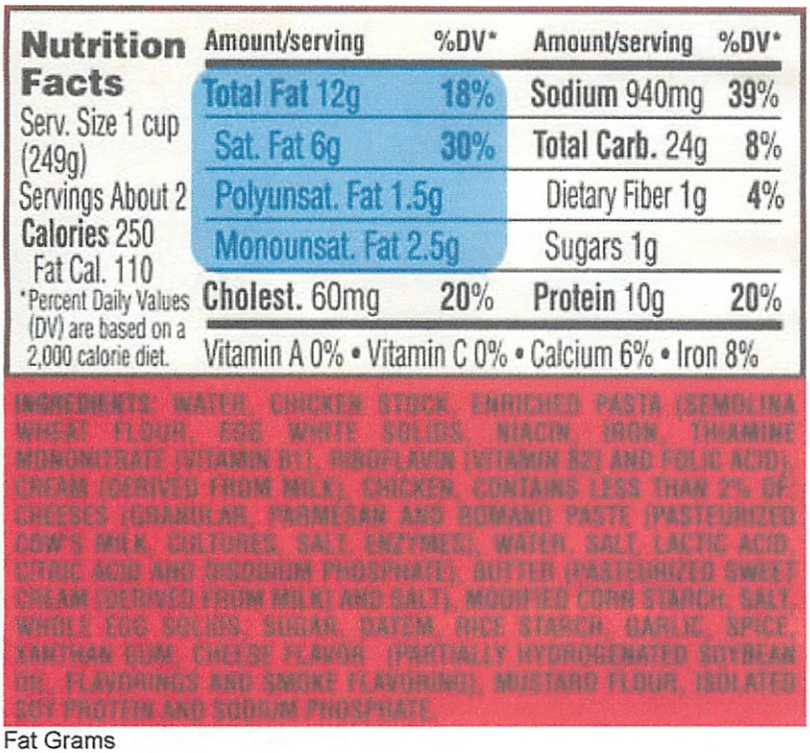
Total Fat Grams

Understanding the amount of **Total Fat** in the foods you eat is important so that you can provide your kids with a low fat diet.

Also keep in mind that unsaturated fats are more healthy than saturated fats and trans fats.

And remember that the American Academy of Pediatrics recommends that everyone 'older than 2 are urged to limit their fat intake to 30 percent or less of daily calories, and to keep saturated fat to no more than one third of total fat, or 10 percent of calories.'

So reading the above food label, you should realize that this isn't the most healthy food for your child to be eating. In addition to being very high in Sodium (which we will discuss later), about 44% of its calories are from fat (110 Fat Cal/250 Calories pe serving). Plus it is high in saturated fat, which you just learned you are supposed to limit.



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	Vitamin A 0% • Vitamin C 0% • Calcium 6% • Iron 8%			

INGREDIENTS: WATER, CHICKEN STOCK, ENRICHED PASTA (SEMOLINA WHEAT FLOUR, EGG WHITE SOLIDS, NIACIN, IRON, THIAMINE MONONITRATE (VITAMIN B1), RIBOFLAVIN (VITAMIN B2) AND FOLIC ACID), CREAM (DERIVED FROM MILK), CHICKEN, CONTAINS LESS THAN 2% OF: CHEESES (GRANULAR, PARMESAN AND ROMANO PASTE (PASTEURIZED COW'S MILK, CULTURES, SALT, ENZYMES), WATER, SALT, LACTIC ACID, CITRIC ACID AND DISODIUM PHOSPHATE), BUTTER (PASTEURIZED SWEET CREAM (DERIVED FROM MILK) AND SALT), MODIFIED CORN STARCH, SALT, WHOLE EGG SOLIDS, SUGAR, DATEM, RICE STARCH, GARLIC, SPICE, XANTHAN GUM, CHEESE FLAVOR (PARTIALLY HYDROGENATED SOYBEAN OIL, FLAVORINGS AND SMOKE FLAVORING), MUSTARD FLOUR, ISOLATED SOY PROTEIN AND SODIUM PHOSPHATE.

Fat Grams

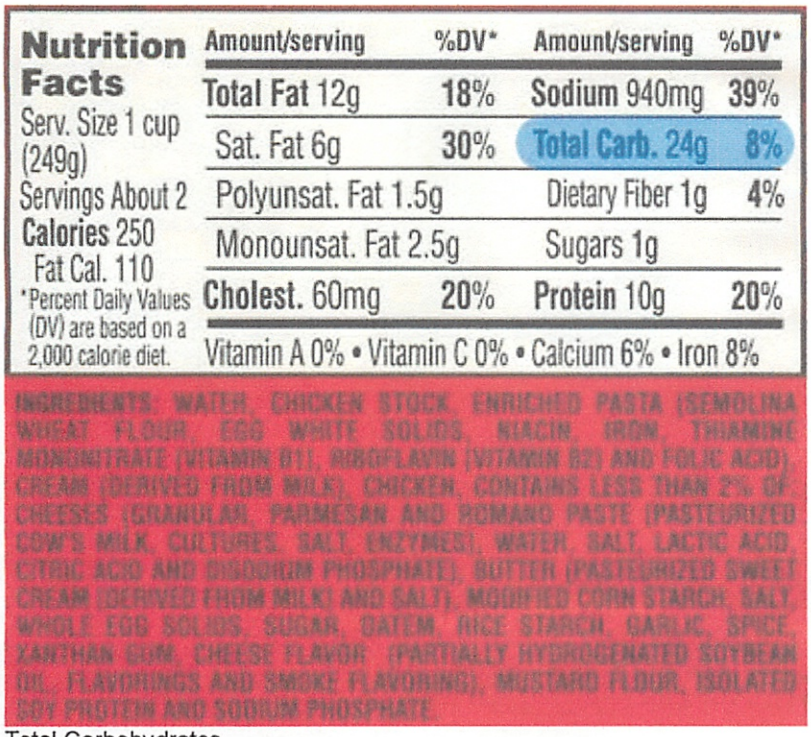
Carbohydrates

Unless you are on the Atkins Diet, carbohydrates should be an important source of calories in your diet.

In fact, the American Academy of Pediatrics states that 'after infancy, children should get about half of their daily calories from carbohydrates.'

The type of carbs you eat is important though. Instead of foods high in Simple **Sugars**, you should choose 'starchy foods like whole-grain breads and cereals, beans and rice, potatoes, and pasta.'

In addition to choosing foods that don't have a lot of sugars in them, you can check the ingredient list to avoid foods with added sugars. If things like corn syrup, high-fructose corn syrup, fruit juice concentrate, maltose, dextrose, sucrose, honey, o maple syrup, are listed in the first few ingredients, then the food does have added sugars and you might look for a alternative with less sugar.



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Total Carbohydrates

Dietary Fiber

Fiber is an important part of a healthy diet and most experts recommend that both children and adults eat a high fiber diet.

According to the American Academy of Pediatrics, 'people who eat a lot of fiber are less likely to be obese, have heart disease, or develop problems affecting the bowel, including constipation and cancer.'

Eating a lot of foods high in fiber is especially important to prevent and treat constipation in your children.

How much fiber do kids need? The general recommendation is that the amount of fiber that they eat each day should be equ to their age in years plus 5. So a 5 year old needs 10g of fiber each day and a 12 year old needs about 17g.

Foods that are usually high in fiber include fruits, vegetables, and whole grain cereals and breads. And reading food labels ca help you to choose foods that are high in fiber. For example, the food label pictured above shows just 1g of dietary fiber, whil a food high in fiber, like a can of vegetable soup, might have 4 or 5g of fiber per serving.

