



I'll bet you he takes the whole nine yards in a New York minute.



Such weighty matters

What's your angle?



Are you RIGHT?

How Do You Measure Up?



Meter Tree-ty of 1875



1 m

Or
INCHeresting WEIGHS
to use different units of
measurement



Take a load off!

An Interdisciplinary/Interdisciplinary Thematic Unit
of Measurement for Grades 6-7

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OVERVIEW

I. CONTENT:

Americans use the greatest variety of units of measure from customary units to metrics and an amazing combination of both. Students need to understand the concept of measurement, how and why it is used, the units used, and when to use the units. Measurement is important, so that they can solve problems using their knowledge of estimated, standard, and metric units of measure for dimension, quantity and capacity. Students need to know the processes involved to be able to solve the problems that they will encounter in their own life experiences.

II. PROCESS:

Understand measurement and its history; use reading comprehension skills to better understand measurement; create products using illustrations, diagrams, and models that are used in daily life; order process steps to derive a final solution; recall units of measurement use in dimension, quantity, and capacity; designs using the disciplines of art, music and/or technology using measurement; connect prior learning to new learning to gain a deeper understanding of measurement; work together in cooperative group; engage in meaningful activities; journal about the process in finding solutions to problems using metacognition; teach others about a process or topic in measurement

III. PRODUCT:

Students will be able to demonstrate their understanding and skills associated with measurement in estimating and using standards/metric units for dimensions, quantity and capacity. The students will be able to apply their knowledge and skills in solving problems and creating a student selected final product.

Unit Overview: Alignment with National / State / District Pupil Performance Standards

Overarching Benchmarks / Standards / Goals for **COMPLETE unit of study:**

Benchmark 1: Texas Math TEKS: Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics.

Benchmark 2: Texas Math TEKS: Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical or algebraic mathematical models.

Benchmark 3: Texas Math TEKS: Solve application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles.

I-SEARCH INDEPENDENT RESEARCH PROJECTS FOR GIFTED AND TALENTED STUDENTS

1. PARADOXES:

A common belief is 5-pound of shrimp is 5 pounds of edible protein. Research this belief. Make a detailed illustration of your findings.

2. ATTRIBUTES:

The American customary measurement system is on trial for ignoring the Treaty of Meters signed in 1875. Create a political cartoon showing your opinion of what you feel the verdict should be.

3. ANALOGIES:

Design a pop-up book illustrating the similarities between the US Customary system and the Metric System of measurement.

4. **DISCREPANCIES:**
Make a flipbook on how to measure with a 12-inch ruler with varying degrees of accuracy.
5. **PROVOCATIVE QUESTIONS:**
Where did the cupcake get its name? Draw a comic strip showing your findings.
6. **EXAMPLES OF CHANGE:**
Make a collage showing products labeled in both Customary and Metric.
7. **EXAMPLES OF HABIT:**
Make a video tape of the President of the United States announcing the immediate and total implementation of the Meter Treaty of 1875.
8. **ORGANIZED RANDOM SEARCH:**
Is a BTU (British thermal unit) a global term? Make a Venn diagram of the countries who use the term BTU and those that do not.
9. **SKILLS OF SEARCH:**
How has the golf ball changed over the years to improve its distance and trajectory? Make three (3) PowerPoint slides to discuss your findings.
10. **TOLERANCE FOR AMBIGUITY:**
US customary unit of one ton equals 2,000 lbs; A British ton is equal to 2,240 pounds. What other units of measurement are named the same but have different values? Make a chart demonstrating your research.
11. **INTUITIVE EXPRESSION:**
“When we cannot use the compass of mathematics or torch of experience...it is certain we cannot take a single step forward”—*Voltaire*
Create a mural demonstrating what this quotation means to you.
12. **ADJUSTMENT TO DEVELOPMENT:**
Lord Kelvin (William Thomson), Gabriel Fahrenheit, Werner Heisenberg, and Joseph I. Lagrange are sitting in a room today discussing measurement. Record their dialogue as they lay the groundwork for a new system of measurement.
13. **STUDY CREATIVE PEOPLE AND PROCESS:**
Research how many medical treatments discovered in the past 10 years have their basis in old wives tales or folk medicines. Make an exhibit for the Houston Health and Medical Science Museum.
14. **EVALUATE SITUATIONS:**
You are living in 2312. How has measurement technology changed? Write a science fiction story detailing your vision of this concept.
15. **CREATIVE READING SKILL:**
Read the picture book “Heavy as a Hippopotamus” by Miriam Schlein. Make a new book jacket for this book.
16. **CREATIVE LISTENING SKILL:**
Create a jingle to teach the customary/metric units of volume/capacity.
17. **CREATIVE WRITING SKILL:**

Rewrite a nursery rhyme or song and/or fairy tale written with customary measures to metric (*Inchworm, Inchworm*).

18. **VISUALIZATION SKILL:**

Make a rebus book of idioms including “Two’s company, three is a crowd”, “take five”, “in for a penny, in for a pound”, “love triangle”, etc.

<p style="text-align: center;">ACADEMIC/CRITICAL THINKING SKILLS <u>ANALYZING HUMAN ACTIVITIES!</u> (AHA!)</p>
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Texas TEKS 6.11, 7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the Universal Theme of **Producing, Exchanging and Distributing** create mastery learning of essential concepts in this unit? *Why the standard measure is necessary to the global economy.*

1. **PRODUCING, EXCHANGING, AND DISTRIBUTING** [ECONOMICS]

Textbook or Database: www.nist.gov/public_affairs/kids
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: “Money, Money, Money” by the O’Jays

Film clip from “Jungle 2 Jungle”

Students will: Students will list five units of measurement or students will identify words in the business section of the newspaper that reflects measurement. Class will compile a word wall from their list of words.

COMPREHENSION:

Students will view video, “Measure to Measure: Length”. Explain in their own words to a partner why a standard unit of measure is necessary.

APPLICATION:

Anticipatory Set: Student will trace their foot and cut out the silhouette.

Students will create a (class / team product): Students will measure the length of the room using their foot silhouette. Record their findings on the chart provided.

Multicultural and/or ESL and/or Bilingual Link: Students will translate “feet” into the languages constituted by class makeup.

Mathematics/Science Link and/or Humanities Link: Discuss how the standard unit of measure has changed over the years.

School-to-Career/Tech Prep Link: List careers that use length as a daily measurement.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory Set: Film clip from “Holes” showing the tennis shoes

Posters of professional basketball players and their tennis shoes

Students will: Design a campaign slogan/poster to elect your foot to be the standard unit of measurement for the classroom.

Class/team/individual product: Students will have 15 seconds to present their campaign slogan/poster to class. Voting for the standard foot will be at the end of class.

INDIVIDUAL JOURNAL ASSIGNMENT:

Students will summarize their knowledge of why standardized measurement is necessary to function in the world today.

HOMELINK:

Measure a room at home using their foot and compare it to measuring using standard foot.

