

Design by Number

Making Math Fun with
Integrated Projects



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$$a^2 + b^2 = c^2$$

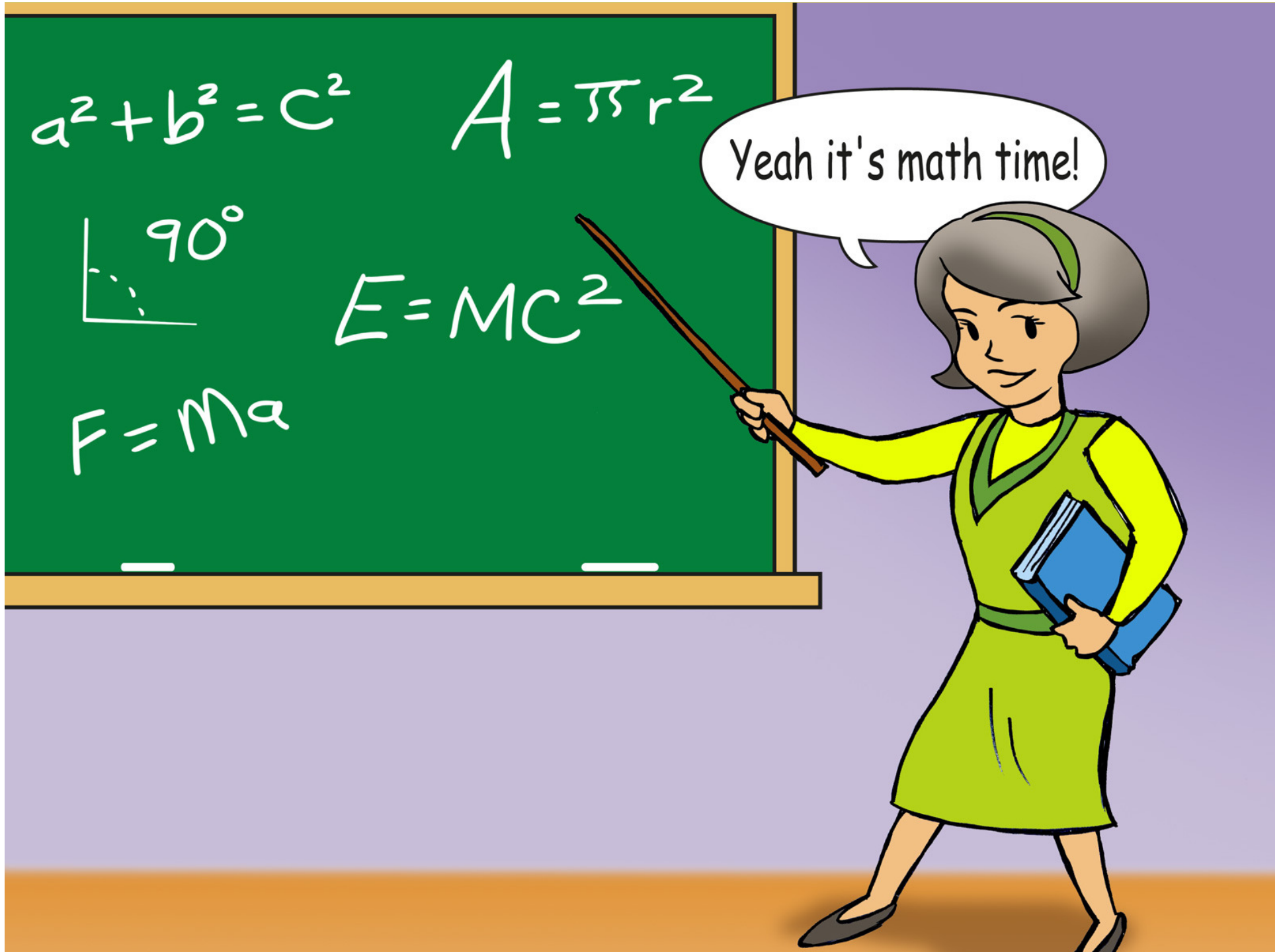
$$A = \pi r^2$$



$$E = MC^2$$

$$F = ma$$

Yeah it's math time!





Academic Integration



Overcoming Challenges

- Make academics meaningful and fun
- Academic & vocational instructors partners
- Collaboration



Collaboration

Standards
Academic

		Show Measurement Criteria									
	B.	Demonstrate mathematics knowledge and skills required to pursue the full range of post-secondary education and career opportunities.	Seg	4	3	2	1	N	Plan		
	1.	Identify whole numbers, decimals, and fractions.	7	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
	2.	Demonstrate knowledge of basic arithmetic operations such as addition, subtraction, multiplication, and division.	7	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
	3.	Demonstrate use of relational expressions such as equal to, not equal, greater than, less than, etc.	7	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
	4.	Apply data and measurements to solve a problem.	7	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
	5.	Analyze Mathematical problem statements for missing and/or irrelevant data.	7	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
	6.	Construct charts/tables/graphs from functions and data.	7	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
	7.	Analyze data when interpreting operational documents.	7	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			

Collaboration

Standards

Vocational

		explain how the message applies to a similar situation.						
III.	PROBLEM-SOLVING AND CRITICAL THINKING	Seg	Gap Analysis					Plan of Imp
A.	Solve problems using critical thinking skills (analyze, synthesize, and evaluate) independently and in teams. Solve problems using creativity and innovation.	Seg	4	3	2	1	N	Plan
1.	Employ critical thinking skills independently and in teams to solve problems and make decisions (e.g., analyze, synthesize and evaluate). Show Measurement Criteria	9, 3	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
2.	Employ critical thinking and interpersonal skills to resolve conflicts with staff and/or customers. Show Measurement Criteria	9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	employee ethic activity
3.	Identify, write and monitor workplace performance goals to guide progress in assigned areas of responsibility and accountability. Show Measurement Criteria	9	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
4.	Conduct technical research to gather information necessary for decision-making. Show Measurement Criteria	9, 12	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
IV.	INFORMATION TECHNOLOGY APPLICATIONS	Seg	Gap Analysis					Plan of Imp