Nutrition Facts	Amount/serving	%DV*	Amount/serving	%DV*
Serv. Size 1 cup (249g)	Total Fat 12g	18%	Sodium 940mg	39%
Servings About 2	Sat. Fat 6g	30%	Total Carb. 24g	8%
Calories 250	Polyunsat. Fat 1.5g		Dietary Fiber 1g	4%
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Fiber

Vitamins

Reading food labels can also help you find foods that are high in certain vitamins and minerals that your kids need, like calcium and iron.

Keep in mind that foods that are high in calcium contain about 20 to 30 percent of a child's percent daily value per serving. If your child doesn't drink a lot of milk or other dairy products that are high in calcium, be sure to check the food labels and find foods high in calcium to make sure that your child gets enough.

Also be aware that teens need more than the 100% DV listed on food labels. They actually need 130% DV of calcium and tha makes choosing high calcium foods even more important.

By checking the Calcium % in foods, you will see that certain products, like orange juice, can have any where between 5 and 30% calcium, so check those food labels.

Nutrition Facts
Serv. Size 1 cup (249g)
Servings About 2
Calories 250
Fat Cal. 110
*Percent Daily Values (DV) are based on a 2,000 calorie diet.

Amount/serving	%DV*	Amount/serving	%DV*
Total Fat 12g	18%	**Sodium** 940mg	39%
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Cholest. 60mg	20%	**Protein** 10g	20%

Vitamin A 0% • Vitamin C 0% • Calcium 6% • Iron 8%

INGREDIENTS: WATER, CHICKEN STOCK, ENRICHED PASTA (SEMOLINA WHEAT FLOUR, EGG WHITE SOLIDS, NIACIN, IRON, THIAMINE MONONITRATE [VITAMIN B1], RIBOFLAVIN [VITAMIN B2] AND FOLIC ACID), CREAM (DERIVED FROM MILK), CHICKEN, CONTAINS LESS THAN 2% OF CHEESES (GRANULAR, PARMESAN AND ROMANO PASTE (PASTEURIZED COW'S MILK, CULTURES, SALT, ENZYMES), WATER, SALT, LACTIC ACID, CITRIC ACID AND DISODIUM PHOSPHATE), BUTTER (PASTEURIZED SWEET CREAM (DERIVED FROM MILK) AND SALT), MODIFIED CORN STARCH, SALT, WHOLE EGG SOLIDS, SUGAR, DATEM, RICE STARCH, GARLIC, SPICE, XANTHAN GUM, CHEESE FLAVOR (PARTIALLY HYDROGENATED SOYBEAN OIL, FLAVORINGS AND SMOKE FLAVORING), MUSTARD FLOUR, ISOLATED SOY PROTEIN AND SODIUM PHOSPHATE

Vitamins

Cholesterol Sodium Protein

Like fat, you should limit the amount of cholesterol and sodium in your child's diet.

If you consider that 5% DV or less is low and 20% DV or more is high, you can see that the food label pictured above is high i both cholesterol and sodium.

According to the American Academy of Pediatrics, 'protein should make up about 10 to 12 percent of each day's calories.' Bu keep in mind that most children in America get more protein than they need in their diet.

Nutrition Facts	Amount/serving	%DV*	Amount/serving	%DV*
Serv. Size 1 cup (249g)	Total Fat 12g	18%	Sodium 940mg	39%
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Cholesterol Sodium Protein

Percent Daily Value

Understanding the Percent Daily Values on a food label can help you choose foods that are high in good nutrients and low in bad nutrients.

Remember that 5% DV or less is low and 20% DV or more is high for a food component. So for things like fat, saturated fat, trans fat, cholesterol, or sodium, look for foods with a low % DV. For these nutrients, you should try to eat less than the 100% DV.

And look for a high % DV for 'good things,' like dietary fiber, vitamin A, vitamin C, calcium, and iron. You should be eating at least the 100% DV for these nutrients.

One thing to consider is that the % DV is based on a 2,000 calorie diet, which is the average energy needs for a child that is 7 10 years old. So for your older children and teens, they will likely need more than 100% DV.

Also remember that the Percent Daily Values are listed for a single serving, so if you eat two servings, you should double % DV. For this food label, you can see that eating two servings provides your kids with almost 80% of their Percent Daily Value of sodium!

Nutrition Facts	Amount/serving	%DV*	Amount/serving	%DV*
Serv. Size 1 cup (249g)	Total Fat 12g	18%	Sodium 940mg	39%
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Percent Daily Value

Ingredients

Reviewing the ingredients list is important, especially if your kids have food allergies.

Reading the food label pictured above, you can see that this food has cow's milk and eggs, so wouldn't be a good idea for a child with a milk and egg allergy.

The ingredient list can also help you to avoid foods with added sugars. If things like corn syrup, high-fructose corn syrup, fruit juice concentrate, maltose, dextrose, sucrose, honey, or maple syrup, are listed in the first few ingredients, then the food does have added sugars and you might look for a alternative with less sugar.

Nutrition Facts

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Servings About 2
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Vitamin A 0% • Vitamin C 0% • Calcium 6% • Iron 8%

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Ingredients

Michael Plasmeier

From: Michael Plasmeier [plasmeier180@msn.com]
Sent: Tuesday, March 08, 2005 6:17 PM
To: 'd'andrea@havsd.net'
Subject: Graph and Nutrients Project
Attachments: DietaryGuildlinesA2005.pdf; Sample Nutrient Workbook.xls; Recommended Daily Intake.htm

First I tried to make the graphs took 10-15 minutes in Excel. All I need to do is the percent graph which uses class data. I attached my work. (Hint: you need to use the tabs in the lower left corner)

I then looked around for nutrients information. I found the new dietary guidelines for Americans online. This included information on what this project is about and more. They are attached.

I then found a database that tells the amount of nutrients in almost every food here:
http://www.nal.usda.gov/fnic/foodcomp/search/

You then need to convert the amounts it gave you into %DV by using the suggested 100% values.
I have attached a chart giving these values and more information about labeling for foods.

Also here is a site that gives more info on nutrition:
http://pediatrics.about.com/od/nutrition/ss/food_labels.htm

-Michael

Third Quarter Science Project

Ms. D'Andrea

Period 3

Due Date: April 7, 2005

Common Types of Graphs and Their Uses

Name Michael Maemeier

Purpose: graphs organize and present data. The organization and presentation makes the data easier to understand. Graphs can present large amounts of data at a glance and in a small amount of space. Many graphs give a view of the shape of the data.

Types

Histogram or Bar Graph

May be oriented horizontally or vertically.
Bars should be all the same width
Best suited to discrete data, that is, data that is not continuous but is distinct, countable, and separate from other information.
Examples: number of car colors in a parking lot,
number of people that like a certain kind of music
Other types of bar graphs
Side-by-side bar graph - compare different groups on the same characteristic
Stacked bar graph - used to show how two or more parts make up a whole on the same characteristic

Line Graph

Best suited for continuous data, such as a trend or fluctuations or changes in a trend
Finding a proper scale is a problem
- scale must show clear difference between the greatest and smallest
- scale must show the degree of accuracy required

Circle or Pie Graph

Best suited to showing percentages of a whole
Easy to read and see the value of each item
Maker must understand angular measurement and percentages

Tables, Charts, and Graphs

To make a data table:

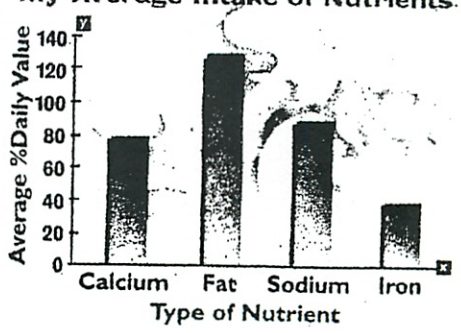
1. Draw a data table as shown below.
2. Give your table a *title* that identifies your variables ("My Week's Intake of Nutrients").
3. Label the column on the left as the *independent variable* (Nutrient). Underneath, list each type of nutrient you used for the independent variable (Calcium, Fat, Sodium, Iron).
4. Label the columns to the right as the *dependent variable* (Total %Daily Value). Draw boxes under these columns in which you can record the results of each *trial* for each activity (Monday, Tuesday, etc.).
5. Include a column at the far right to record the average %DV for each nutrient. To calculate the average %DV, add the %DV for each nutrient, then divide the total %DV by the number of days.