Texas TEKS 6.11, 7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the Universal Theme of **Transportation** create mastery learning of essential concepts in this unit? *Measurement of distance has changed over the years.*

2. **TRANSPORTATION**

Textbook or Database: www.nist.gov/public_affairs/kids
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: Film clip of “Around the World in 80 Days” – 2004

Song clip of “Twenty-five Miles” by Edwin Starr

Students will: name their favorite mode of transportation.

COMPREHENSION:

Students will defend their favorite mode of transportation in view of gasoline prices today.

APPLICATION:

Anticipatory Set: Song clip, “I can’t drive 55” – Sammy Haggard

Students will create a (class / team product): Estimate how far you walk in a day. Using a school map, measure the distance traveled in one day using a pedometer or “your foot”.

Multicultural and/or ESL and/or Bilingual Link: Students will discuss differences of transportation in other countries.

Mathematics/Science Link and/or Humanities Link: Map skills – compute distance from home to school given a map of the neighborhood with distance grid. (Or using maps from www.mapquest.com or other websites)

School-to-Career/Tech Prep Link: School transportation director speak with class to discuss routes, costs of transportation, and safety issues.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Film clip, “Speed” 1994

Students will: Pick five cars and compare gas mileage for each.

Class/team/individual product: Students will graph information gathered by the class by types of cars.

INDIVIDUAL JOURNAL ASSIGNMENT:

Justify how important gas mileage will be in the purchasing of your first vehicle.

HOMELINK:

Ask family member how much a gallon of gasoline was when they first began to drive.

Texas TEKS 6.11, 7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the Universal Theme of **Communications** create mastery learning of essential concepts in this unit? *How mathematics affects communications.*

3. COMMUNICATIONS

Textbook or Database: www.nist.gov/public_affairs/kids
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: Play downloads from cell phones.

Can and string phones or film clip from “Little Rascals”, or “Now and Then”

Students will: define communication.

COMPREHENSION:

Students will estimate the area of coverage by different cellular phone companies using company brochures.

APPLICATION:

Anticipatory Set: song clip, “Pick a Little, Talk a Little” from “The Music Man”

Students will create a (class / team product): Students will communicate math concept of measurement to the class using learning styles: visual, auditory, kinesics or a combination.

Multicultural and/or ESL and/or Bilingual Link: Draw and label ways of communicating.

Mathematics/Science Link and/or Humanities Link: Estimate distance between a cell phone or radio transmission tower to satellite.

School-to-Career/Tech Prep Link: Fiber Optic Technician to discuss benefits of fiber optics versus wire cable.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: film clip, “Frequency”-- 2000

Students will: compile estimates on data on minutes used in daily communication (i.e. text messaging, cell phones, landline, computer usage, e-mail, studying/homework, etc.)

Class/team/individual product: Graph results using students’ raw data.

INDIVIDUAL JOURNAL ASSIGNMENT:

How has written communication shrunk the world from 100 years ago to today?

HOMELINK:

How many cell phone minutes, does your family use in a week?

Texas TEKS 6.11, 7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the Universal Theme of **Protecting and Conserving** create mastery learning of essential concepts in this unit? *How measurement applies to protecting and conserving the environment.*

4. PROTECTING AND CONSERVING

Textbook or Database: formula to determine the volume of a cylinder ($V = \pi r^2 h$), textbook
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: Students will view a clip from Sesame Street’s “Oscar the Grouch’s” home. Students will reproduce the “Don’t Mess with Texas” poster for the classroom.

Students will: learn to measure the volume of the school cafeteria’s trashcan used for recycling soda cans and measure how many cans will fill one layer of the cylinder (garbage/recycling can).

COMPREHENSION:

Predict how many cans will be collected per day during all three lunch periods. Determine if one lunch period discards more cans than the other lunch periods (larger numbers of students, more 8th graders, etc.)

APPLICATION:

Anticipatory Set: Students will listen to a short clip from the air fresher commercials, “Plug-it in, plug-it in” but substitute “Fill-it up, fill-it up.”

Students will: determine the capacity through their model of a single layer of the cylinder and determine how many layers of soda cans will be needed to fill the recycling cans.

Students will create a (class / team product): Students will construct the single layer of the recycling can model and multiply this single layer model by the number of layers to the top of the can to determine the volume of a cylinder.

Multicultural and/or ESL and/or Bilingual Link: students will discuss whether our neighbors to the south also recycle for economic reasons or for environmental reasons.

Mathematics/Science Link and/or Humanities Link: Students will contrast the environmental impact of one month’s can recycling program versus no recycling.

School-to-Career/Tech Prep Link: students will invite a City of Houston landfill representative to illustrate the significance of a school program which recycles “X” number of cans per year.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Students will listen to “It’s Raining Pennies from Heaven.”

Students will: evaluate the positive effects of recycling (monetary and environmentally) of recycling a school year’s effort of cylinders full of cans

Class/team/individual product: The students’ team class project will be to graph the numbers of cans it will take to fill a garbage can with soda cans from responses of 25 random students.

INDIVIDUAL JOURNAL ASSIGNMENT:

Reflect on their understanding of cylinder capacity and their beliefs in “making a difference” and the ramifications of not recycling all the soda can cylinders.

HOMELINK:

The family’s garbage cans will be filled with crushed soda cans to determine the capacity of the cylinders with crushed cans versus whole cans in regard to the change in volume of the recycle receptacle.

Texas TEKS 6.11,7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the Universal Theme of **Providing Education** create mastery learning of essential concepts in this unit? The U.S. uses customary and metric units of measure, which often results in confusion, especially to foreign visitors. Students will gain a better understanding of the relationships between customary and metric units of measure as they are used in their daily activities.

5. PROVIDING EDUCATION

Textbook or Database: www.thinkmetric.com

<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: Film clip from “Chariots of Fire”

Listen to “10 Miles to Go On a 9-Mile Road”

Students will: match prefixes to U.S. number names and multiplication factors.

COMPREHENSION:

Find the distance in meters for 3K, 5K, and 10K runs.

APPLICATION:

Anticipatory Set: Read, Toward a Metric America: The United States and the Metric System
Federal Citizen Information Homepage:

http://www.pueblo.gsa.gov/cic_text/misc/usmetric/metric.htm

Students will create a (class / team product): In small groups, students will explain why the U.S. has not fully adopted the metric system.

Multicultural and/or ESL and/or Bilingual Link: Students will identify the root word origins of metric prefixes.

Mathematics/Science Link and/or Humanities Link: Given a list of objects, i.e. football field, CD, etc., students will explain which metric unit is best to measure each one.

School-to-Career/Tech Prep Link: Invite a guest speaker to discuss the use of the metric system in their profession.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Show a transparency of various currency and signs from different countries.

Students will: Compare and contrast the differences between common units of measurement for three different countries.

Class/team/individual product: Divide the class into teams and have each team develop a new metric system.

INDIVIDUAL JOURNAL ASSIGNMENT:

Explain why or why not you would prefer use of the metric system.

HOMELINK:

List the various types of measurements used in your home

Texas TEKS 6.11, 7.13, 8.14 STUDENTS WILL BE ABLE TO use underlying processes and mathematical tools. The students apply Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to (A) identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics; (D) select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems.