Collaboration



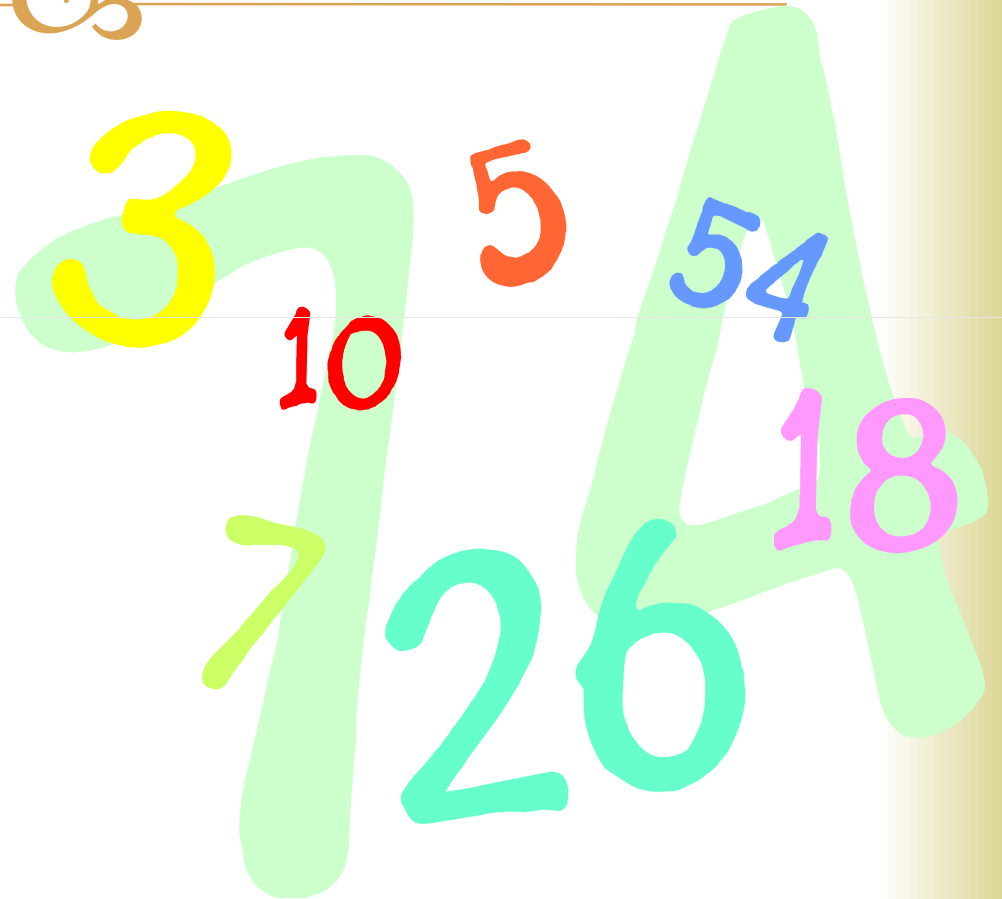
Develop Project/ Activity List

- Academic projects fit in unlikely places
 - Notepad
 - Job estimates
 - Materials
 - Labor
 - Profit margin
 - Paper purchasing
 - Pica and Point
 - Children's picture book
 - Graphing & Infograph

Math Essentials



- ☞ Required Curriculum
 - ☞ Whole Number
 - ☞ Fractions
 - ☞ Decimals
 - ☞ Measurement
 - ☞ Conversions