My Week's Intake of Nutrients

Nutrient	Total %Daily Value							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Average
Calcium	40	50	120	70	150	70	60	80
Fat	70	170	200	90	140	160	80	130
Sodium	60	90	110	60	160	80	70	90
Iron	30	40	50	30	40	60	30	40

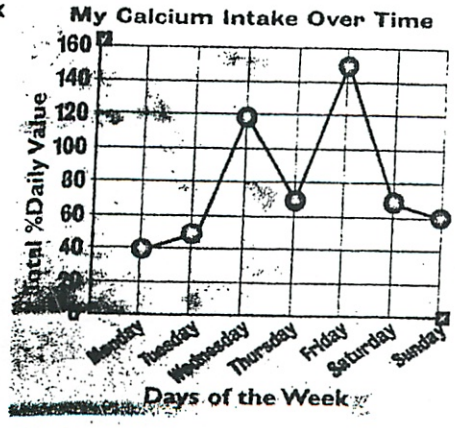
To make a bar graph:

1. On graph paper, draw a set of *axes* (*x* and *y*).
2. Give your bar graph a *title* ("My Average Intake of Nutrients").
3. Label the horizontal (*x*) axis with your *independent variable* (Type of Nutrient), including the nutrients you used for the independent variable (Calcium, Fat, Sodium, Iron).
4. Label the vertical (*y*) axis with your *dependent variable* (Average %Daily Value) and a scale that marks the values of the dependent variable.
5. For each independent variable, draw a solid bar to the height of the corresponding value of the dependent variable. Example: The average %DV of calcium consumed is 80%. Draw a bar above the "calcium" label on the *x*-axis to the 80%DV mark on the *y*-axis.



To make a line graph:

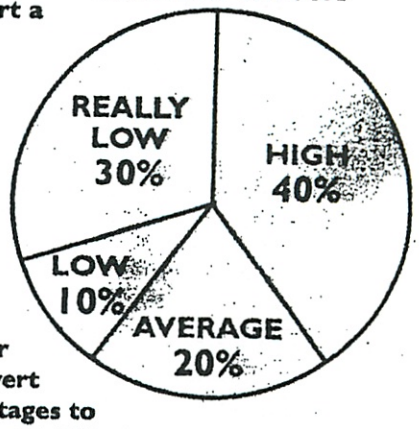
1. On graph paper, draw a set of axes (*x* and *y*).
2. Give your line graph a *title* ("My Calcium Intake Over Time").
3. Label the *x*-axis with your *independent variable* (Days of the Week) with the values of the independent variable (Monday, Tuesday, etc.).
4. Label the vertical *y*-axis with your *dependent variable* (Total %Daily Value). Place a scale that includes all the values of your dependent variable along the *y*-axis.
5. Plot a point on the graph for each piece of data. Example: The total %DV of calcium on Monday is 40%. To locate this point in your graph, draw an imaginary vertical line from the Monday mark on the *x*-axis. Then, draw an imaginary horizontal line from the 40% mark on the *y*-axis. Plot the point where the lines intersect. When you've plotted the points for all your data, connect the points.



CHEESE: ©2002 SCHOLASTIC PHOTO DEPT; CHEESE, ICE CREAM: PHOTODISC VIA SODA

To make a pie chart:

1. Draw a circle with a compass.
2. Give your pie chart a *title* ("Class Rating In Calcium Intake").
3. Mark the center with a point; this is where each pie "slice," or wedge, will start.
4. Measure a wedge for each level of the independent variable (High, Average, Low, or Really Low). First, convert your data from percentages to angle degrees. Example: If 40% of classmates get a high mark for calcium intake, the pie wedge for "high" would be 40% of the 360° circle, or 144° (360 × .4 = 144). Position a protractor at the center point of the circle. Mark 0° and 140° angles with points on the edge of the circle. Draw a line from these points to the center of the circle.
5. Label the wedge (include its percentage).
6. Measure your next wedge from the edge of the first. When finished, the entire circle should be filled, and the angles of the wedges should add up to 360°.



Michael Plasmeier, ADD Your names Rosie, Ethan, Louise
4/14/2005
P.D.:2

Super Fizzers Simple Report

1. Title: The effect of the temperature of water on the length of time it takes for the effervescent tablet to dissolve.

2. Introduction:
   1. Rationale: We conducted this assignment because it was assigned to us. We are learning about experimental design and how to write a lab report just like this one. Also we heard earlier that molecules move faster when they are hot, and this experiment can show this.

   2. Purpose: We hoped to learn that our hypothesis is true, and whether we wrote the report properly.

   3. Hypotheses: If the temperature of water decreases, the time it takes the effervescent tablet to dissolve increases.

3. Experimental Design:

IV: Temperature of water		
Ice Water	Room Temperature Water	Hot Water
1 tablet (us) 5 tablets (total)	1 tablet (us) 5 tablets (total)	1 tablet (us) 5 tablets (total)

DV: Length of time it takes for effervescent tablet to dissolve.

- C: amount of water
- Type of cup
- Type of effervescent tablet
- Amount of effervescent tablet (half a tablet)

4. Procedure:
   1. From the central supply area, obtain 75 mL of ice water.
   2. Add one half effervescent tablet.
   3. Record the time (sec) for the tablet to completely dilssolve. Discard the solution as directed by your teacher.
   4. From central supply, obtain 75 mL of room temperature water. Repeat steps 2-3.
   5. From central supply, obtain 75 mL of hot water. Repeat steps 2-3.

6. To create repeated trials, record your group's data on the class data table.
7. Compute the average time for dissolving at each temperature using the values from the class data table.
8. Construct an appropriate graph of the data.

Note: Approved change in procedure from directions

5. Results:
   - Data Table: Need, coming
   - Graph:

Need

Summary:

6. Conclusion
   a. What was the purpose of the experiment?
   b. What were the major findings? as above
      We found that when the temperature of water is increased, the length of time for one-half of an effervescent tablet to completely dissolve in 75mL of water.
   c. Was the hypothesis supported by the data?
      Yes, our hypothesis was supported by our findings.
   d. How did your findings compare with other researchers or with information in the textbook. Yes it is similar to what we knew befor
   e. What possible explanations can you offer for your findings?
      We can possibly explain that effervescent tablets dissolve quicker because we learned in class that molecules move faster when heated. Because half of an effervescent tablet dissolved faster in hot water, the molecules must have been moving quicker to join up with the water molecules, and therefore dissolving faster then in 75mL of cold water.
   f. What recommendations do you have for further study or improving the experiment?