ESSENTIAL QUESTION: How does the Universal Theme of **Making and Using Tools and/or Technology** create mastery learning of essential concepts in this unit? *The student will integrate and use technology to solve real life mathematical experiences both inside and outside of school.*

6. MAKING AND USING TOOLS AND/OR TECHNOLOGY

Textbook or Database: www.usmint.gov/kids/flashIndex.cfm
www.google.com
www.links4kids.co.uk.ucc.htm
www.factmonster.com/mathmoney.html
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: Teacher made FLYER announcing (virtual) field trip to Mexico, Mexican mariachi music in the background

Students will: define the following words: Currency, value, conversion, exchange rate

COMPREHENSION:

Given a problem solving situation involving a class field trip to Mexico, the students will use a Google search of kid friendly resources to find, estimate and then calculate the conversion rate of \$25.00 United States dollars to Mexican pesos using a calculator and then checking their work against a currency converter. Question: Is the U.S. dollar worth more or less in Mexico than it is here in the states? Why do you think that? Have students defend their opinion.

APPLICATION:

Anticipatory Set: film clip of the TV “Supermarket Sweep”

Students will create a (class / team product): The student will create a pre-trip visual shopping list of five items they might buy for their trip to Mexico. Students will cut and paste items from a sale flyer onto a foldable book listing the cost of the items in U.S. dollars and then use a currency exchange website to determine the cost of the same item in Mexican pesos. Extensions: Have student find what the same item costs in another country’s currency.

Multicultural and/or ESL and/or Bilingual Link: Compare and contrast the physical attributes of Mexican pesos with U.S. Currency.

Mathematics/Science Link and/or Humanities Link: Use the internet to visit a travel site and choose one interesting place you might someday wish to visit in Mexico. Be prepared to tell why you chose it and, approximately how far it is from where you live using the world map.

School-to-Career/Tech Prep Link: Have the computer technology person at your school, or the librarian speak with your students about computer usage, internet safety and guidelines as well as the use of search engines such as Google.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: song clip, “If I was a Rich Man” from “Fiddler on the Roof”

Students will: use the internet to search out various lodgings and meal costs in Mexico City and calculate the amount of money that a person might need to stay over one day/night in that location.

Class/team/individual product: In a small group, create a budget for a two-day field trip to Mexico City, including at least one site of interest and one meal and snack for each day.

Brainstorm with group what types of things you will need to pay for. Decide how much money you will need to exchange in order for each individual to go on the trip, assuming transportation and one additional meal each day is paid for by the school.

INDIVIDUAL JOURNAL ASSIGNMENT:

How can understanding currency exchange help you to be a more global learner?

HOMELINK:

Ask you family if they ever visited another country and had to use currency exchange to understand, and participate in the buying and selling of goods and services. What were the biggest challenges? Record their responses to share with the class.

Texas TEKS 6.11,7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the Universal Theme of **Providing Recreation** create mastery learning of essential concepts in this unit? *The many ways measurement affects recreation and sports.*

7. PROVIDING RECREATION

Textbook or Database: <http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: Film clip from “Chariots of Fire”

Students will: list sports they enjoy participating in

COMPREHENSION:

The student takes the sports and explains how measurement is used in the sports by naming the measurement and unit used – The sport may involve more than one measure (i.e. 100 yd dash in track – yards/distance, seconds – time)

APPLICATION:

Anticipatory Set: T.V. clip from “Survivor” – showing a challenge the survivors must perform
Students will: take a sport and change some measurements to modify the game to provide a different strategy to use to win the game.

Students will create a (class / team product): will draw a model and explain their modifications and implications to the class.

Multicultural and/or ESL and/or Bilingual Link: Find a sport that is unique to other countries that is unfamiliar in the U.S. Describe how these sports are alike and/or different from similar U.S. sports.

Mathematics/Science Link and/or Humanities Link:

School-to-Career/Tech Prep Link: Choose a popular sport personality and discuss their school career before they became professional athletes.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Read the poem “Casey at the Bat” by Ernest Lawrence Thayer

Students will: Design a new sport and demonstrate with a partner how this new sport is played.

Class/team/individual product: The student will make a scale drawing of the playing area or/and equipment needed to perform the game.

INDIVIDUAL JOURNAL ASSIGNMENT:

Explain what sport you liked the best and give three reasons why. If you could change one thing about the sport, what would it be?

HOMELINK:

Ask a family member what sport they like and one they dislike and why.

Texas TEKS 6.11, 7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the Universal Theme of **Organizing and Governing** create mastery learning of essential concepts in this unit? *The U.S. Bureau of Weights and Measurements and the National Institute of Standards and Technology are the governing bodies of measurement for the United States.*

8. ORGANIZING AND GOVERNING

Textbook or Database: www.nist.gov/public_affairs/kids
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: film clip from television series “Numbers” (2005)

Song clip from “16 Tons” by Tennessee Ernie Ford

Students will: list at least five different forms of measurement and the base unit of measurement for each.

COMPREHENSION:

Students will select three items from a newspaper ad/sale paper that depend on established standard units of measurement to be useful and explain why the standards are necessary in each situation.

APPLICATION:

Anticipatory Set: film clip from “North to Alaska”

Students will create a (class / team product): Each team will create a crossword puzzle containing at least 20 units of measurement. These will be exchanged between the teams for solving.

Multicultural and/or ESL and/or Bilingual Link: Share with the class the units of measurement used in your native country (include money) and discuss what regulatory agency would be over your country.

Mathematics/Science Link and/or Humanities Link: Students will write one paragraph explaining what is meant by “standardizing weights & measures.”

School-to-Career/Tech Prep Link: Guest speaker from Post Office to discuss how standardization of weights & measurements is important in their job

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Read a summary report on the Baltimore fire of 1904 targeting the problems connecting fire hoses.

Students will: compare the National Institute of Standards & Technology with the International Bureau of Weights & Measures.

Class/team/individual product: Create a timeline to show changes in measurement standards since 1900.

INDIVIDUAL JOURNAL ASSIGNMENT:

What would be the differences in your life today if the U.S. used the metric system today?

HOMELINK:

With your family, see how many examples of the International System of Units (metric system) and the customary system of measurement are found in your home.

Texas TEKS 6.11, 7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the Universal Theme of **Moral, Ethical and Spiritual Behavior** create mastery learning of essential concepts in this unit? *Investigate the proper uses of the terms “standards of measurement” to measure moral, ethical and spiritual behaviors?*

9. MORAL, ETHICAL AND SPIRITUAL BEHAVIOR

Textbook or Database: www.nist.gov/public_affairs/kids
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: film clip of “Dead Poet’s Society”, Film clip of “Patch Adams”

Students will: define moral, ethical, and spiritual behaviors

COMPREHENSION:

Student will qualify acceptable/non-acceptable standards of behavior when given an example (i.e. copying another student’s homework, chewing gum, etc.)