Math Essentials



☞ Pre-Test

☞ Online

☞ <http://mathessentialsmatter.weelby.com>

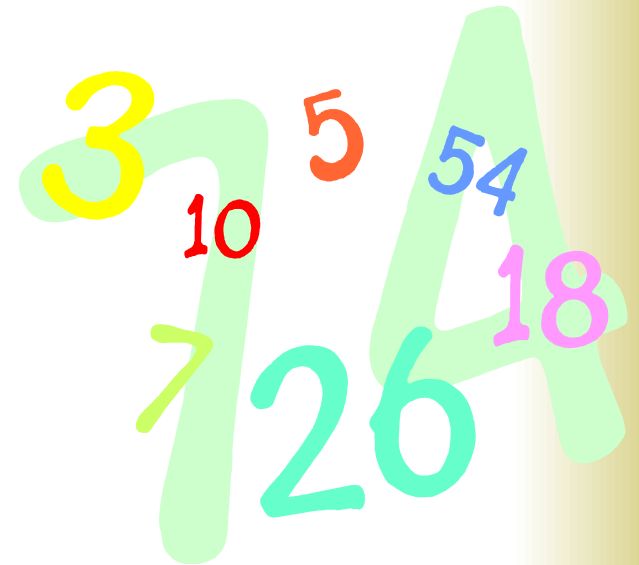
☞ Instruction

☞ Application problems

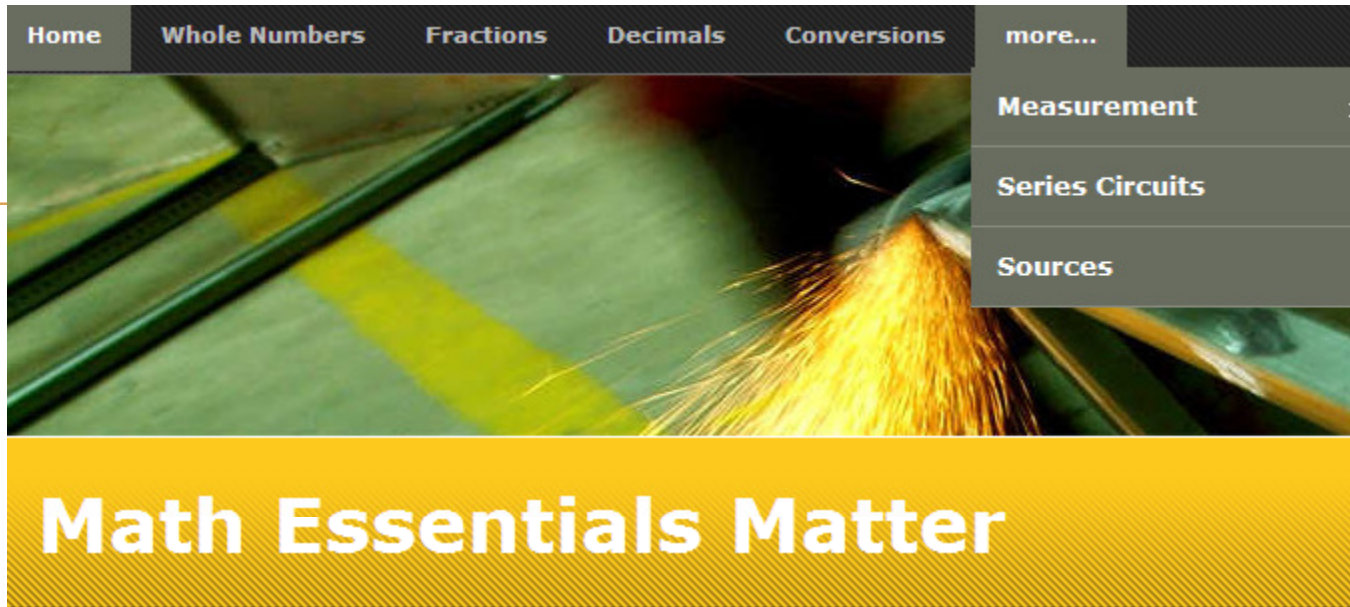
☞ Fun games

☞ Self-check and practice problems

☞ Quizzes



Math Essentials



Home Whole Numbers Fractions Decimals Conversions more...

- Measurement >
- Series Circuits
- Sources

Math Essentials Matter

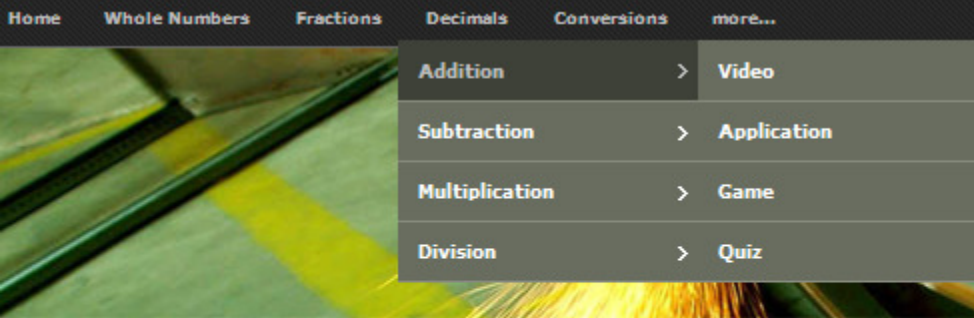
Math in Vocational Careers



Welcome to the Career-Tech Center and Math Essentials! The purpose of this site is to refresh those necessary math skills needed in your selected vocational career.

Based upon your Math Essentials pre-test results, complete the sections that the math teachers have indicated. At the end of each section there is a 10 question exit quiz. Once you achieve a score of 80% or greater, print the results and

Math Essentials



Home Whole Numbers Fractions Decimals Conversions more...

- Addition > Video
- Subtraction > Application
- Multiplication > Game
- Division > Quiz

Math Essentials Matter

Addition of Decimals



Word Art

To add decimals, write the numbers so that the decimal points are on a vertical line. Add just like whole numbers, and write the decimal point in the sum directly below the decimal point in the addends.

Example 1

Add $0.237 + 4.9 + 27.32$

Write the problem vertically so that the decimal points are lined up.

$$\begin{array}{r} 0.237 \\ 4.9 \\ +27.32 \\ \hline \end{array}$$

*Hint: It may help to fill in the empty places with zeros to keep the columns aligned.

$$\begin{array}{r|l} 0.237 \\ 4.900 \end{array}$$

ME Integrated Activities



☞ Whole Number Operations

- ☞ Paper purchase

☞ Decimals

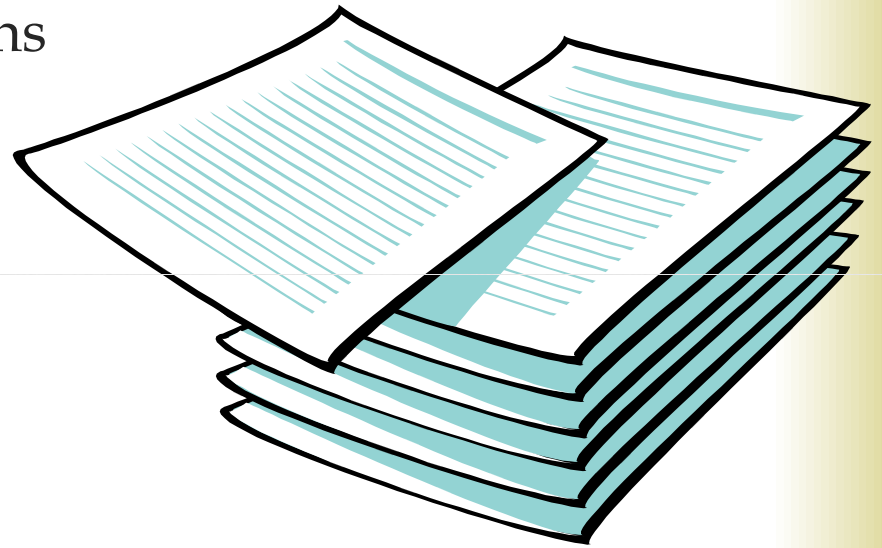
- ☞ Estimates
- ☞ Supplies
- ☞ Business calculations

☞ Fractions

- ☞ Conversions
 - ☞ Cutter
 - ☞ Paper waste

☞ Measurement

- ☞ Duplicate magazine layout



ME Capstone Project



Children's Picture Book

- ☞ Discuss our favorite books from childhood
 - ☞ What made them special to us?
- ☞ Review several math storybooks
- ☞ Select one and write a review
 - ☞ Summary
 - ☞ Graphics add to the storyline
 - ☞ How was math is woven into story?