Michael Plasmeier, Rosie Carlson, Ethan Cole, Louise Rohrer, Greg Thompson
4/17/2005
P.D.:3

Super Fizzers Simple Report

1. Title: The effect of the temperature of water on the length of time it takes for the effervescent tablet to dissolve.

2. Introduction:

   1. Rationale: We conducted this assignment because it was assigned to us. We are learning about experimental design and how to write a lab report just like this one. Also we heard earlier that molecules move faster when they are hot, and this experiment can show this.

   2. Purpose: We hoped to learn that our hypothesis is true, and whether we wrote the report properly.

   3. Hypotheses: If the temperature of water decreases, the time it takes the effervescent tablet to dissolve increases.

3. Experimental Design:

IV: Temperature of water		
Ice Water	Room Temperature Water	Hot Water
1 tablet (us) 5 tablets (total)	1 tablet (us) 5 tablets (total)	1 tablet (us) 5 tablets (total)

DV: Length of time it takes for effervescent tablet to dissolve.

- C: amount of water
- Type of cup
- Type of effervescent tablet
- Amount of effervescent tablet (half a tablet)

4. Procedure:

   1. From the central supply area, obtain 75 mL of ice water.
   2. Add one half effervescent tablet.
   3. Record the time (sec) for the tablet to completely dilssolve. Discard the solution as directed by your teacher.
   4. From central supply, obtain 75 mL of room temperature water. Repeat steps 2-3.

5. From central supply, obtain 75 mL of hot water. Repeat steps 2-3.
6. To create repeated trials, record your group's data on the class data table.
7. Compute the average time for dissolving at each temperature using the values from the class data table.
8. Construct an appropriate graph of the data.

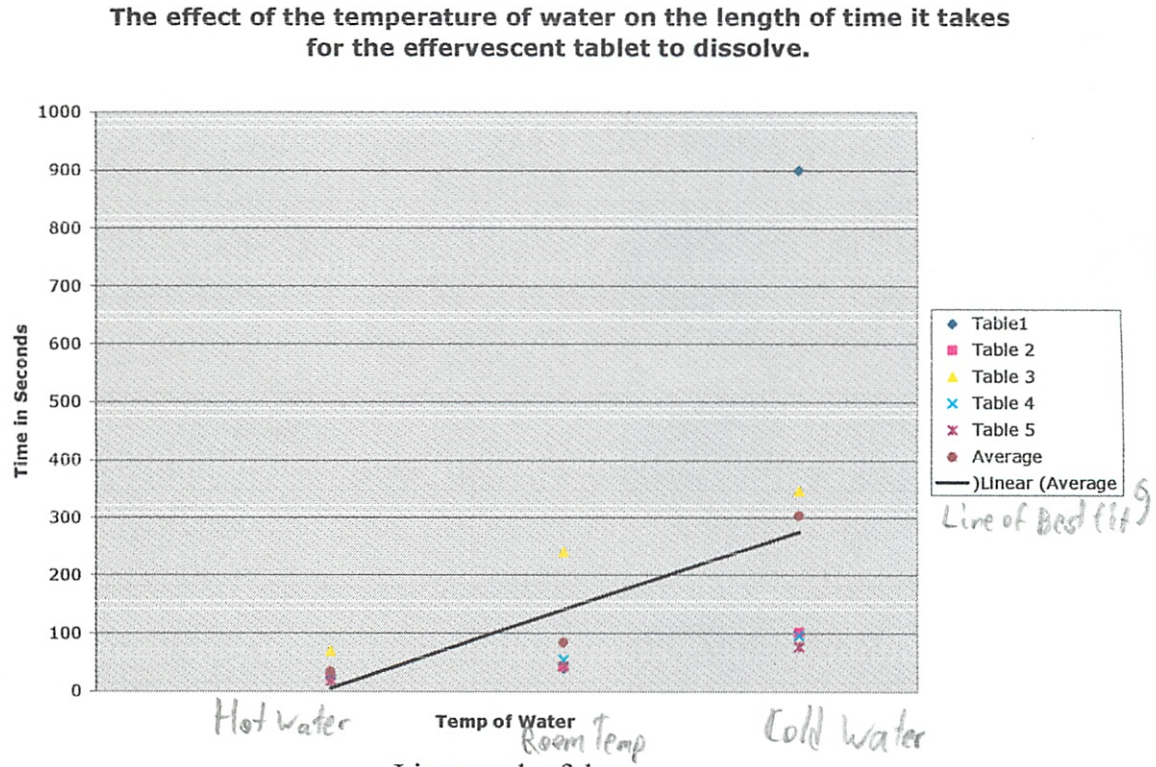
Note: Approved change in procedure from direction.

5. Results:
   - Data Table:

Length of Time for half an Effercent Tablet takes to Disolve in Sec

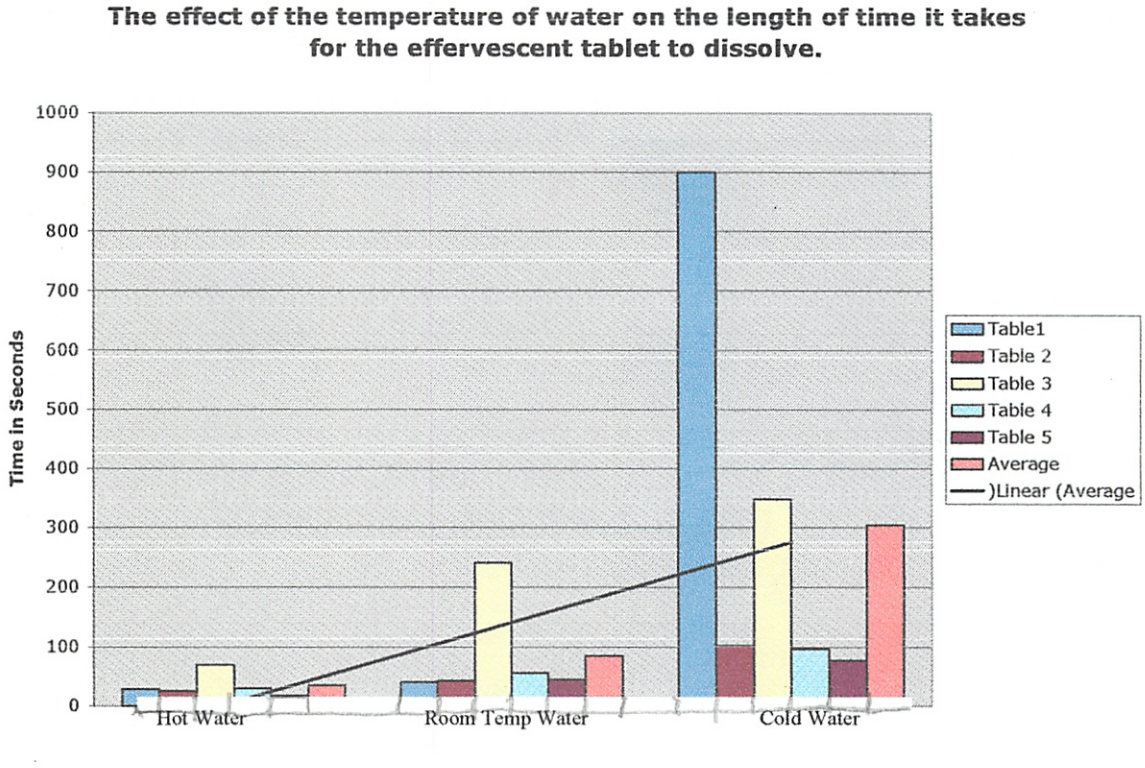
Temp. of Water	Table1	Table 2 (us)	Table 3	Table 4	Table 5	Average
Hot Water	27.81	25	69	28.24	18.36	33.682
Room Temp Water	39.54	42	241	54.68	43.63	84.17
Ice Water	900	102	347	96	77	304

   - Graphs:



Line graph of data.