APPLICATION:

Anticipatory Set: film clip, “Stand and Deliver” 1988

Students will: demonstrate personal standards of acceptable/non-acceptable standards of behavior in given situations.

Students will create a (class / team product): role-play acceptable/non-acceptable standards of behaviors in given situation similar to the game “Can of Squirms.”

Multicultural and/or ESL and/or Bilingual Link: discuss differences of acceptable/non-acceptable standards of behaviors in the different cultures (Japanese bow instead of shaking hands, etc)

Mathematics/Science Link and/or Humanities Link: Are boys smarter in Math/Science than girls?

School-to-Career/Tech Prep Link: Enlist a Career Counselor to speak with class about the different standards of behavior in the job place versus home or school.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: film clip, “Dangerous Minds” 1995

Students will: write a summary of their personal code of conduct.

Class/team/individual product: create a classroom constitution using their individual codes of conduct.

INDIVIDUAL JOURNAL ASSIGNMENT:

Do you think that your personal code of conduct will change as you get older?

HOMELINK:

What is your family’s code of conduct?

Texas TEKS 6.11, 7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the Universal Theme of Aesthetic Needs create mastery learning of essential concepts in this unit? *Artists, musicians, and other professional fine arts careers use measurements and math on a daily basis.*

10. **AESTHETIC NEEDS**

Textbook or Database: www.nist.gov/public_affairs/kids
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: a copy of a Picasso painting, a copy of a painting by Salvador Dali

Students will: Name the types of shapes found in the painting

COMPREHENSION:

Defend the need for society to have aesthetics (Art, music, dance)

APPLICATION:

Anticipatory Set: film clip, “Martha Graham Modern Dance Company”

The student will: create a front and back cover for a CD or DVD for “The School of Rock’s - Measurement”

Students will create a (class / team product): Gallery walk of the CD/DVD covers – which one would you buy.

Multicultural and/or ESL and/or Bilingual Link: Is the CD appealing to other cultures?

Mathematics/Science Link and/or Humanities Link: How are CD’s actually made?

School-to-Career/Tech Prep Link: professional fine arts career person to speak on measurement and math in their careers.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: film clip from “What Dreams may Come” 1998

Students will: design a mural to describe measurement

Class/team/individual product: Make a mural describing measurement.

INDIVIDUAL JOURNAL ASSIGNMENT:

Is there a relationship between art and mathematics?

HOMELINK:

Discuss the art found in your home.

Texas TEKS 6.8, 7.9 STUDENTS WILL BE ABLE TO solve application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles.

ESSENTIAL QUESTION:

Determine the discipline/sub-discipline of length relate to mastery learning of measurement. Length is an essential concept to learning measurement.

11. LENGTH

Textbook or Database: textbook, www.nist.gov/public_affairs/kids
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: film clip from “The Longest Yard”, “I can see for miles and miles” by The Who

Students will: define measures of length, foot, inch, yard, miles, meters, kilometers, fathom, furlough, hands, etc.

COMPREHENSION:

Give an example of something in the classroom that is: 12 inches long, one meter long, etc.

APPLICATION:

Anticipatory Set: Where the Sidewalks Ends by Shel Silverstein

Students will create a (class / team product): Measure the length of the cafeteria or gym or hallway using the various units of measurements. Chart and compare findings.

Multicultural and/or ESL and/or Bilingual Link: How far is it to the capitol of _____?

Mathematics/Science Link and/or Humanities Link: history of the “royal” foot or other measurements, how far is it to the moon?

School-to-Career/Tech Prep Link: builder/carpenter/architect speaker

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: film clip, “Jaws”

Students will: illustrate a comparison of student’s height to the length of a great white shark

Class/team/individual product: Students will research the length of a baby great white shark and the length of an adult great white shark (or other sea creatures); cut yarn (or paper strips) representing the lengths. In the hallway, display the lengths of the yarn and label.

INDIVIDUAL JOURNAL ASSIGNMENT:

What adjectives describe length or height?

HOMELINK:

Measure family members – draw and label heights of each.

Texas TEKS 6.9, 7.9, 8.10a STUDENTS WILL BE ABLE TO solve application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles.

ESSENTIAL QUESTION:

How does the discipline/sub-discipline of area relate to mastery learning of measurement? *Area is an essential concept to learning measurement.*

12. AREA

Textbook or Database: <http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: film clip of a “Field of Dreams;” sing, “Take me out to the Ballgame”

Students will: define square foot and area. Look up the area of the infield of a baseball field.

COMPREHENSION:

Give examples of usages of area in today’s world.

APPLICATION:

Anticipatory Set: baseball base (physical representation of a square foot)

Students will: Compute the area of classroom, gym, and/or cafeteria (designated area of the school).

Class/team/individual product: Check computations with a physical model of a square foot.

Multicultural and/or ESL and/or Bilingual Link: Are the baseball field/little league “diamonds” same area in other countries?

Mathematics/Science Link and/or Humanities Link: History of the baseball field – how has the diamond area change throughout history.

School-to-Career/Tech Prep Link: Field trip to local ballpark, groundskeeper of ballpark to speak to class

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Peanuts baseball cartoon, footage of hitting a homerun

Students will: write an editorial supporting their opinion of whether the dimensions of the local ballpark should be changed to the dimensions of a professional ballpark (i.e. Minute Maid Park)?

Class/team/individual product: Narrow argument to one statement to share with classmates and vote on the changes.

INDIVIDUAL JOURNAL ASSIGNMENT:

Defend your vote on the change with new ideas.

HOMELINK:

Discuss with your family, where you could safely practice baseball or softball?

Texas TEKS 6.8 STUDENTS WILL BE ABLE TO solve application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles.

ESSENTIAL QUESTION:

How does the discipline/sub-discipline of time relate to mastery learning of measurement? *The measurement of time affects our daily life and learning.*

13. TIME

Textbook or Database: <http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: song clip “Time in a Bottle” by Jim Croce

Film Clip “Time Tunnel”, Film clip “Time Line”

Students will: Predict how long you can hold your breath. Using stopwatches, time your partner.

COMPREHENSION:

Convert time from one unit to another (seconds, minutes, hours, days, etc.).

APPLICATION:

Anticipatory Set: film clip – “Back to Future”

Students will: solve word problems involving time management (varying minutes/days/months/years) problems to learn how to budget/manage time.

Students will create a (class / team product): make a cartoon illustrating their favorite time problem

Multicultural and/or ESL and/or Bilingual Link: learn time words from other languages

Mathematics/Science Link and/or Humanities Link: Atomic clock in Colorado, time zones

School-to-Career/Tech Prep Link: Clock repairperson speaks on time

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Song clip, “What time is it?” by the Spindoctors

Song clip, “Does anyone really know what time is it?” Chicago

Students will: design a bumper stick to represent daylight savings time

Class/team/individual product: display bumper stickers

INDIVIDUAL JOURNAL ASSIGNMENT:

How does daylight saving time affect you?

HOMELINK:

Discuss daylight savings time with your family.

Texas TEKS 6.8, 7.9 STUDENTS WILL BE ABLE TO solve application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles.