ME Capstone Project



☞ Children's Picture Book

- ☞ Select math topic from ME Curriculum
 - ☞ Must truly understand the mathematical process to write and teach others
- ☞ Create story outline
- ☞ Thumbnails/storyboard & dummy
- ☞ Requirements
 - ☞ All graphics must be original
 - ☞ Original story
 - ☞ **MUST BE ACCURATE!**
 - ☞ Rubric
 - ☞ Completed samples



Children's Picture Book

Rubric

Your Rubric - Print View

Page 1 of 2



Rubric Made Using:
Rubistar (<http://rubistar.4teachers.org>)

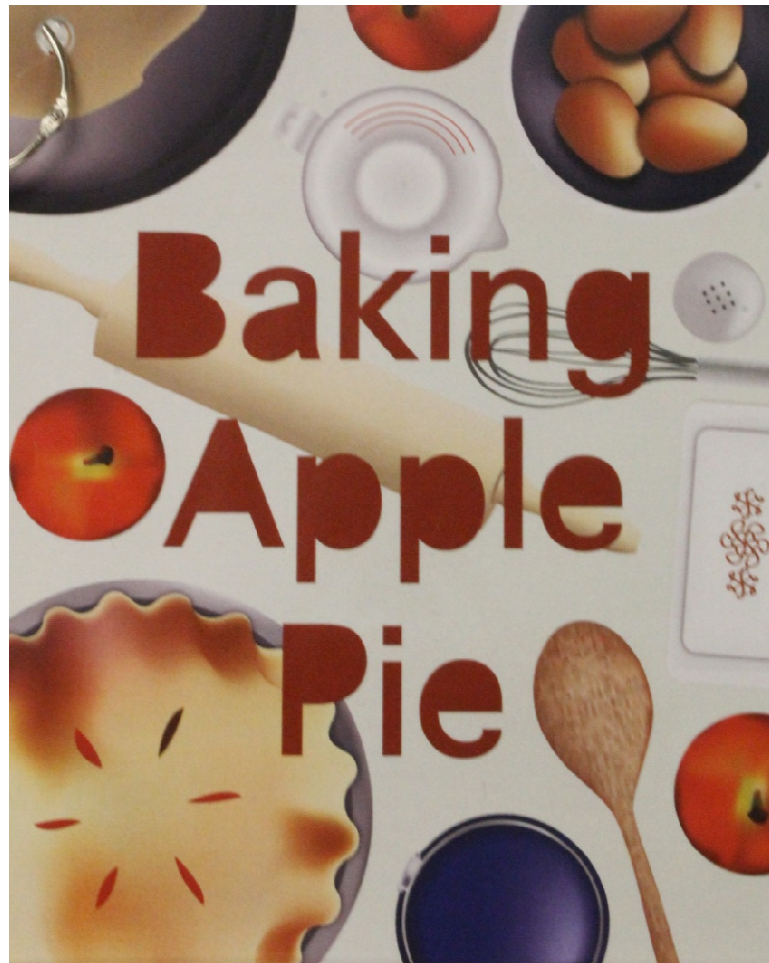
VIT Children's Picture Book

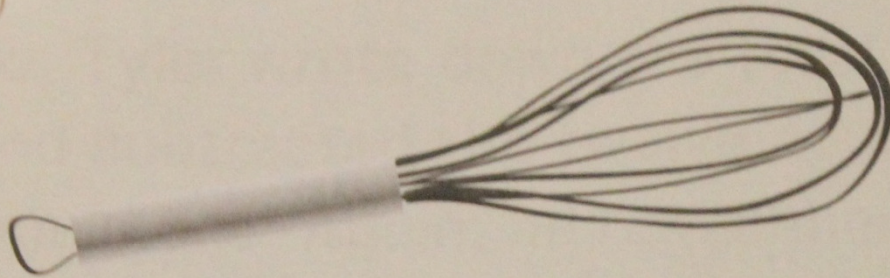
Teacher Name: **Mrs. Shoskey**

Student Name: _____

CATEGORY	15	10	5	0
Focus on the Assigned Topic	The entire book is related to the assigned topic and the reader is able to understand much more about the topic.	Most of the book is related to the assigned topic and the reader is still able to understand the topic.	Some of the book is related to the assigned topic but the reader does not learn much about the topic.	No attempt has been made to relate the book to the assigned topic.
Mathematical Processes	100% of the math processes presented in the book are accurate.	99% - 80% of the math processes presented in the book are accurate.	79% - 70% of the math processes presented in the book are accurate.	69% - 60% of the math processes presented in the book are accurate.
Mathematical Calculations	100% of the math calculations are accurate.	99% - 80% of the math calculations are accurate.	79% - 70% of the math calculations are accurate.	69% - 60% of the math calculations are accurate.
Illustrations	Original illustrations are detailed, attractive, creative, and relate to the story.	Original illustrations are somewhat detailed, attractive, and relate to the story.	Original illustrations relate to the story.	Illustrations are not present OR they are not original.
Creativity	The book contains many creative details that contribute to the reader's learning.	The book contains some creative details that contribute to the reader's learning.	The book contains a few creative details that contribute to the reader's learning.	There is little evidence of creativity in the book.
Technical Requirements	100% of the spelling and punctuation are correct. The book is at least 12 pages.	99% - 80% of the spelling and punctuation are correct. The book is at least 8 pages.	79%-70% of the spelling and punctuation are correct. The book is 6-7 pages.	69% -60% of the spelling and punctuation are correct. The book is less than 6 pages long.
Work Ethic	10: 100 %of class time was used	7: 99% - 80% of class time was used	5: 79% - 70% of class t ime was	3: Majority of class time was spent off

Baking Apple Pie





$$\begin{array}{r} 19 \\ + 7 \\ \hline 26 \end{array}$$

Because Tyler was so good at math, he knew to line up the numbers into columns. Then, he added nine and seven in the first column and, because nine plus seven is more than ten, added another digit to the second column.