We should not have done a line graph(scatter plot) because we did not measure temps of the water. The actual numbers should be used as the x-axis for finding a line of best fit and using a scatter plot



Bar Graph of Data

- Summary: We found that our hypothesis was supported by our data. As the temperature of water was decreased, the amount of time for a table to dissolve decreased. We did find a problem with Table 1's results for Cold Water, which was way out of line. We also had a discrepancy about when to record that a tablet was completely dissolved. This is why we believe that we can not count Table 1's result for cold water. However, we still included it in our averages.

6. Conclusion:
   a. What was the purpose of the experiment?
      We conducted this assignment because it was assigned to us. We are learning about experimental design and how to write a lab report just like this one. Also we heard earlier that molecules move faster when they are hot, and this experiment can show this. We hoped to learn whether our hypothesis is true, and whether we wrote the report properly.
   b. What were the major findings?
      We found that when the temperature of water is increased, the length of time for one-half of an effervescent tablet to completely dissolve in 75mL of water.
   c. Was the hypothesis supported by the data?
      Yes, our hypothesis was supported by our findings.
   d. How did your findings compare with other researchers or with information in the textbook.

We have not researched other experiments or other findings about effervescent tablets dissolving in water.

e. What possible explanations can you offer for your findings?

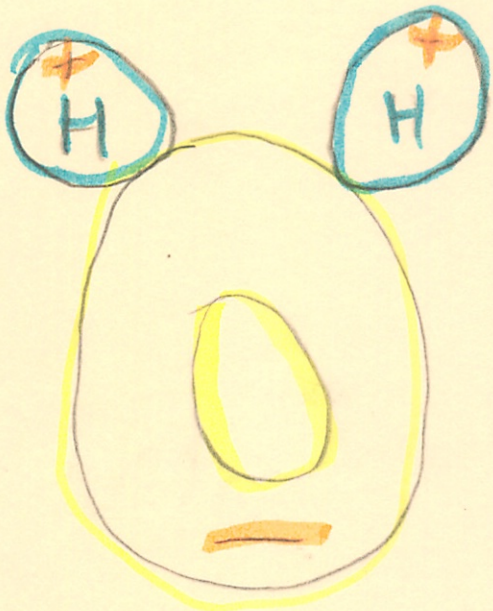
We can possibly explain that effervescent tablets dissolve quicker because we learned in class that molecules move faster when heated. Because half of an effervescent tablet dissolved faster in hot water, the molecules must have been moving quicker to join up with the water molecules, and therefore dissolving faster then in 75mL of cold water.

f. What recommendations do you have for further study or improving the experiment?

We recommend that there should be a standardized way to figure out whether a tablet is completely dissolved.

4-11-05

Water has Polarity



$H_2O - H_2O$!!!

Michael Plasmeier

Michael Plasmeier
5/15/2005
P.D.:3

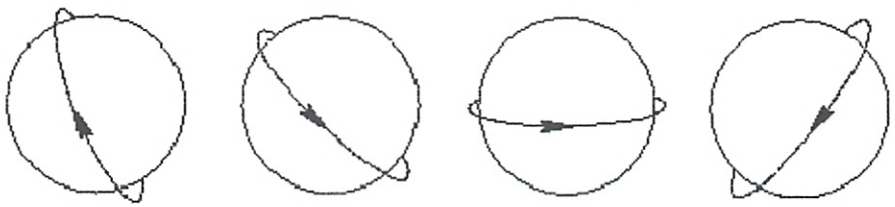
5-16-05

Read

The Physics of a Baseball

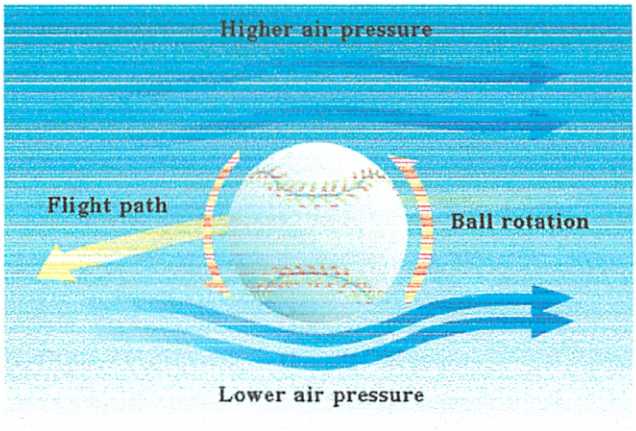
Baseballs are made specifically for the game of Baseball. The way the ball bounces, the way the ball flies though the air, and the way it flies, all are parts of baseball. In fact, the game and game strategies all take in consideration how baseballs fly. The pitcher throws the ball in a certain way to make the ball fly over the plate, but very hard to hit. Generally the core of a baseball is cork, rubber, or a mixture of the two. Around the core are various materials including yarn and twine, or sometimes wool. A leather cover is put on, in two pieces, and stitched together using 104 stitches of waxed red cotton thread. (http://en.wikipedia.org/wiki/Baseball_%28object%29).

Richard Fitzpatrick from the Physics Department at the University of Texas at Austin has a page on the physics of baseball pitching at http://farside.ph.utexas.edu/teaching/329/lectures/node69.html. He says that a baseball in flight is subject to three distinct forces. These are, *gravity*, which causes the ball to accelerate vertically downwards. This force is all around us and can not be avoided. The second force is *air drag*, which impedes the ball's motion through the air. This can be affected by the smoothness of the ball. The third force is called the *Magnus force*, which permits the ball to curve laterally. This is caused by the ball spinning through the air. The pitcher has direct control on how the ball spins. However, he can not really affect the smoothness of the ball, or can not at all affect the force of gravity on the ball. He can also alter the force at which he throws it. In fact, the different type of pitches, make the ball spin in different ways. He is a diagram of how the ball spins from the above website:



fastball ***curveball*** ***slider*** ***screwball***

A curveball is thrown by having the pitcher makes a finger-snapping, wrist twisting movement as the ball is released. This creates a top spin, so that the top of the ball is moving forward against the air, while the lower half is spinning backward and moving the same direction as the air. (http://wings.avkids.com/Book/Sports/advanced/curveball-01.html) The aerodynamics of a baseball can also be summed up like this:



(Sorry for the bad printer
It's sufficient

http://faculty.tcc.fl.edu/scma/carrj/Java/baseball4.html is a very good simulation of hitting a baseball and how it flies. Also, there is research about if a corked bat will improve how you hit it. Aluminum bats also make the ball easier to hit. Alan M. Nathan from the Department of Physics at the University of Illinois at Urbana-Champaign said in the document http://www.npl.uiuc.edu/~a-nathan/pob/corked-bat-remarks.doc that the use of a corked bat has no affect on a long fly ball. However, the corked bat is lighter, allowing a contact-type hitter to hit the ball easier by being able to maneuver the bat easier. Aluminum bats increase the sweet spot of the bat, and make it much easier to hit an inside pitch.

Also, work is being done to reduce injuries from baseball in Little-Leagues across the country. These balls are softer and lighter. A study by the National Institute for Sports Science and Safety at http://www.nisss.org/balltest.htm, finds that the stiffer the ball, the greater the impact force. This means that if you make a ball lighter, it will hit softer. This causes fewer injuries in young players.