ESSENTIAL QUESTION:

How does the discipline/sub-discipline of temperature relate to mastery learning of measurement? *The measurement of temperature is an essential part of life and learning.*

14. TEMPERATURE

Textbook or Database: www.nist.gov/public_affairs/kids

<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: film clip, “Ice Age”

Film clip, “Day after Tomorrow”

Students will: given a thermometer, identify the freezing point and boiling point

COMPREHENSION: When given a thermometer reading, students will match outdoor activities to temperature and list the appropriate clothing worn.

APPLICATION:

Anticipatory Set: Film clip, “The Core”, “Journey to Center of the Earth”

Students will: use thermometers strips to measure the difference between forehead surface temperature and hand surface temperature.

Students will create a (class / team product): Compile results and look for trends.

Multicultural and/or ESL and/or Bilingual Link: Discuss how temperature affects national products from foreign countries.

Mathematics/Science Link and/or Humanities Link: History of thermometers

School-to-Career/Tech Prep Link: NASA – how temperature affects the space program (i.e. Challenger Explosion)?

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: film clip, “Fern Gully: The Last Rainforest” 1992

Students will: diagram water cycle and explain how temperature affects the cycle.

Class/team/individual product: Keep a class diary for a week to determine average class period’s outdoor temperature during that class period.

INDIVIDUAL JOURNAL ASSIGNMENT:

Reflect on how their life would be different without air conditioning.

HOMELINK:

How does temperature affect your electric bill?

Texas TEKS 6.8, 7.9, 8.9b STUDENTS WILL BE ABLE TO solve application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles.

ESSENTIAL QUESTION:

How does the discipline/sub-discipline of capacity relate to mastery learning of measurement?

Capacity/volume is an essential part of learning about measurement.

15. VOLUME CAPACITY

Textbook or Database: <http://www.utopia.utexas.edu>

<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: daily press cartoons on capacity [www.dailypress.com/extras/solution/images/SOL050602.gif, [SOL050702.gif](http://www.dailypress.com/extras/solution/images/SOL050702.gif), [SOL050802.gif](http://www.dailypress.com/extras/solution/images/SOL050802.gif)]

Students will: write complete sentences incorporating measurement tools mentioned in the cartoons

COMPREHENSION:

The student will display assorted ingredients along with the tools used to measure each. The students will extend their personal experiences to make educated guesses as to what could be made with what is given.

APPLICATION:

Anticipatory Set: Film clip - Tom Hanks “Big” scene when eating ice cream sundae,

Music clip - “Ice Cream Man” by Tom Waits

Students will create a (class / team product): follow directions, measure ingredients and make coffee can ice cream using directions found on the Utopia website.

Multicultural and/or ESL and/or Bilingual Link: translate ingredients into another language or bring a favorite sweet recipe from various cultures.

Mathematics/Science Link and/or Humanities Link: change liquid to solids

School-to-Career/Tech Prep Link: field trip to local ice cream maker (i.e. Blue Bell)

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Film clip from “Jack” -- eating ice cream

Students will: measure the resulting ice cream from coffee can into cups before eating

Class/team/individual product: complete data from how much ice cream was made by class, change cups into pints, 2 cups = 1 pint. If one recipe yields 1 cup, double the recipe to create 1 pint.

INDIVIDUAL JOURNAL ASSIGNMENT:

Write a letter to Ben & Jerry asking them to produce a new ice cream flavor with the ingredients you have combined.

HOMELINK:

Create an ice cream flavor for the family using the baggie method found at the Utopia Website.

Texas TEKS 6.8 STUDENTS WILL BE ABLE TO solve application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles.

ESSENTIAL QUESTION:

How does the discipline/sub-discipline of weight relate to mastery learning of measurement? *Weight is essential to learning about measurement and life.*

16. WEIGHT

Textbook or Database: www.nist.gov/public_affairs/kids
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: different physical representations of scale (musical, balance, body fat, fish, etc.)

Film clip from “Shallow Hal”

Film Clip from “Nutty Professor” 1996

Students will: name which unit of measurement you would use in determining mass of an object (paper clip, shoe, and a brick)

COMPREHENSION:

Estimate how much your shoe weighs. Weigh shoe and compare the results.

APPLICATION:

Anticipatory Set: Discuss the phrase, “That’s the straw that broke the camel’s back.”

Students will create a (class / team product): Give each team the same 10 objects to arrange in order of weight from lightest to heaviest using a standard. After three minutes, compare results between teams. (Suggested objects: cotton ball, penny, paper clip, skittles bag, math book, etc.)

Multicultural and/or ESL and/or Bilingual Link: How would you teach a visually impaired person to measure how much something weighs?

Mathematics/Science Link and/or Humanities Link: “The Overloaded Bridge” from The 10 Things All Future Mathematicians and Scientist must Know (But are Rarely Taught) by Zaccaro

School-to-Career/Tech Prep Link: DPS officer who weighs trucks and why it is important to avoid overage. (Butcher or Deli person who works with scales and weights.)

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Steps to Build a Balance Scale

Students will: build a balance scale

Class/team/individual product: play the “Weight is Right.”

INDIVIDUAL JOURNAL ASSIGNMENT:

What does it mean to you “to be at a healthy weight”?

HOMELINK:

Discuss with family, which weighs more: a pound of feathers or a pound of oranges.

Texas TEKS 6.8, 7.9 STUDENTS WILL BE ABLE TO solve application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles.

ESSENTIAL QUESTION:

How does the discipline/sub-discipline of angles relate to mastery learning of measurement? *Angles are essential to learning about the concept of measurement and life.*

17. Angles

Textbook or Database: www.nist.gov/public_affairs/kids
<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

KNOWLEDGE:

Anticipatory Set: Discuss meaning of the phrase - “What’s your angle?”

Students will: Define and draw an example of straight, right, obtuse and acute angles.

COMPREHENSION:

Students will find and list at least two examples of each type of angle in their real world.

APPLICATION:

Anticipatory Set: Film clip, “Trading Spaces”

Students will: use a protractor to measure various angles.

Students will create a (class / team product): make a protractor using different colors to separate acute, obtuse, right, and straight.

Multicultural and/or ESL and/or Bilingual Link: At what time is: an acute angle formed, a straight angle formed, a right angle

Mathematics/Science Link and/or Humanities Link: make a sextant to measure the angle of the moon at 8 PM

School-to-Career/Tech Prep Link: Architect/artist to talk about angles.

HIGHER ORDER THINKING SKILLS (H.O.T.S.):

Anticipatory set: Listen to MATHSPEAK by Harry Guffee or other applicable math songs from <http://www.songsforteaching.com/guffee/mathspeak.htm>

Students will: write rap song/dance about angles

Class/team/individual product: perform and videotape rap song/dance about angles

INDIVIDUAL JOURNAL ASSIGNMENT:

How do angles affect your daily life as a teenager?

HOMELINK:

Discuss with your family the different angles found in your home?