Homemade Apple Pie

12 sliced apples

❁ FRACTIONS ❁



Tyler's grandmother began to slice the apples. First, she cut the apple in half, so that it was in two pieces. Then, she cut it in half again. She explained that each slice could be written as a different fraction.



$$\frac{1}{1}$$



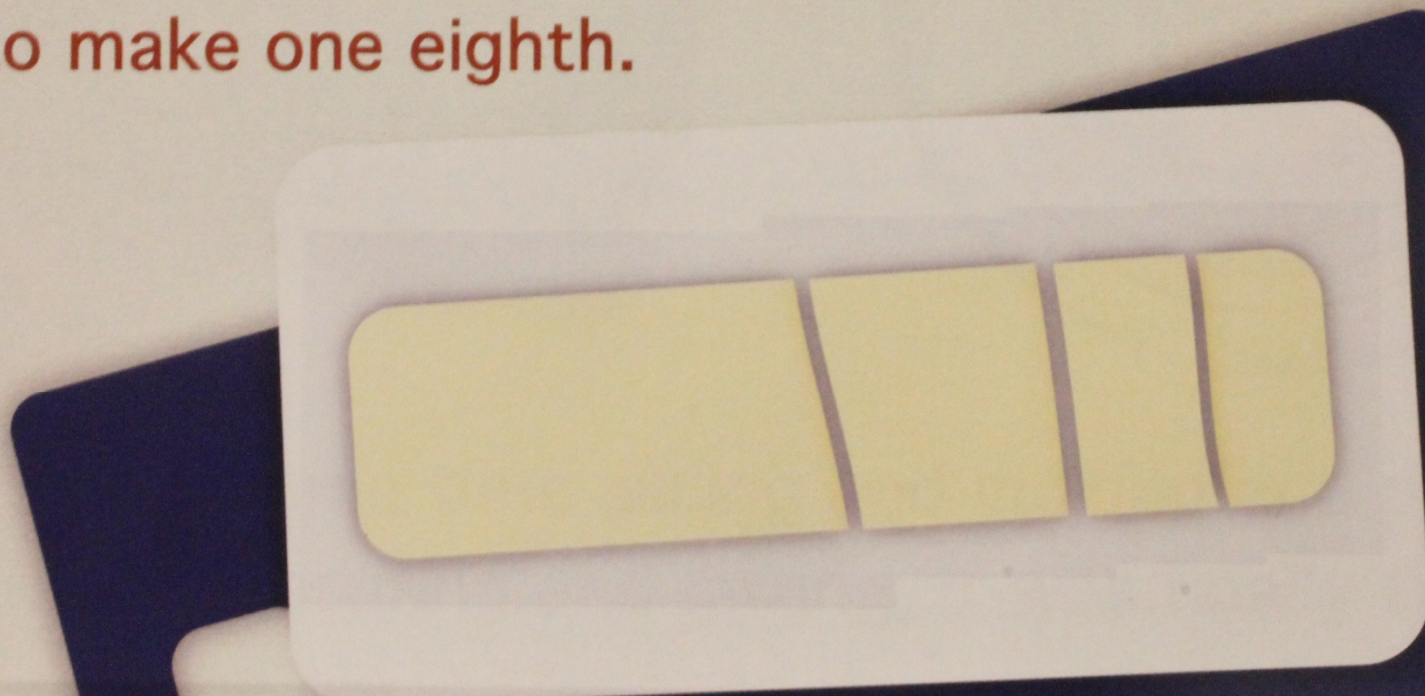
$$\frac{1}{2}$$



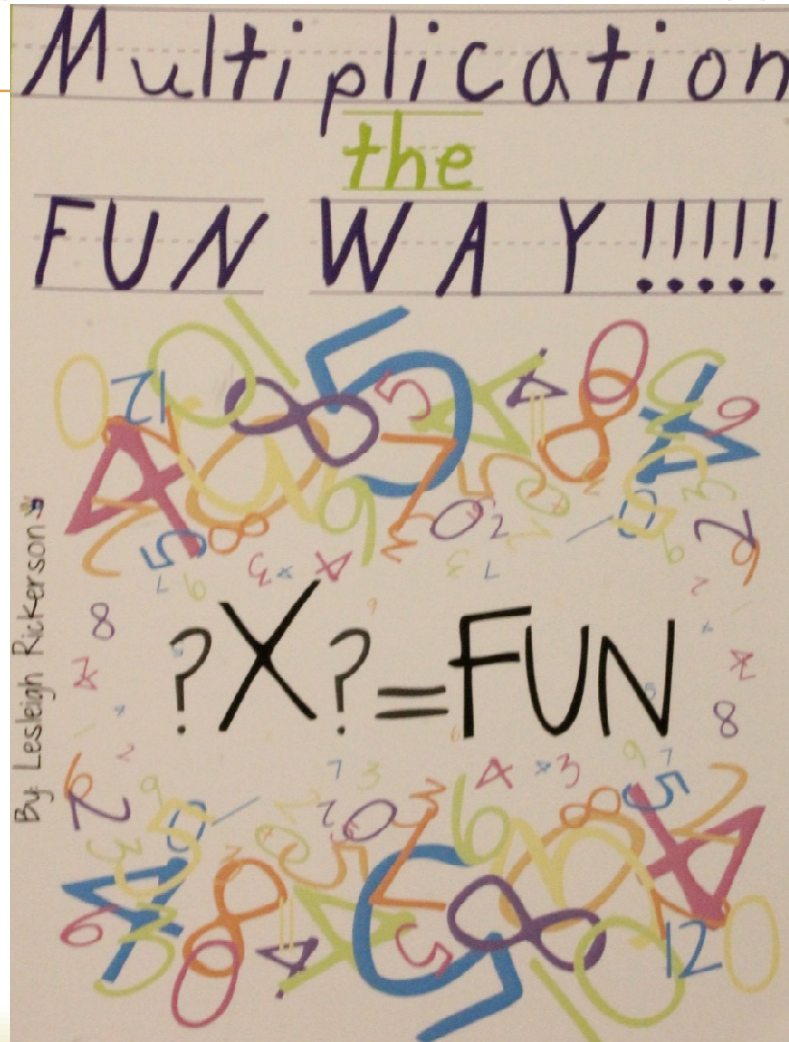
$$\frac{1}{4}$$

Tyler thought this was a tricky thing to do, so he decided to use math to make sure he would be correct.

He cut the butter in half. Then he cut it again to make one quarter. The, he cut it once more to make one eighth.





