

MATH! WHAT'S IT ALL ABOUT?

OUTCOMES

Students will understand what it means to solve problems and communicate.

GED DESCRIPTORS

Language Arts-Reading
 Social Studies
 Science
Mathematics
 Language Arts-Writing

ROLES

Family Worker Community

PROGRAM TYPE

<u>ABE</u>	<u>Urban</u>
<u>GED</u>	<u>Rural</u>
ESOL	Homeless
<u>Family Literacy</u>	Institutional
<u>Workforce</u>	<u>Corrections</u>

LEARNER LEVEL

1-6

KEYWORDS

754: Math

LESSON DESIGNER NAME Paula Mullet

PROGRAM Willoughby-Eastlake

EMAIL prmullet@att.net

PHONE 216-382-2820

STANDARD Use Math to Solve Problems and Communicate

COPS	ACTIVITY ADDRESSES COMPONENTS
Understand, interpret, and work with pictures, numbers, and symbolic information.	Students will recognize the math in a variety of real-life materials.
Apply knowledge of mathematical concepts and procedures to figure out how to answer a question, solve a problem, make a prediction, or carry out a task that has a mathematical dimension.	Students will determine what procedures they use to solve a problem and what areas of math they have difficulties with.
Define and select data to be used in solving the problem.	Students will assess their adult roles to determine during which activities they use math.
Determine the degree of precision required by the situation.	Students will assess which math activities provide accurate solutions.
Solve problem using appropriate quantitative procedures and verify that the results are reasonable.	Students will determine when they use appropriate procedures to solve a problem.
Communicate results using a variety of mathematical representations, including graphs, chart, tables, and algebraic models.	Students will discuss times they have used mathematical representations.

TECHNOLOGY INTEGRATION

ABLE Standards and Benchmarks <http://www.ode.state.oh.us/ctae/adult/able/StandardsandBenchmarks.asp>

MATH! WHAT'S IT ALL ABOUT?

<p>OUTCOMES Students will understand what it means to solve problems and communicate in real life situations.</p>	<p>STUDENT GOALS Students will expand their understanding of the ways they use math in their adult roles and recognize that they use all the components of performance of the math standard when they use math in their daily lives.</p>	<p>MATERIALS Math Standard Overhead Large chart paper, post-a-notes Newspapers, sale ads, flyers, magazines, maps, etc.</p> <p>NRS EFL 1-6 TIME FRAME 30-60 minutes</p>
<p>STANDARD <i>Use Math to Solve Problems and Communicate</i></p>	<p>LEARNER PRIOR KNOWLEDGE The purpose of this activity is to help students understand the standard "Use Math to Solve Problems and Communicate." This lesson will unveil misconceptions and anxiety that adults bring to the learning experience.</p>	
<p>COPS Understand, interpret, and work with pictures, numbers, and symbolic information.</p> <p>Apply knowledge of mathematical concepts and procedures to figure out how to answer a question, solve a problem, make a prediction, or carry out a task that has a mathematical dimension.</p> <p>Define and select data to be used in solving the problem. Determine the degree of precision required by the situation.</p> <p>Solve problem using appropriate quantitative procedures and verify that the results are reasonable.</p> <p>Communicate results using a variety of mathematical representations, including graphs, chart, tables, and algebraic models.</p>	<p>ACTIVITIES/CURRICULAR RESOURCES [REAL-LIFE APPLICATIONS] Step 1 – Preparation before class: Before class gather 6-12 sheets of chart paper (or as large a sheet as possible). On six of the sheets write one of the six questions:</p> <ol style="list-style-type: none"> 1. Do you use math on your job? If yes, how do you use it? 2. How do you use math at home? 3. How do you use math when you are out in your community? 4. Do you always need an exact answer when you do math? When might an "about" answer be good enough? 5. What area of math do you find the most challenging/difficult? 6. Using a word, phrase, and or picture explain how you feel about math. <p>On the back of each sheet or on additional paper write one of the 6 components of performance that go along with the math standard, <i>Use Math to Solve Problems and Communicate</i>. Post the sheets around the classroom (question side up) before the students arrive.</p> <p>TEACHER NOTE The components of performance are located on the side of this document or at this website ABLE Standards and Benchmarks http://www.ode.state.oh.us/ctae/adult/able/StandardsandBenchmarks.asp The Math Standard Overhead can also be used with the group to talk about the components of performance.</p> <p>Step 2 – After the students arrive in class, divide the class into 6 groups. Explain that today the class will be looking at how math is used in our lives (as a worker, family member and community member). Each group will visit each chart and answer the question on the chart. Answers can be written directly on the chart (use a different color marker for each group) or on post-a-notes (give each group a different color, one idea per note). Groups</p>	<p>ASSESSMENT/EVIDENCE</p> <p>Chart paper questions with student responses on post-a-notes.</p>

do not need to repeat the answers of previous groups, but may wish to indicate if they agree with a response. Inform the class how long each group will have to respond to each question (5-7 minutes is usually enough). Allow students to answer all the questions.

Step 3 – After the students have completed the activity, walk around the room and read the student responses to the class. Commend the students on their many responses to the questions. At this point the lesson can continue in either of two ways:

1 – Using questions, lead the students to recognize other ways math might be used in each of their life roles and when an “about” answer can be used (Questions 1-4). or

2 – Pass out newspapers, sale ads, magazines, maps, instruction manuals, etc. Encourage the students use the resources to find additional ways math is used in each adult role.