Baseball is all about physics. That is why pitchers and batters need to know about physics and aerodynamics. The way the ball is thrown, the way it is hit and the type of bat and balls used all have an effect on the game. Corked bats and aluminum bats change the way the bat can be hit. Special balls are used to reduce injury to little kids.

Most of these sites linked from http://www.npl.uiuc.edu/~a-nathan/pob/index.html

Michael Plasmeier
5/15/2005
P.D.:3

1st Draft

How a Baseball Bounces

Baseballs are made specifically for this game. The way the ball bounces, the way it flies though the air, all are parts of Baseball. In fact, the game and game strategies wind around how baseballs fly. The pitcher throws the ball so it flies through the air in a certain way. Generally the core of the ball is cork, rubber, or a mixture of the two, and is sometimes layered. Around that are various linear materials including yarn and twine, sometimes wool is used. A leather cover is put on, in two pieces, and stitched together using 104 stitches of waxed red cotton thread. (http://en.wikipedia.org/wiki/Baseball_%28object%29).

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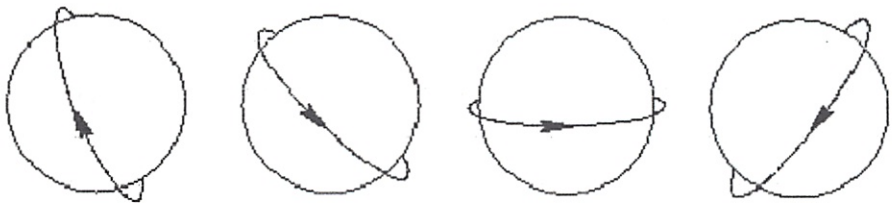

fastball *curveball* *slider* *screwball*

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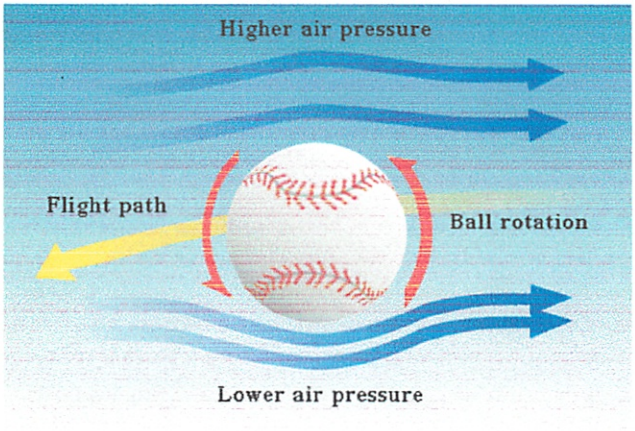

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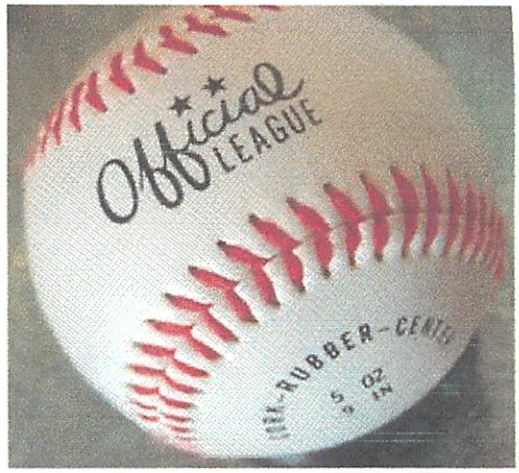
Baseball (object)

From Wikipedia, the free encyclopedia.
(Redirected from Baseball (ball))



A **baseball** is a ball used primarily in the sport of the same name, baseball. It is generally approximately 9 inches 323 cm) in circumference, and 5 ounces (142 g) in weight, although smaller balls may be used in children's leagues. Construction varies. Generally the core of the ball is cork, rubber, or a mixture of the two, and is sometimes layered. Around that are various linear materials including yarn and twine, somteimes wool is used. A leather cover is put on, in two pieces, and stiched together using 104 stiches of waxed red cotton thread.

Cushioned cork cores were patented in the late 19th century by sports equipment manufacturer and former baseball star Al Spalding. In recent years various synthetic materials have been used to create baseballs; however, they are generally considered lower quality, and are not used in the major leagues. Using different types of materials affects the performance of the baseball. Generally a tighter-wound baseball will jump off the bat faster, and go farther. Since the baseballs used today are wound tighter than in previous years, notably the dead ball era, people often say that the ball is "juiced". The height of the seams also affect how well a pitcher can pitch.

In the early years of the sport, only one ball was typically used in each game, unless it was too damaged to be usable; balls hit into the stands were retrieved by team employees in order to be put back in play, as is still done today in other sports. Over the course of a game, a typical ball would become discolored due to dirt, and often tobacco juice and other materials applied by players; damage would also occur, causing slight tears and seam bursts. However, after the 1920 death of batter Ray Chapman after being hit in the head by a pitch – perhaps due to his difficulty in seeing the ball during twilight – an effort was made to keep clean, undamaged balls in play. Today, several dozen baseballs are used in a typical professional game, due to scratches, discoloration, and misshapenness that can occur during the game. Spectators are now generally allowed – and even encouraged – to keep baseballs that are hit or tossed to them, one reason some people enjoy going to a baseball game. Balls hit out of the park for momentous occasions (record setting, or for personal reasons) are often requested to be returned by the fan who catches it, or donated freely by the fan.

There are several historic instances of fans catching or attemping to catch baseballs:

- The ball that Mark McGwire hit for his 62nd home run of the 1998 baseball season, breaking Roger Maris's record, was sold by a fan to a collector of sports memorabilia for over one million dollars.
- Larry Ellison famously retrieved both Barry Bonds's 660th and 661st home runs.
- Steve Bartman interfered with a play while attempting to catch a foul ball, causing the Chicago Cubs not to get an out in "The Inning" during the 2003 NLCS.

The Major League Baseball rulebook has guidelines for the size, weight and construction of the baseball for use in the major leagues.

> "*The ball shall be a sphere formed by yarn wound around a small core of cork, rubber or similar material, covered with two stripes of white horsehide or cowhide, tightly stitched together. It shall weigh not less than five nor more than 5 1/4 ounces avoirdupois and measure not less than nine nor more than 9 1/4 inches in circumference.*"

STATIC AND DYNAMIC BEHAVIOR OF MODIFIED AND TRADITIONAL BASEBALLS

Shonn P. Hendee, M.S.

Richard M. Greenwald, Ph.D.

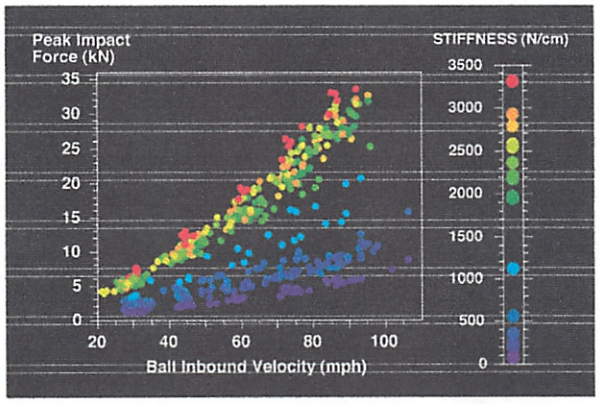
Joseph J. Crisco, Ph.D.