Multiplication Flip Book



TWOS

Examples:

$$\begin{array}{r} 3 \\ \times 2 \\ \hline 6 \end{array}$$


$$\begin{array}{r} 12 \\ \times 2 \\ \hline 24 \end{array}$$


$2 \times 1 =$

$2 \times 2 =$

$2 \times 3 =$

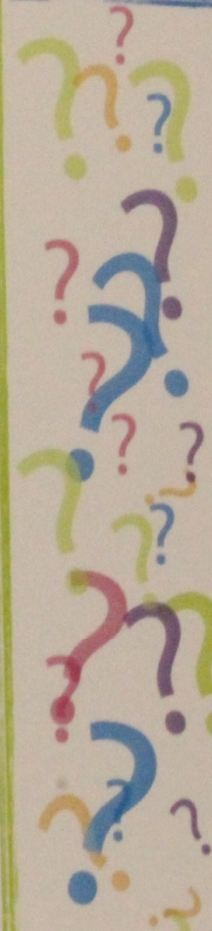
$2 \times 4 =$

$2 \times 5 =$

$2 \times 6 =$

$2 \times 7 =$

2



Graphing



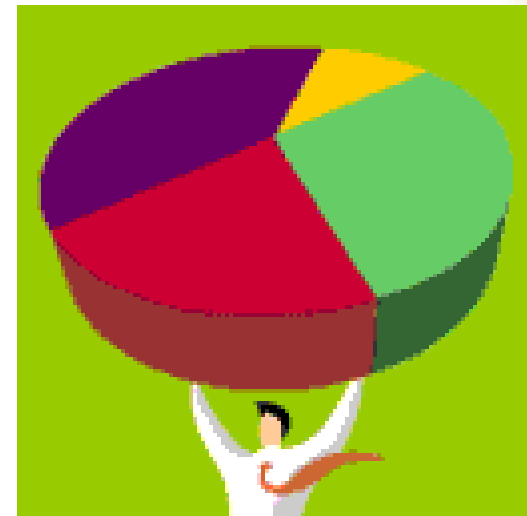
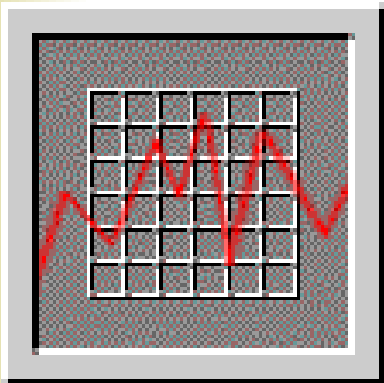
- Graphing Tools
 - Illustrator & InDesign
- Business Information



Graphing



- ❧ Create more depth
- ❧ Integration possibilities
 - ❧ Make it more meaningful
 - ❧ Fun!



Why have an infographic?



Information + graphics = infographics
The smart new way of communicating ideas, data, knowledge

Infographics explain complex information quickly...



**Using graphs and charts,
icons and symbols...**



...and stylish illustrations. A picture says a thousand words.



They get straight to the point



they capture attention



They spread the word
- thanks to social media...

Just seen this cool infographic
tinyurl.com/bt8kr4d
Please RT!



...and websites that share best infographics
with Twitter followers and Facebook fans.



Infographics are the perfect companion to traditional
press releases, and text-heavy white papers.

Journalists  infographics

Why wouldn't they?
Great infographics
help tell the story.

News websites, newspapers and magazines run infographics.



And companies publish them on their websites, driving inbound links, helping boost traffic and search rankings.



 **The
Infographics
Agency**

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Time you joined the infographic revolution?
Talk to us now!



Infographs



Infographs

- ❧ Why infographs in VIT?
 - ❧ Lucrative
 - ❧ Trend
 - ❧ Intensive design process
 - ❧ Researching data
 - ❧ Time and dedication
 - ❧ Accurate and reliable data
 - ❧ Create a strong visual impact
 - ❧ Precisely displays information
 - ❧ Rational
 - ❧ Blend with the overall design.

Infographs



Introduction

Review several infographs

<http://www.infographs.org>

<http://www.coolinfographics.com/>

<http://www.mymodernmet.com/profiles/blogs/10-eyeopening-infographs-you>

<http://pinterest.com/bucknellcareer/infographs/>

<http://www.dailyinspiration.nl/10-awesome-infographics-for-graphic-designers/>

Students select one to analyze

Criteria for analysis

Graphic style

Font choice

Color

Statistics



THE CLEANING SERVICES industry brings in more than

\$50 BILLION
A YEAR,



from commercial janitorial services to residential cleaning agencies, and the industry is projected to continue growing as the baby boomer generation continues to age and older Americans seek help with housework.



30%

Percentage of maids and housekeeping cleaners employed in private households

1 in 10

Households that hire a residential cleaning service or maid



Americans generated
MORE THAN 250 TONS
of garbage in 2010.



MORE THAN A THIRD of that was recycled, but that's still a whole lot of trash filling a whole lot of garbage bins across the country. From half-chewed food to unread newspapers to beer cans, let's take a look at what we throw away.



More than 70 million tons

OF PAPER IS DISCARDED EVERY YEAR, BUT PAPER SEES THE BIGGEST PERCENTAGE OF RECYCLING AND COMPOSTING AT 62.5%.



THAT'S THE EQUIVALENT OF **more than 66 reams** OF REGULAR LETTER-SIZED PAPER.



THE AVERAGE PERSON SENT **334 pounds** OF PAPER OR PAPERBOARD TO RECYCLING EFFORTS IN 2010.

About 34 million tons

OF FOOD WASTE IS THROWN OUT EVERY YEAR, BUT LESS THAN 3 PERCENT IS COMPOSTED OR RECYCLED.

FOOD WASTE REPRESENTS THE LARGEST CATEGORY OF WASTE THAT MAKES IT WAY TO LANDFILLS.



13.9%
Food Scraps



THE AVERAGE FAMILY OF FOUR THROWS OUT

880 pounds

OF FOOD A YEAR; THAT'S ABOUT THE WEIGHT OF AN ADULT COW



MORE THAN HALF THE

33.4 tons of yard waste

PRODUCED EVERY YEAR IS COMPOSTED OR OTHERWISE RECYCLED; THAT'S THE SECOND-HIGHEST RECOVERY TOTAL AMONG ALL THE CATEGORIES.



