Objectives:

- Develop a cohesive visual language;
- Create appropriate design for multiple age groups with a primary target audience of middle school students and their teachers;
- Enhance accessibility and “fun” aspect of the subject matter.
Target Audience

- The audience being targeted can be divided into two categories:
  1. teachers
  2. middle-school students

- Although the purpose and usage of this site differs for each category it must appeal to both of these audiences.
Goals/Communication

The goals for the icon illustrations are:

• To illustrate a lively and creative solution that effectively communicates the outlined lessons and subject matter.

• These visual images should be easily understood and quickly deciphered by both middle-school students and teachers.

• Each icon illustration should be both dynamic and cohesive in regard to the other components of the site.
Data (Visual References)

Definition
Figures or facts from which conclusions may be drawn.
• Generally expressed in a chart, table, or graph.
• Statistical analysis.
Number Operations (Visual References)

Definition
• Comparing and organizing whole numbers, fractions, decimals, and percents efficiently.
Measurements (Visual References)

Definition
- Range, dimension, extent, or capacity of something.
- Different things that can be measured... time, size/length, weight, speed, rate of an object, growth, etc.
- Different units... metric, US (in. ft. etc.), monetary, volume, height, weight, altitude, speed, size, etc.
**Definition**

- Rather than working directly with numbers, algebra uses symbols or elements of some set. These symbols, mainly lower-cased letters, are used to represent variables in the set. For example...
  
a + 3(8) = 36... solve for “a”
  
this can also be a word problem.
Geometry (Visual References)

Definition

• Deals with the measurements, properties, and relationships of lines, angles, points, surfaces, and solids.

• shapes... line, triangle, square, pentagon, hexagon, octagon, cone, sphere, cube, rhombus, pyramid, etc.
Sketches and Thumbnails
Sketches and Thumbnails

Icon Illustrations

Project:
Web-based Mathematics Education
Draft Site redesign
Logo development
Icon development

Date: April 19, 2006

Project Team:
School of Visual Comm. Design
Kent State University
Prof. Sanda Katila
Anne H. Berry, Irene Giller, Jerad Lavey
Design Considerations

Color

• The colors for the illustrations should relate but are not subject to the color scheme of the entire site. They should be fun, energetic, and separate easily from one another.

Medium for Communication

• Based on the feel of the site and the targeted audience (students and teachers); the illustrations were constructed using acrylic, oil pastels, and cut paper. By using these mediums in an energetic nature, the goals are to give WME a fresh look and to create icons that are easily associated with the lesson being covered.
Preliminary Paintings (Color Studies)

Data

Measurement

Geometry
Data (Final Illustration)
Number Operations (Final Illustration)
Measurements (Final Illustration)
Algebra (Icon Illustration)
Geometry (Final Illustration)
Icon Illustrations (Entire Series)
Round 1:

Early explorations drew inspiration from computer game logotypes and software icons to evoke feelings of play, excitement, and adventure.

The exploration focused on the WME initials rotated in space and drawn three dimensionally.

The design was developed with the possibility of animation in mind.
Logo Development

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Round 2:

The first steps of the new design exploration involved brainstorming a variety of ideas.
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Icon development

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New Goals:

The design should:
- Complement the look and feel of the website and icons
- Reference mathematics in a non-technical manner
- Transcend language and cultural barriers
- Be adaptable to print media
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2 directions were selected for further exploration.
Logo Development

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Selected Solution:

The selected solution is a friendly face with geometric qualities and mathematical relationships rendered in a painterly style.
Selected Solution:
Selected Solution:

Logo Development
Logo Development

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Welcome!
Welcome to Web-based Mathematics Education (WME) at Kimpton Middle School. This site is part of a pilot project to develop WME and create a new paradigm for mathematics education.

Making Math Easy and Fun
WME provides interesting, dynamic and hands-on lessons expertly prepared, organized, and delivered on the Web in a customized form to your classes.

STUDENTS:
click lessons to begin today's class

TEACHERS:
click lessons to begin today's class or prepare to customize lessons and modules

VISITORS:
click here to explore the site
Go to today’s lesson

Please select your class

• 7TH GRADE MATH | MRS. WILSON
• 7TH GRADE OASIS MATH | MRS. BAKER
• 8TH GRADE MATH | MR. BROWN
• 8TH GRADE OASIS MATH | MRS. YOAK

Links to teacher resources online...
Beginning of color-coding system; green for “percentages” Lesson Modules
Motivation

What Does LeBron James Have to Do with Percents?