MORAL/ETHICAL/SPIRITUAL REASONING AND DILEMMAS FOR CHARACTER EDUCATION

TEN ETHICAL DILEMMAS

Texas TEKS 6.11, 7.13, 8.14 STUDENTS WILL BE ABLE TO apply mathematics to solve problems connected to everyday experiences, investigations of other disciplines, and activities in and outside of school; use tools, technology, or techniques.

ESSENTIAL QUESTION: How does the content of this unit reflect **character education** through Moral and Ethical dilemmas?

1. **Producing, Exchanging, and Distributing** [Economics]

ESSENTIAL QUESTION: How does the **Human Activity** of **Producing, Exchanging and Distributing** create moral/ethical dilemmas?

DILEMMA:

The class must decide which foot will be their classroom standard. Everyone will present their foot and poster/slogan to the class for selection. You have a class member who also happens to be the richest boy in town. He promises to invite everyone who votes for his foot to his “End of the Year” party at Astroworld. How will you vote?

2. **Transportation**

ESSENTIAL QUESTION: How does the **Human Activity** of **Transportation** create moral/ethical dilemmas?

DILEMMA:

Your favorite vehicle is parked outside the gym. You observe the keys are in the ignition. Do you “borrow” the dream car for a test drive or turn the keys into the office?

3. **Communications**

ESSENTIAL QUESTION: How does the **Human Activity** of **Communications** create moral/ethical dilemmas?

DILEMMA:

You find a cell phone in the hallway. The phone has a picture stored on it of your best friend. This picture is extremely inappropriate. Do you delete the picture before you return it to the owner, just return it, or turn it in to the office?

4. **Protecting and Conserving**

ESSENTIAL QUESTION: How does the **Human Activity** of **Protecting and Conserving** create moral/ethical dilemmas?

DILEMMA:

You are eating in the school cafeteria. There is a large mess on the cafeteria table where you usually sit. You know who left the mess. An adult asks you to clean it up or tell who is responsible. What do you do?

5. **Providing Education**

ESSENTIAL QUESTION: How does the **Human Activity** of **Providing Education** create moral/ethical dilemmas?

DILEMMA:

You are standing at the Coke machine after basketball practice. Today, you brought a Canadian coin from your grandfather’s coin collection to show to the class for extra credit. You reach into your pocket to get the change for the machine. You are short \$0.25 to buy your drink. The Canadian coin is the size of a quarter. Do you spend the Canadian coin?

6. **Making and Using Tools and/or Technology**

ESSENTIAL QUESTION: How does the **Human Activity** of **Making and Using Tools and/or Technology** create moral/ethical dilemmas?

DILEMMA:

You are assigned 10 questions for homework calculating the area of a polygon, and converting those measurements from inches, feet, and yards to centimeters and meters. You have a baseball game tonight and really do not have time for all the calculations. Your best friend gives you a website for where you can convert the measurements just by typing in the numbers. Do you use the website for your homework even though you know the teacher did not intend for a computer to do your work for

you, or do you get busy on your homework and do your own calculations, so you will not be late for your ballgame?

7. **Providing Recreation**

ESSENTIAL QUESTION: How does the **Human Activity** of **Providing Recreation** create moral/ethical dilemmas?

DILEMMA:

Your best friend is taking anabolic steroids and at the awards ceremony he receives a full scholarship to the state's university. Do you tell anyone about his illegal drug usage?

8. **Organizing and Governing**

ESSENTIAL QUESTION: How does the **Human Activity** of **Organizing and Governing** create moral/ethical dilemmas?

DILEMMA:

The boys in your school want to petition to wear earrings, which is against the school's dress code. How would you get the rule changed?

9. **Moral, Ethical and Spiritual Behavior**

ESSENTIAL QUESTION: How does the **Human Activity** of **Moral, Ethical and Spiritual Behavior** create moral/ethical dilemmas?

DILEMMA:

You are at the grocery store and walk by the bulk candy display. There is an "honor" money drop to pay for one or two pieces. You sample a couple of pieces of the more expensive candy and decide not buy it. Do you pay the honor box, tell the cashier that you had a few pieces, or do nothing?

10. **Aesthetic Needs**

ESSENTIAL QUESTION: How does the **Human Activity** of **Aesthetic Needs** create moral/ethical dilemmas?

DILEMMA:

Your best friend with the perfect school record asks to borrow your computer to do a homework assignment. While on the Internet, your friend violated the copyright law by making an illegal copy of the latest music CD (or DVD). What should you do?

<p style="text-align: center;">PRODUCTIVE THINKING SKILLS DIVERGENT / CREATIVE THINKING</p>

1. **BRAINSTORM MODEL**

A. BRAINSTORM ALL OF THE _____.

AHA #1: things that U.S. teenagers can use for money.

AHA #2: things that have wheels

AHA #3: non-verbal forms of communication

AHA #4: uses for recycled materials

AHA #5: things that can be tested

AHA #6: different ways people can calculate

AHA #7: the ways numbers are used in sports

B. BRAINSTORM AS MANY _____ AS YOU CAN THINK OF.

AHA #8: units of measurement

AHA #9: cafeteria rules

AHA #10: shapes (polygons)
 AHA #11: inch long objects
 AHA #12: indoors sports arenas/areas
 AHA #13: timepieces
 AHA #14: weather instruments

C. HOW MANY WAYS CAN YOU COME UP WITH TO _____?

AHA #15: fill a swimming pool
 AHA #16: weigh a house
 AHA #17: get from home to school

2. VIEWPOINT MODEL (Human or Animate)

A. HOW WOULD _____ LOOK TO A (N) _____?

AHA #1: newly designed nickel	Thomas Jefferson
AHA #2: space shuttle	Orville & Wilbur Wright
AHA #3: cell phone	Alexander Graham Bell
AHA #4: an aluminum soda can	King "Tut"
AHA #5: SAT test	caveman
AHA #6: GPS unit	Lewis and Clark
AHA #7: soccer	Huckleberry Finn
AHA #8: TV show "Numbers"	Galileo

B. WHAT WOULD A _____ MEAN FROM THE VIEWPOINT OF A (N) _____?

AHA #9: cure for cancer	hermit
AHA #10: digital picture	paint brush
AHA #11: millimeter	furlough
AHA #12: larger baseball field	groundskeeper
AHA #13: telephone land lines	spider
AHA #14: snowflake	laser
AHA #15: eyedropper	hummingbird
AHA #16: grain of sand	meteorite
AHA #17: Doritos chip	UFO

C. HOW WOULD King Edward I of England VIEW THIS? (Use one person from history here)

1: Centimeter
 2: Metric Conversion Act.
 3: British yard bar
 4: National Bureau of Standards
 5: International Postal Service
 6: Public Law 93-380

3. INVOLVEMENT MODEL (Personification / Inanimate object brought to life)

A. HOW WOULD YOU FEEL IF YOU WERE _____?

AHA #1: A British pound forced to live in the USA
 AHA #2: a spare tire
 AHA #3: a crank antique phone
 AHA #4: a discarded glass coke bottle
 AHA #5: marathon runner shoe
 AHA #6: an abacus
 AHA #7: Henry Ford driving in the Indy 500