As the new ideas are generated, have the students who suggested the ideas write (either directly or with a post-a-note) it on the appropriate paper.

TEACHER NOTE Be sure there is at least one activity on each sheet for each Component of Performance.

TEACHER NOTE Questions 5 and 6 are useful for your/teacher preliminary assessment of your students’ attitudes about math, math anxiety, topics of concern, etc.

Step 4 – Next, using the question chart or the post-a-notes from each chart, reclassify the responses on the COP charts in which they correspond. Discuss the results of the reclassification with the students. Stress the idea that in order to use math effectively you must be able to use math in all the ways indicated by the Components of Performance (COPs). Stress to the students that doing math requires that all the COPs be used.

TEACHER NOTE Many students think of math only as COP 1 (Understand, interpret, and work with pictures, numbers, and symbolic information). This lesson can be very freeing for students with math anxiety as they learn math is more than computation.

Step 5 – Finally, ask the students to write a brief summary on what they have learned or to write an explanation of how math is used in their life. Encourage the students to reflect on what COP they feel their skills are the strongest? the weakest? This self assessment by the students will be useful to revisit throughout their ABLE experience.

Additional post-a-notes with responses to questions.

Charts with math uses grouped by components of performance.

REFLECTION/EVALUATION

This activity can be adjusted and used to assess student knowledge in a particular content area. Use similar questions but substitute a content area (e.g., geometry) for the word "math" in the question. This is a very effective way to determine the level of your students and what skills they want to know.

NEXT STEPS**PURPOSEFUL & TRANSPARENT**

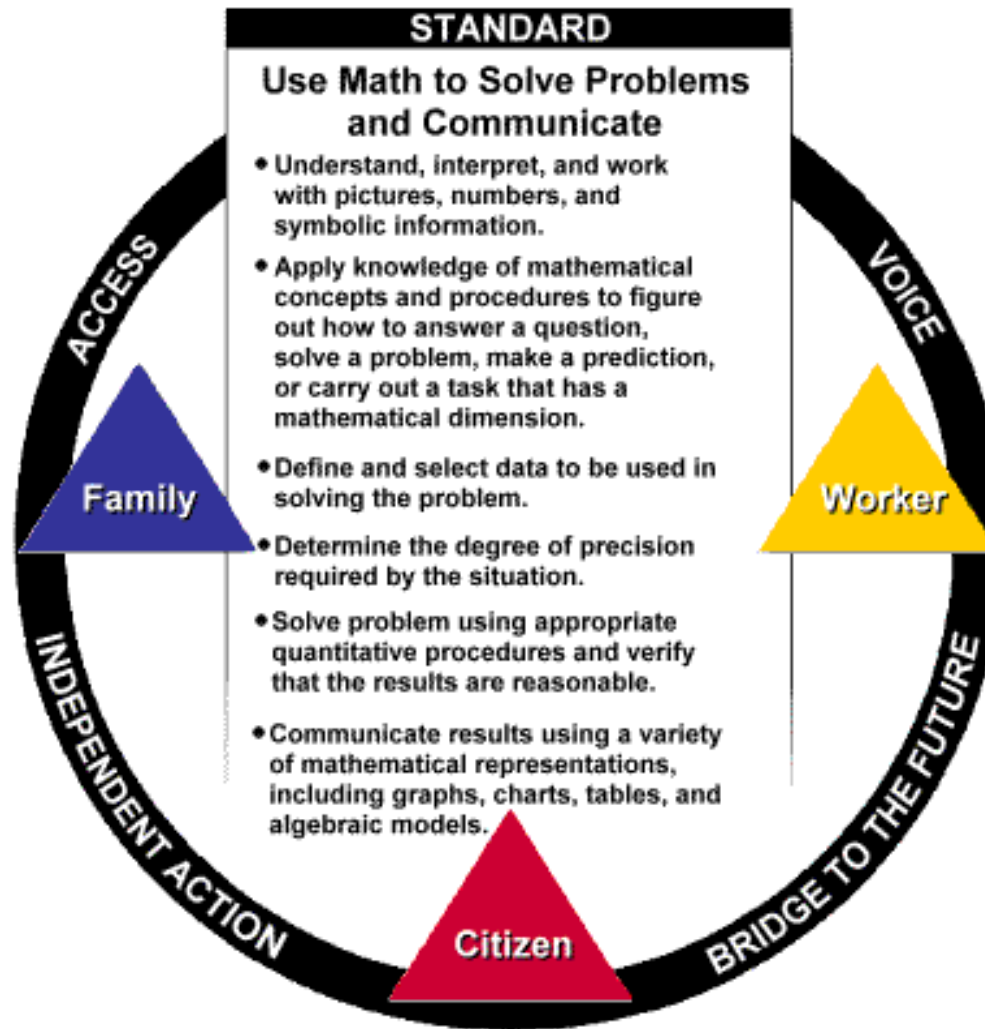
Students will expand their view of math by sharing their ideas on what math is.

CONTEXTUAL

The plan is related to real world experiences of the students. Using realia insures the students continue to feel linked to practical situations.

BUILDING EXPERTISE

Students are using their personal background and experience to expand their understanding of the Math Standard and components of performance.



Math Standard Overhead