13.4%
Yard Trimmings



LESS THAN 8 PERCENT OF THE

31 million tons of plastics

THROWN OUT WAS RECYCLED IN 2010.



12.4%
Plastics



THAT MEANS

28.6 million tons

OF PLASTICS MADE THEIR WAY INTO LANDFILLS OR INCINERATORS.

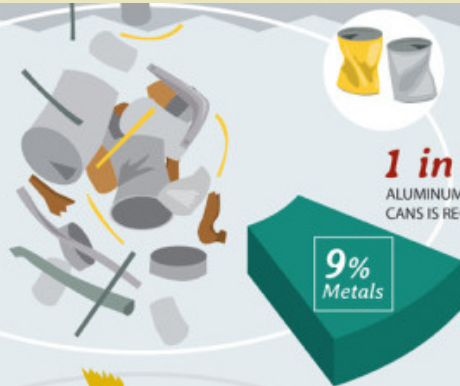
THE LARGEST CATEGORY OF PLASTICS IS COMPOSED OF CONTAINERS AND PACKAGING, BUT THE CATEGORY ALSO INCLUDES APPLIANCES, FURNITURE, DIAPERS, TRASH BAGS AND MEDICAL DEVICES. WITHIN THE CATEGORY, PLASTIC BAGS SAW A BETTER RATE OF RECYCLING AT

12%

METALS ENJOY THE THIRD HIGHEST RECYCLING RATE AMONG THE OVERALL WASTE CATEGORIES.

IN 2010, NEARLY TWO-THIRDS OF THE TOTAL METAL WASTE PRODUCED **-22.4 million tons-** WAS RECYCLED.

NONFERROUS METALS, WHICH INCLUDE LEAD FROM LEAD-ACID BATTERIES, WERE RECYCLED AT A 70 PERCENT RATE.



13 million tons of textiles and 7.7 million tons of rubber or leather

WERE THROWN OUT, WITH ABOUT 15 PERCENT OF EACH CATEGORY AVOIDING LANDFILLS.



8.4%
Rubber, Leather
& Textiles



MORE THAN 14 PERCENT OF THE NEARLY **16 million tons of wood** THROWN OUT EACH YEAR IS RECYCLED. THAT INCLUDES WASTE FROM FORESTRY OPERATIONS AND SUBURBAN WOOD CLEARING.

6.4%
Wood

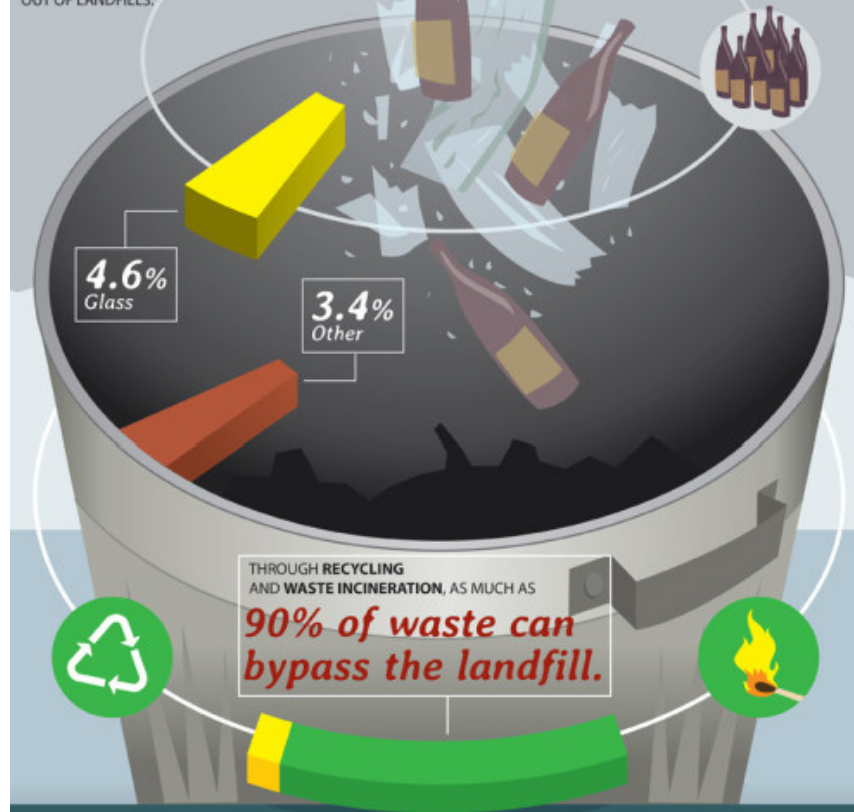
Nearly 12 million tons of glass waste

IS PRODUCED, WITH ABOUT 27 PERCENT STAYING OUT OF LANDFILLS.

THAT MEANS

3 million tons

OF GLASS NEVER SAW A LANDFILL. THAT'S A LOT OF CHARDONNAY.



SOURCES

American Forest and Paper Association U.S. Bureau of Labor Statistics U.S. Census Bureau U.S. Environmental Protection Agency

<http://www.sbdnet.org/small-business-researchreports/commercial-residential-cleaning-services>

Infographs



- ❧ Create Infograph
 - ❧ Select topic
 - ❧ Research
 - ❧ Analyze data
 - ❧ Design
 - ❧ Create original graphics

Infographs



Infographs

Wiki

<http://vit2.pbworks.com/w/page/52569567/FrontPage>

Upload Infograph

Critique

1. What did you learn from the infograph?
2. What additional information would you like to learn about the topic?
3. What suggestions do you have to improve the infograph?
4. How do the graphic details (colors, fonts, graphics) add to or distract from the infograph?

Presentations

Breaking the Bank: Costs of raising a special needs child.

Healthy Children

birth to age 18: approximately \$222,000

Special Needs Children

birth to age 18: approximately \$285,500 if qualified for assistance programs.

The Financial Time Bomb



Only 22.9% special needs parents in MI have some form of college education.



Over 70% parents are forced to cut hours or quit working in order to provide care.