B. IF YOU WERE A _____, WHAT WOULD YOU (SEE, TASTE, SMELL, FEEL.)?

AHA #8: meter stick
 AHA #9: Nile River

AHA #10: quilting needle
 AHA #11: tape measure
 AHA #12: roll of bubble wrap
 AHA #13: antique grandfather clock
 AHA #14: retractable stadium roof

C. YOU ARE A _____. DESCRIBE HOW IT FEELS.

AHA #15: oil spill
 AHA #16: animal scale at the zoo
 AHA #17: theodolite (measures angles for surveyors)

4. CONSCIOUS SELF-DECEIT MODEL

A. SUPPOSE _____. WHAT _____.

AHA #1: the US mint shut down	currency would we use.
AHA #2: gas powered vehicles were outlaw	would you use to get to school
AHA #3: weekly cell phone usage was determined by age	other methods of
	communication would you use
AHA #4: you lived next door to Oscar the Grouch	would you do about the
	excessive volume of garbage
	before your company arrives?
AHA #5: schools were limited to a maximum of 50 students	effect would this have on
	your neighborhood?
AHA #6: batteries lasted 25 years	effect would this have on
	technology
AHA #7: football field is the size of a basketball court	effect would this have on the
	game
AHA #8: lost all measure terms from vocabulary	would you use to describe a
	dinosaur
AHA #9: there was no behavior code at school	behaviors would you observe

B. YOU CAN _____. WHAT _____?

AHA #10: record a movie soundtrack	sounds/instruments would you use
AHA #11: measure the Empire State building	would you use as your measurement
	tool.
AHA #12: scale down the land area of New York City	parts you keep
AHA #13: turn back time	time will you go to
AHA #14: choose your favorite season	season would you pick
AHA #15: design a new ice cream cone	size would it be
AHA #16: weigh the moon	unit would you use
AHA #17: name a new type of angle	measure would it be and what name
	would you give it?
Random:	
decide the measurement system for your state	WHAT system would you choose?
Random:	
measure the distance between bases at Wrigley Field.	WHAT type of hot dog would
	you choose as your measuring unit?
Random: eat your weight free at any restaurant	WHAT food(s) would you choose?

5. FORCED ASSOCIATION MODEL

A. HOW IS _____ LIKE _____?

AHA #1: shoe	a ruler
AHA #2: map	breathing
AHA #3: cell phone	a teddy bear
AHA #4: Styrofoam tray	bathroom scale

AHA #5: school
AHA #6: inch
AHA #7: Hop Scotch

triangle
elephant
area

B. GET IDEAS FROM _____ TO IMPROVE _____.

AHA #8: physics
AHA #9: monastery
AHA #10: rain forest
AHA #11: kindergarten
AHA #12: space travel
AHA #13: Spider Man
AHA #14: space shuttle

school food
school behavior
cell phone rings
Junior High
city highways
elevators
car insulation

C. I ONLY KNOW ABOUT _____. EXPLAIN _____ TO ME.

AHA #15: teaspoons
AHA #16: feathers
AHA #17: colors
Random: phonics
Random: quantity
Random: sundial
Random: miles per hour

liters
tons
angles
measurement
capacity
analog time
time travel

6. REORGANIZATION / SYNECTICS MODEL

A. WHAT WOULD HAPPEN IF _____?

AHA #1: Pokemon cards became the new world currency.
AHA #2: current USA President's foot became the new standard measure.
AHA #3: your cell phone was on a party line
AHA #4: no trash collection in your classroom for one week
AHA #5: if the USA immediately and completely implemented the Metric Treaty of 1875
AHA #6: there was On Star (a computer) on the Titanic
AHA #7: a football was the size of a baseball

B. SUPPOSE _____ (HAPPENED) WHAT WOULD BE THE CONSEQUENCES?

AHA #8: only 100 people survived a nuclear holocaust (mixed cultures and number systems)
AHA #9: sixth graders were put in charge of the world
AHA #10: all radio waves were stopped
AHA #11: cities had no boundaries
AHA #12: all sixth graders were 8 feet tall
AHA #13: days were 48 hours long and school was for 24 hours each day
AHA #14: thermometers could not record temperatures below zero

C. WHAT WOULD HAPPEN IF THERE WERE NO _____?

AHA #15: plastic containers
AHA #16: bathroom scales
AHA #17: t-squares
Random: Styrofoam
Random: postal system
Random: email
Random: roads

CULTURAL LITERACY

1. Dates:

1791 1821 1832 1866 1875 1893 1974 1975

2.	Names: Huckleberry Finn Pokemon Titanic	On Star Oscar the Grouch British yard bar	
3.	Proper Names: Thomas Jefferson Alexander Graham Bell Henry Ford Werner Heisenberg Voltaire "The Mendenhall Order" Public Law 93-380 "Law of 1866" Lord Kelvin – William Thomson "Adams Report"	Orville & Wilbur Wright King “Tut” Joseph I. Lagrange Gabriel Fahrenheit King Edward I of England Metric Conversion Act. "Treaty of the Meter"-1875 "Jefferson Report." Lewis and Clark	
4.	Ideas: Standards of Measure Inch Gram Capacity Square measurements Zero	Measurement Meter Volume Ounce Cubic measurements Scales (different kinds)	
5.	Phrases The “Golden Rule” As the crow flies A stone’s throw Can’t fit round peg in a square hole Take the whole nine yards Such weighty matters What’s your angle?	A fool and his money are soon parted Down the road a piece Pay through the nose Walk a mile in my shoes In a New York minute Take a load off	
6.	Vocabulary US Customary System Conversion/convert Inch (es) Grams Meter Money Perimeter Obtuse Right angle Triangle Cylinder Capacity Mile	Metric system Unit Foot (Feet) Pounds Centimeter Area acute Straight angle polygon Rectangle Volume Mass Kilometer	Square Pixels Ounces Bit/Byte Yard

RESOURCES

I. **BIBLIOGRAPHY** for TEACHERS PROFESSIONAL RESOURCES

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III. **Educational Films / Videos**