Work was performed at the Orthopedic Biomechanics Institute, Salt Lake City, UT

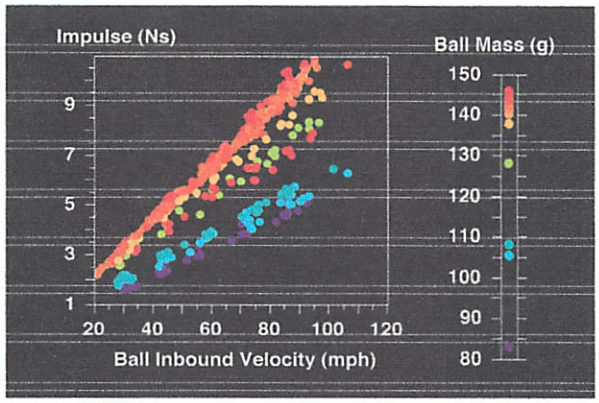
Funding was provide by the National Operating Committee on Standards for Athletic Equipment (NOCSAE)

RESULTS

The peak impact force was found to increase approximately linearly with increasing baseball ball velocity. There was also a strong correlation between the static stiffness of the baseball and the peak impact force; the stiffer the ball, the greater the impact force. In this figure, each baseball model is identified by a circle whose color is mapped to its stiffness (i.e. the softest of the modified balls are purple and the hardest of the traditional balls is red).



The impulse of the impact force was found to correlate most closely with baseball mass.



The coefficient of restitution (COR) of all baseball ball models decreased with increasing velocity. Some modified baseballs met the NCAA standard for performance at the required test velocity of 60 mph, but their performance rapidly decreased with increasing velocity. The performance for most of the modified balls was generally below the existing standards. Note that these COR measurements are with respect to a flat wall. The COR for a ball and bat during an actual swing has not yet been reported.

ABSTRACT

A leading cause of injury in youth baseball is impact with a baseball. To reduce the risk of injury, manufacturers have produced modified baseballs for youth play that are more compliant than traditional baseballs. Determination of the efficacy of these modified baseballs in reducing injury risk requires an understanding of the injury mechanisms and information about the impact properties of the ball. This study addressed the latter by investigating the relationship between quasi-static mechanical properties and dynamic impact variables of baseballs. Eleven traditional and eight modified baseball models (n = 8/model) were studied. Quasi-static load vs. displacement curves were obtained for each baseball model, from which average ball stiffness and energy loss were calculated. The dynamic impact variables of peak force, impulse, duration and coefficient of restitution (COR) were determined from force-time profiles of balls impacted into a load cell and from velocity data. Impact velocities ranged from 13.4 to 40.2 m/s. Peak force increased linearly with increasing ball stiffness ($r2 = 0.948$ for impacts at 26.8 m/s). Impulse of impact increased linearly with both ball mass ($r2 = 0.806$) and COR ($r2 = 0.899$). COR decreased with increasing velocity in all balls tested, although the rate of decrease varied among the different models. Energy loss (hysteresis) calculated from the quasi-static load vs. displacement data was not useful in predicting some dynamic energy loss (COR2). These results indicate that static parameters can be useful in predicting dynamic impact variables, and may therefore be useful in estimating the relative safety of various baseball models.

With regard to injury, these results suggest that modified baseballs that are both softer and lighter than traditional baseballs would possess the greatest potential to reduce both the frequency and severity of injury from impact.

INTRODUCTION

Baseball is a popular source of recreational activity for young people throughout the world. While there are numerous benefits associated with youth participation in sports-related activities, most sports, including baseball, inherently pose some risk of injury to players. Although the overall incidence of baseball-related injuries is low compared with that for other popular team sports such as football, serious and even fatal injuries occasionally occur in baseball. In the United States between 1973 and 1995, 88 children in the 5 to 14 age group died from injuries sustained while playing baseball, softball, or teeball (Adler & Monticone, 1996). Most of these baseball-related deaths were attributed to impact with the batted or thrown ball. Furthermore, Adler and Monticone reported that ball-player impact was the leading cause of baseball-related injuries requiring emergency room treatment among children in the 5 to 14 age group in 1995, accounting for an estimated 55% of all such injuries. In an effort to reduce the incidence and severity of baseball injuries associated with ball-player impact, several sporting goods manufacturers have developed modified baseballs that are promoted as being "safer" for youth play. There are two components required to predict the efficacy of these balls in reducing the incidence and severity of impact-related baseball injury: (1) understanding of the injury mechanisms involved and (2) characterization of the impact properties of the balls. The present study addresses the latter of these two components. Other researchers have investigated impact characteristics of baseballs by impacting anthropomorphic test dummies with traditional and modified baseballs and measuring the resulting head acceleration (Viano et al., 1993). They found that modified baseballs reduced peak impact force and peak head acceleration. Static baseball parameters were not investigated in that study. Heald and Pass (1994) used cadavers and a Hybrid III anthropomorphic test dummy to investigate the relationship between ball stiffness and head injury risk caused by impact with baseballs. They concluded that there was a strong relationship between ball stiffness and risk of head injury.

In this study, we performed quasi-static compression tests and dynamic impact tests on several commercially available traditional and modified baseballs, and sought to determine whether static parameters correlate with dynamic variables. The hypothesis of the present study was that static and dynamic impact characteristics of baseballs are correlated. If such a correlation exists, then static parameters, which are relatively simple to measure, might be useful in predicting the injury-reducing potential and field performance of modified baseballs.

MATERIALS AND METHODS

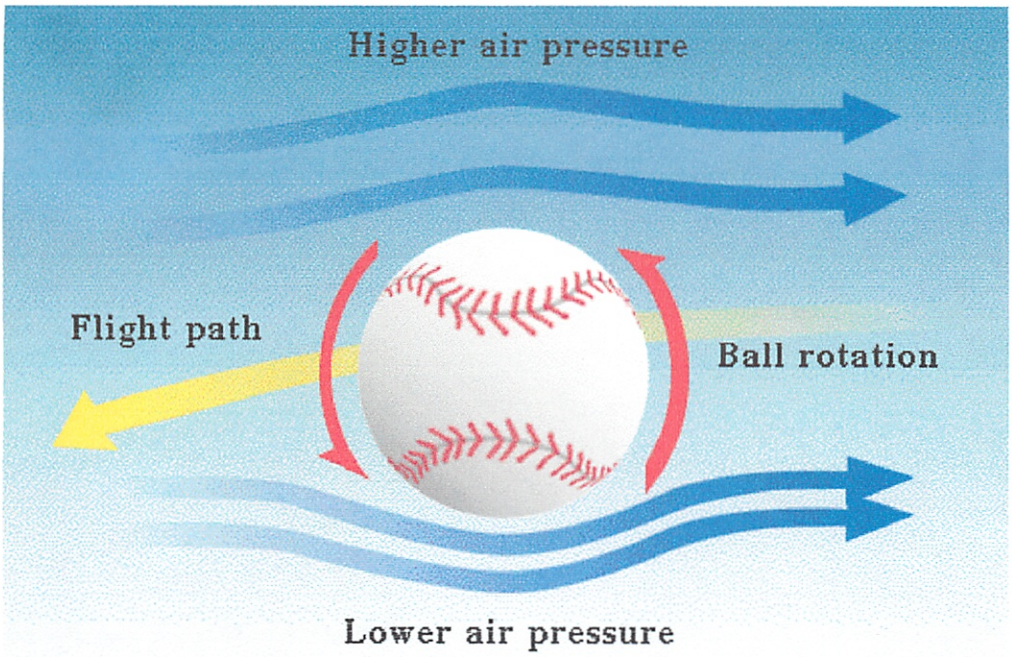
Nineteen commercially available ball models were utilized in this study: eleven traditional and eight modified. Traditional baseballs were defined to be those consisting of a cork or combined cork and rubber core wound with yarn and wrapped with a stitched two-piece leather cover. The modified baseballs used were those in which the manufacturer modified the material composition or construction with the objective of making the balls safer in impact situations than their traditional counterparts. Three balls

of each model were used in the static tests, and five of each model were used in the dynamic tests. Least squares regression was used to make comparisons of all measured variables among the various ball models, and correlations between static and dynamic variables were evaluated.