Caregiving families have median incomes more than 15% lower than non-caregiving families.



47% families report that care has used up all or most of their savings.

In 2009, Michigan cut approximately **\$317 million** from funding to assistance programs for special needs children.

Best Aid Programs for special needs kids:

2008	2012
1. Massachusetts	1. Massachusetts
2. Michigan	2. Rhode Island
3. Rhode Island	3. New York
4. New Hampshire	4. New Hampshire
5. New York	5. Connecticut
	6. Michigan

Michigan Out-of-Pocket Costs:
\$642

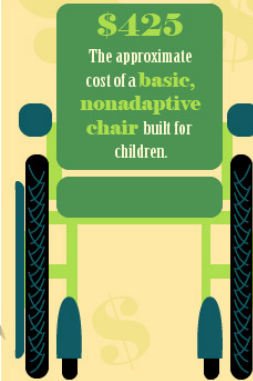


Equipment Costs:

Wheelchairs

\$425

The approximate cost of a **basic, nonadaptive chair** built for children.



However, when considering specialized wheelchairs, the average cost is approximately

\$1400.00

Is There a Way Out?

CSHCS in 2008

Children's Special Health Care Services

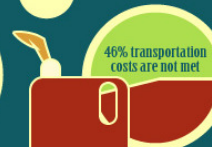
Average family pays \$495 to participate in aid-based program, which provides:

- prescription cost coverage
- coverage for specific therapies
- travel reimbursement
- coverage of basic needs (diapers, etc)
- educational programs regarding disabilities, therapies, and providers
- aid with managing health insurance costs and benefits

CSHCS only offers aid to those with a physical diagnosis. Consequently, they do **not** cover those with autism, downs syndrome, or other serious and demanding disabilities that are "strictly mental."

and even if you do **qualify**...

Since 2009, coverage of many basic needs such as diapers and dental products have been cut from the program.



Sounds great, right?

Look Closer.

We obviously have some work to do.

Michigan Department of Community Health, Children With Special Needs Fund: Annual Survey, Michigan Department of Community Health, Print.
"Wheelchair Store and Medical Supply Shop" Wheelchair: Manual & Electric Wheelchairs. Web. 05 Apr. 2012. <http://www.1800wheelchair.com/>.
"Expenses on Children by Families." USGA Center for Nutrition Policy and Promotion. May 2011. Web. <http://www.cnpp.usda.gov/>.
Shattuck, Paul T. "Rankings Table from New WUSTL Study | Newsroom | Washington University in St. Louis." Document Moved. WUSTL Publications, 10 July 2008. Web. 05 Apr. 2012. <http://news.wustledu/news/Pages/11870.aspx>.
National Alliance for Caregiving. "Caregivers of Children." www.caregiving.org. AAR#: www.caregiving.org/%2Fdata%2FReport_Caregivers_of_Children_11-12-09.pdf>.
Samantha Kaufman



THE LEGO GROUP

FUN FACTS :D



FUN FACT #1

There are LEGO conventions all over the world where fellow LEGO users can get together and share their creations



FUN FACT #2

LEGO was created in 1934 by Ole Kirk Christiansen in Billund, Denmark. Before they made plastic bricks, they made wooden toys.



FUN FACT #3

LEGO comes from the Danish phrase leg god, which means "play-well".



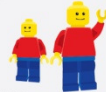
FUN FACT #4

LEGO has made approximately 400 billion bricks in its lifetime. That is 62 pieces for every person on the planet!



FUN FACT #5

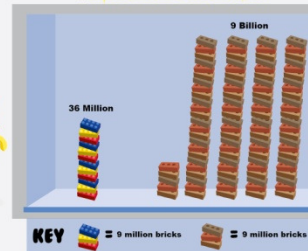
The modern Lego brick was patented in 1958, and bricks from that year are still compatible with current bricks.



The LEGO Group has been making little plastic toys for decades. But how many? And how does that compare to the world? I explore these questions, as well as present several other statistics and facts about the LEGO Group.

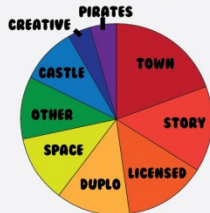


BRICKS MADE IN A YEAR



Now LEGO's numbers may seem really insignificant, but the 9 Billion made in America is the total of ALL the brick making companies, while LEGO is just one by itself.

LEGO THEMES AND DISTRIBUTION OF SUB-THEMES



Base Themes:	# of Sub-Themes:
TOWN	31
SPACE	18
CASTLE	15
PIRATES	6
LICENSED	22
STORY	23
CREATIVE	7
JUNIOR(DUPLO)	20
OTHER	17



AVERAGE RUBBER TIRES MADE IN A YEAR



There are 46 LEGO Retail stores operated in the world. So far they only exist in Canada, The United States, and Europe.



Why Integration is Vital



Looking Ahead



Expand Projects

- ✧ We are incorporating more writing throughout the process. Students read and analyze children's books this year and write a paper.
- ✧ Possibly donate children's books to a local school or library
- ✧ Create infographs on topics related to school or teen issues and post in our building
- ✧ Create infographs on community issues and present to news organizations

Smarter Balanced Assessments

- ✧ Writing in the content areas
- ✧ Performance tasks
- ✧ Problem solving



Information



☞ Contact Information:

☞ Julie Orr: jorr@tbaisd.org

☞ Karen Shoskey: kshoskey@tbaisd.org

☞ Handouts & Lesson Documents

☞ <http://tbaisdctc.weebly.com>

Other Programs



- ☞ Culinary Arts
 - ☞ Business Math
 - ☞ Yield Testing
 - ☞ Popularity Index
 - ☞ Restaurant Project
 - ☞ Management Teams
 - ☞ Given Restaurant Information
 - ☞ Decisions
 - ☞ Staffing
 - ☞ Design
 - ☞ Menu
 - ☞ Creative Element

Other Programs



- ❧ Construction Trades, Skilled Trades, & Electrical
 - ❧ Algebra 2
 - ❧ Ratios & Proportions
 - ❧ Blueprint Reading
 - ❧ Design Home
 - ❧ Draw to scale
 - ❧ Parking Lot Addition