GED Connection, VARIOUS TOPICS #26-37

Measure to Measure: Length, Discovery.com-United Streaming Video

IV. **Commercial Films / Videos/ TV shows and Commercials**

<u>American Graffiti</u> , 1973	<u>Around the World in 80 Days</u> , 2004	<u>Nutty Professor</u> , 1996
<u>Dangerous Minds</u> , 1995	<u>Jungle 2 Jungle</u> ,	<u>Chariots of Fire</u>
<u>Dead Poet's Society</u> , 1989	<u>Speed</u> , 1994	
<u>Goodbye Mr. Chips</u> , 1969	<u>Little Rascals-Our Gang</u>	
<u>Mr. Holland's Opus</u> , 1995	<u>Frequency</u> , 2000	
<u>Robin Hood, Prince of Thieves</u> , 1991	<u>Sesame Street- Oscar the Grouch-</u> PBS	
<u>School Ties</u> , 1992	<u>Trading Spaces-</u> 2005 TV show	
<u>Teacher's Pet</u> , 1958	<u>Supermarket Sweep-</u> TV GAME SHOW	
<u>Teachers</u> , 1984	<u>Survivor-</u> TV Reality Show 2003-2005	
<u>Teaching Mrs. Tingle</u> , 1999	<u>Numbers-</u> TV series, 2005	
<u>To Sir with Love</u> , 1967	<u>North to Alaska</u> ,	
<u>What Dreams May Come</u> , 1998	<u>Patch Adams</u> ,	
<u>The School of Rock</u> , 2004	<u>The Longest Yard</u> , 2005	
<u>Field of Dreams</u> ,	<u>Fern Gully: The Last Rainforest</u> , 1992	
<u>Holes</u>	<u>Stand and Deliver</u> , 1988	
<u>Jaws</u>	<u>What Dreams may Come</u> , 1998	
<u>Time Tunnel</u>	<u>Time Line</u>	
<u>Back to Future</u>	<u>Ice Age</u>	
<u>Day After Tomorrow</u>	<u>Journey to the Center of the Earth</u>	
<u>Big- Tom Hanks</u>	<u>Jack-</u> Robin Williams	
<u>The Core</u>	<u>Shallow Hal</u>	

V. **Literature / Language Arts** (on reserve in Media Center for interest reading)

Fiction

The Man Who Counted: A Collection of mathematical Adventures by Malba Tahan
How big is a Foot by Rolf Myller
Measuring Dinosaurs by Nancy Cook
Math-terpieces: The Art of Problem-Solving by Greg Tang
Sir Cumference and the Great Knight of Angleland: A Math Adventure by Cindy Neuschwander
Measuring Penny by Loreen Leedy
Ten Times Better by Richard Michelson
Fractals, Googols, and Other Mathematical Tales by Theoni Pappas
Measure Up! A Bug Contest by Frank Wilson
Slow and Fast by Alvin Granowsky

Non-Fiction

In the Running for the Olympics by Barbara Healy
Measures and Space by David Kirkby
The History of Counting by Denise Schmandt-Besserat
Measuring by David Kirkby
Where We Play Sports: Measuring the Perimeters of Polygons by Greg Roza
Building Washington, DC: Measuring the Area of Rectangular Shapes by Barbara M. Linde
The Man Who Made Time Travel by Kathryn Lasky
Famous Bridges of the World: Measuring Length, Weight, and Volume by Yolonda Maxwell
Far-out Science Projects with Height and Depth: How High Is up? How Low Is Down? By Robert
Gardner
Actual Size by Steve Jenkins
Galileo Scientist and Stargazer, 2002 Jacqueline Mitton
Secret Treasures and Magical Measures Revealed: Adventures in Measuring by Chris Kensler
A Mathematical Dictionary for Schools by Brian Bolt
Math and Mathematicians: The History of Math Discoveries Around the World by Lawrence W. Baker
Math and Mathematicians: The History of Math Discoveries around the World, Vol.2-4 Gale Group
Mathematicians Are People, Too: Stories from the Lives of Great Mathematicians, Vol.1-2 by Luetta
Reimer
Art of Shapes: For Children and Adults by Margaret Steele
Barron's Mathematics Study Dictionary by Frank Tapson
Sea Clocks: The Story of Longitude by Louise Borden
What Are You Figuring Now?: A Story about Benjamin Banneker by Jeri Ferris
Women and Numbers: Lives of Women Mathematicians Plus Discovery Activities by Teri Perl
Time, Distance and Speed by Marion Smoothey
Keep Your Distance! by Gail Herman
Mathematics Illustrated Dictionary: Facts, Figures, and People by Jeanne Bendick

VI. **Poetry**

“Casey at the Bat” by Ernest Lawrence Thayer
“Sara Cynthia Sylvia Stout would not take the garbage out” by Shel Silverstein

VII. **Drama** (Stage Productions)

“If I was a Rich Man” from “Fiddler on the Roof”
Martha Graham Modern Dance Company

VIII. **Art Works**

Picasso
Salvador Dali
Escher

IX. **Music**

“Money, Money, Money” by the O’Jays
“16 Tons” by Tennessee Ernie Ford

“Twenty-five Miles” Edwin Starr
 “I can’t drive 55” – Sammy Haggard
 “Pick a Little, Talk a Little” from The Music Man
 “It’s Raining Pennies from Heaven”
 “Does anyone really know what time it is?” Chicago
 “10 Miles to Go On a 9-Mile Road”
 “What time is it?” by the Spindoctors
 “I can see for miles and miles” by The Who

“Ice Cream Man” by Tom Waits
 “Take me out to the Ballgame”
 Mexican mariachi music
 “Rich Girl” Gwen Stephani
 “Time in a Bottle” by Jim Croce

X. Resource People / Mentors

School Bus Driver
 Cafeteria Worker
 Art Teacher
 Surveyor
 DPS officer

Butcher or Deli Counter personnel
 Local Landfill Representative
 Postal Worker
 builder/carpenter/architect
 Weatherman

XI. Field Trips

Transportation Department
 Local Landfill
 Telephone Company (land line or cellular)
 Aluminum Can Recycling/ Manufacturing Company
 Football Field/ Baseball Park
 Ice cream maker (i.e. Bluebell)
 NASA
 Art /Fine Arts Museum

XII. Other Material (CD–ROM, Laser Disc, Internet sites, etc.)

www.science.org.au/nova/033/033print.htm
www.ausport.gov.au/info/factsheets/tech.html
www.mathinthemiddle.org/design/descriptor.htm
www.esl.about.com/library/vocabulary/blsport_measurement/
www.wordorigins.com
www.answers.com/topic/measurement
www.my.nctm.org
www.tenet.edu/teks/math/clarifying/teksa/6_8
www.philtulga.com
www.lyrics.com
www.bassetunes.com
www.winmix.com
www.limewire.com
www.morpheus.com
www.lyrics.coolfreepages.com
www.songsforteaching.com
www.hyperhistory.com
www.digitalhistory.uh.edu
www.gti.net/mocolib/kid/food
www.coolmath.com
<http://www.songsforteaching.com/guffee/mathspeak.htm>
www.nist.gov/public_affairs/kids
<http://www.utopia.utexas.edu>
www.dailypress.com/extras/solution/images
www.usmint.gov/kids/flashIndex.cfm
www.google.com
www.links4kids.co.uk.ucc.htm
www.factmonster.com/mathmoney.html
www.thinkmetric.com
www.mapquest.com
<http://www.aolatschool.com/teachers/research/measurement/index.adp>

www.unitedstreaming.com

www.infoplease.com

www.convert-me.com

www.time.greenwich2000.com

www.metri.com

<http://www.glencoe.com/sec/math/mac/mac01/course1/index.htm>

<http://physics.nist.gov/GenInt/Time/time.html>

<http://inventors.about.com/gi/dynamic/offsite.htm?site=http://www.cftech.com/BrainBank/OTHERREFERENCE/WEIGHTSAndMEASURES/MetricHistory.html>

<http://www.mscc.cc.tn.us/webs/vyoung/songs/Tables.htm>