Ball mass was determined by calculating the average mass value obtained from all balls tested of a given model. Ball stiffness was determined by measuring load and displacement while compressing the balls between parallel plates. Compressive loads were applied to the baseballs using an MTS 858 Bionix Material Test System (MTS, Minneapolis, MN). Displacement and load were sampled at 50 Hz while balls were compressed by 1 cm at a rate of 1 mm/s and then unloaded at the same rate. Stiffness was estimated as the average of the load-displacement curve (peak compressive force divided by peak displacement). Energy loss was defined as the area between the loading and unloading portions of the load-displacement curve. Percent hysteresis, a normalized representation of energy loss, was defined as the energy loss divided by the area under the loading portion of the curve.

Dynamic impact testing was accomplished by firing baseballs from an air cannon (Movan, Inc., Toronto, Ontario, Canada) into a load cell mounted on a steel plate 2.5 cm x 66 cm x 66 cm). The force transducer consisted of three PCB 208B05 piezoelectric force transducers (PCB Piezotronics, Depew, NY) compressed between a 5 cm thick aluminum block and a 2.5 cm x 15 cm x 15 cm aluminum impact plate. The load cell was calibrated by compressing it with the MTS and comparing the summed output of the three force transducers with the MTS load measurement. Loads measured by the force plate matched the MTS load measurements within a standard error of less than 2%.

Impact tests were performed on each ball at five targeted impact velocities: 13.4, 20.1, 26.8, 33.5, and 40.2 m/s (30, 45, 60, 75 and 90 mph). Forces vs. time profiles were obtained for each impact by summing the three channels of force data, each sampled at 20 kHz. A pair of photodetectors (Oehler Research Model 55, Austin, TX) was used to measure incident and rebound velocities. A secondary measure of inbound velocity was provided by a pair of photoelectric sensors positioned in the barrel of the cannon. The dynamic impact variables that were calculated based on the force vs. time profiles and the velocity data included peak impact force, impact duration, impulse of impact (integral of the force vs. time curve over the impact duration), and coefficient of restitution (COR, the ratio of the rebound velocity to the incident velocity. Impact velocities of the individual baseballs varied somewhat, due primarily to variations in ball mass. In order to facilitate comparisons among the various ball models, linear least squares regression was used to predict values for each of the dynamic impact variables at the five target velocities. These interpolated values were used to make comparisons of the impact variables among the various ball models tested


Higher air pressure
Flight path
Ball rotation
Lower air pressure

: Clin Pediatr (Phila). 2001 Apr;40(4):197-203.

Related Articles, Links

Comment in:

- Clin Pediatr (Phila). 2001 Apr;40(4):205-6.

Injury reduction and bounce characteristics of safety baseballs and acceptability by youth leagues.

Yamamoto LG, Inaba AS, Okamura DM, Yamamoto JA, Yamamoto JB.

Department of Pediatrics, University of Hawaii John A Burns School of Medicine, Kapiolani Medical Center for Women and Children, Honolulu, Hawaii 96826, USA.

The only reasonable way to reduce the potential for ball-related youth baseball injuries sustained by the defensive players (the majority of ball-related injuries) is to make the ball less injurious. The American Academy of Pediatrics' 1994 statement on youth baseball injuries in this regard reads, "Consideration should be given to utilizing low-impact NOCSAE-approved baseballs and softballs for children 5 to 14 years of age, if these balls demonstrate satisfactory playing characteristics and reduce injury risk. A variety of studies should be undertaken to determine the efficacy of low-impact balls in reducing serious impact injuries." The purpose of this study, in accordance with this AAP policy, is to investigate the following: A) injury reduction potential of softer baseballs, B) their bounce characteristics, and C) their acceptability by youth leagues. Six simple injury models were studied, baseball bounce characteristics were analyzed, and attitudes of safety baseballs among statewide Little League district presidents were surveyed. Injury models demonstrated less injury potential with safety baseballs compared to that with standard hard baseballs. Safety baseballs bounced higher after vertical drops and slow throws, but during fast throws (with the greatest injury potential), the bounce heights were similar for all ball types. Of 27 survey cards sent out, 13 were returned. While 9 respondents indicated that they were already using safety baseballs for the younger players, none of the 13 respondents indicated that they were planning to expand the use of safety baseballs in their leagues. In conclusion, safety baseballs are less injurious in these models. The bounce characteristics of safety baseballs are satisfactory. Youth baseball league officials are not very willing to expand the use of safety baseballs. We recommend using safety baseballs as a standard for all youth baseball leagues because these balls are safer.

PMID: 11336417 [PubMed - indexed for MEDLINE]

exploratorium.edu/sports/ball_bounce/index.html

Science – Ms. D'Andrea
Name_____
End of the Year Schedule
Period 3

5/16/05
Submit Current Events Homework Assignment
Student Presentations – Activity 58: Creature Features (Modeling Genes)

5/17/05
Teacher Inservice – No Class

5/18/05
Submit Extra Credit
Follow-up Notes on Activity 55: Plants Have Genes, Too!

5/19/05
Begin Activity 59: Gene Combo

5/20/05
Finish Activity 59: Gene Combo

5/23/05
Activity 60: Mendel, First Geneticist

5/24/05
SuperFizzers Day
Students can complete SuperFizzer Activity, recording and graphing group data. Simple Report due 5/27. If Simple Report has already been submitted for this activity, then this is an SSR day.

5/25/05
Start Activity 61: Gene Squares

5/26/05
Finish Activity 61: Gene Squares

5/27/05
Quiz on Activities: 59, 60, and 61.
Start DNA Model using K'NEX

5/31/05
DNA model using K'NEX

6/1/05
DNA Model using K'NEX

6/2/05
Video Day (video TBA)
Complete Video Worksheet: What Did I Learn?/What Questions Do I Still Have?

6/3/05
Picnic – Brandywine – No Class

6/6/05
Final Exam Review Packet Distributed
Begin Group Work

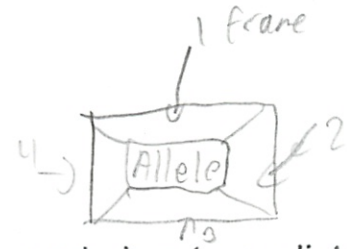
6/7/05
DNA Model Presentations

6/8/05
Final Exam Review Day

6/9/05
Final Exam Review Day

6/10/05
Hershey Park Field Trip – No Class

Science Homework
Due Date: 6/1/05 Wed



Part 1:
Make a frame for each of the vocabulary terms listed below. Write the term in the center. Think about how each term is related to our discussions on patterns of heredity. Use definitions, examples, descriptions, parts, and pictures.

allele heredity ratio probability

Part 2: on back
Describe how the vocabulary terms in the following pairs of words are related to each other. Explain the relationship in a one- or two-sentence answer. Underline each vocabulary word or term in your answers.

Complete this assignment on one small/medium size sheet of oaktag.

phenotype/ genotype

dominate/ recisive