LeBron James sparkled throughout, and Zydrunas Ilgauskas' rebound and lay-in with 37 seconds to play was the pivotal basket Friday in an exciting 89-87 victory over San Antonio at Gund Arena. Cleveland quickly overcame an eight-point deficit with six minutes left and then exchanged leads with the Spurs several times down the stretch. James finished with 32 points and 11 rebounds, Ilgauskas had 16 and 12, and Jeff McInnis tallied 15 and eight assists.

Well, you'll have to learn about percentages before you can find out!
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click classes to begin today’s class

TEACHERS:
click classes to begin today’s class or prepare to customize lessons and modules

VISITORS:
click here to explore the site

Click here to learn about the standard areas in mathematics education

Revised homepage incorporating new logo and link to “Standard Areas” section of site
Revised design of lesson page, directing students to respective teachers/courses
Please follow instructions from your teacher to go to today's lesson. Your lessons are all listed under the modules below:

- Length and Area
- Percentages
- Proportions
- Possibilities
- Fractions
- Fractions and Percents
- Understanding Data
- Number Relations
- Integers

Revised template of Topic Module page
Lessons > Baker-6th Grade

Please follow instructions from your teacher to go to today's lesson. Your lessons are all listed under the modules below:

- Length and Area
- Percentage
- Proportions
- Possibilities
- Fractions
- Fractions and Percents
- Understanding Data
- Number Relations
- Integers
PERCENTAGES: Lesson Pages

01  Introduction  What does LeBron James Have to do with Percents?
02  Percent and Pizza  (Brief description)
03  A Percent Grid  (Brief description)
04  Percent and the Dollar  (Brief description)
05  Percent of Numbers  (Brief description)
06  Dining Out  (Brief description)
07  A Percent Calculator  (Brief description)
08  Percent and Basketball  (Brief description)

Revised template of Lessons page
PERCENTAGES: Introduction

LeBron James sparkled throughout, and Zydrunas Ilgauskas’ rebound and lay-in with 37 seconds to play was the pivotal basket Friday in an exciting 89-87 victory over San Antonio at Gund Arena. Cleveland quickly overcame an eight-point deficit with six minutes left and then exchanged leads with the Spurs several times down the stretch. James finished with 32 points and 11 rebounds, Ilgauskas had 16 and 12, and Jeff McInnis tallied 15 and eight assists.

Well, you’ll have to learn about percentages before you can find out!
PERCENTAGES: Percent and Pizza

Do you know that Italians like SQUARE PIZZAs as well as round ones? Little Caesars actually makes them square.

A rectangle pizza has been divided into 100 equal little pieces. Each piece is 1/100 of the whole pizza, and is said to be one percent of the whole.

Initially, all, or 100 percent are uneaten. And none, or zero percent, has been eaten.

Click on some pieces and see what happens.

To start over simply reload the page.
PERCENTAGES: Dining Out

After a hectic week with much work and activities, it is Friday, how wonderful. You go out with your family for a sit-down meal. From the menu the whole family orders.

We have reproduced a typical menu here. Use this menu to enter your order. When you are done ordering, we'll look at the bill and figure out the tip, the tax, among other things.
ICON SYSTEM FOR STANDAR D AREAS in mathematics education:

- Algebra
- Data Analysis and Probability
- Geometry
- Measurement
- Number and Operations
- Problem Solving

“Standard Areas” section to help define and explain icon system
STANDARD AREAS and lesson organization in mathematics education

Related WME lessons are grouped into modules such as percentages, equivalence and taking chances. Each module may have a number of lessons, typically a dozen or so. Modules are grouped into content areas such as specified by the NCTM curriculum standard:

ALGEBRA

DATA ANALYSIS AND PROBABILITY
GEOMETRY
MEASUREMENT
NUMBER AND OPERATIONS
PROBLEM SOLVING

Overview describing Algebra standard area...

Detail of icon—opportunity to provide overview of what kind of material is covered under “Algebra” section
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