

## **Grade 7**

# **Project Citizen Steps Correlation to Tennessee State Standards in Social Studies, Science, English/Language Arts, and Mathematics**

## Grade 7: Social Studies/Governance and Civics

4.0 Governance establishes structures of power and authority in order to provide order and stability. Civic efficacy requires understanding rights and responsibilities, ethical behavior, and the role of citizens within their community, nation, and world.

Project Citizen Steps 2008 edition	Subject Area Standard TN State Performance Indicators (SPI)	National Standards for Civics & Government
<p>Step 1: Identifying Public Policy Problems In your community.</p> <p style="padding-left: 40px;">A. Sharing What you know about Problems in your community.</p> <p>Step 2: Selecting a Problem for Class Study.</p> <p>Step 3: Gathering Information on the Problem Your Class Will Study. (7.4 spi 3) A-4 Lawyers and Judges A-6 Legislative Offices A-7 Administrative Agencies</p> <p>(7.6 spi 1) A. 1. Libraries 2. Newspaper Offices 3. Professors and Scholars 4. Lawyers or Judges 5. Community Organizations 6. Legislative Offices 7. Administrative Agencies C. Researching the problem in your Community.</p> <p>(7.6.spi 3) A. Sources of Information B. Guidelines for obtaining and Documenting Information C. Researching the Problem in Your community.</p>	<p>7.3.spi.4 distinguish the differences among rural, suburban and urban communities.</p> <p>7.3.spi.8 define demographic concepts (i.e., population distribution, population density, growth rate, family size and infant mortality).</p> <p>7.4.spi.1 define the different types of government.</p> <p>7.4.spi.3 recognize how the boundaries of Congressional districts change in the state of Tennessee. (A-4, A-6, A-7)</p> <p>7.6.spi.1 identify ways family, groups and community influence daily life and personal choices. (A-1-7, C)</p> <p>7.6.spi.2 differentiate between the rights, roles and state of the individual in relation to the general welfare in various regions of the world.</p> <p>7.6.spi.3 recognize the causes, consequences and possible solutions applied by governing bodies to persistent global issues using a narrative. (A, B, C)</p>	<p><i>NSS-C.5-8.2 Foundations Of The Political System</i> What are the Foundations of the American Political System?</p> <p>*What is the American idea of constitutional government? *What are the distinctive characteristics of American society? *What is American political culture? *What values and principals are basic to American constitutional democracy?</p> <p><i>NSS-C.5-8.3 Principles Of Democracy</i> How does the government established by the Constitution embody the purposes, values, and principles of American Democracy?</p> <p>*How are power and responsibility distributed, shared, and limited in the government established by the United States Constitution? *What does the national government do? *In what manner are state and local governments organized and what do they do? *Who represents you in local, state, and national governments? *What is the place of law in the American constitutional system? *How does the American political system provide for choice and opportunities for participation?</p> <p><i>NSS-C.5-8.4 Other Nations And World Affairs</i> What is the relationship of the United States to other Nations and to World Affairs?</p> <p>*How is the world organized politically? *How has the United States influenced other nations and how have other nations influenced American politics and society?</p>

Sample Classroom Applications	Sample Resources
<p>Introduction to Public Policy: Define Public policy. Using newspapers to introduce Public Policy.</p> <p>The policymaking process</p> <p>Introducing policymakers</p>	<p><b>Print</b> <u>Project Citizen</u> guide: Teachers Edition (T.E.)</p> <p>What is Public Policy? Student handout 1 found on page 86 of T. E.</p> <p>What is and What is not Public Policy? Student Handout 2 page 87 of T.E.</p> <p>T.E. Appendix H - Student handout 3.</p> <p>T.E. Appendix H - Student handout 4B</p>
<p>Step 1 Identifying Public Policy Problems in Your Community</p> <p>Discuss with students what they know about problems in communities.</p>	<p>Homework or class assignments pages 7- 10 of student book.</p> <p>Additional teaching tips pages 13-14 of T.E.</p>
<p>Step 2 Selecting A Problem For Class Study</p> <p>Lead a discussion about what students learned from their work in step 1.</p> <p>Class Consensus</p>	<p>Suggested questions on page 15 of T.E.</p> <p>Student Book page 11, T.E. pages 16-18 Teaching Tips pages 19-20.</p>
<p>Step 3 Gathering Information on The Problem Your Class Will Study</p> <p>Identify sources of information</p> <p>Guidelines for obtaining and documenting information</p>	<p>Student Book pages 18-20, T.E. 21-22 Teaching Tips pages 23-25.</p> <p>Student Book pages 23-27.</p>

**Grade 7: Social Studies/Governance and Civics**

<p align="center"><b>Project Citizen Steps 2008 edition</b></p>	<p align="center"><b>Subject Area Standard TN State Performance Indicators (SPI)</b></p>	<p align="center"><b>National Standards for Civics &amp; Government</b></p>
<p>Step 4: Developing a Class Portfolio (7.4.spi.1)- A. Task 4, Part 4, A-1 B. C.</p> <p>Group 4 Task – Developing an Action Plan Portfolio 1. A2 (pg. 30) 2. A2 (pg. 30) 3. A2 (pg. 34) 4. A3 (pg. 38)</p> <p>Step 5: Presenting Your Portfolio</p>	<p>7.3. spi. 18 analyze the environmental consequences of humans changing their physical environment. (Note: If students choose an environmental issue, this fits under Research, Step 3-C)</p> <p>7.2.spi.2 define renewable and nonrenewable resources 7.2. spi.3 define demographic concepts 7.4.spi.1 define the different types of governments</p> <p>7.4.spi.1 define the different types of governments</p>	<p>NSS-C.5-8.5 Roles Of The Citizen What are the roles of the Citizen in American Democracy?</p> <p>*What is citizenship? *What are the rights of citizens? *What are the responsibilities of citizens? *What dispositions or traits of character are important to the preservation and improvement of American Constitutional Democracy? *How can citizens take part in civic life?</p>

Sample Classroom Applications	Sample Resources
<p>Step 4 Developing a Class Portfolio</p> <p>Divide the class into portfolio groups.</p> <p>Tasks and specifications for the portfolio</p>	<p>See T.E. page 27 for ideas. Additional help and guidelines found on pages 50-53 (Appendix C)</p> <p>Portfolio Criteria Checklist T.E. pages 82-83.</p> <p>Student Book pages 29-34</p> <p>Student Book pages 38-47 gives each portfolio group the specifics of how to design and the information needed in their section of the portfolio.</p> <p>Constitutional Opinion Form pages 44-45 of Student Book (Portfolio group three)</p> <p>Teaching Tips pages 31-32 of T.E.</p>
<p>Step 5 Presenting Your Portfolio</p>	<p>Goals and guidelines pages 33-35 T.E.</p> <p>Student Book pages 50-52.</p>
<p>Step 6 Reflecting On Your Learning Experience</p>	<p>T.E. pages 38-39, Student Book pages 53-55.</p>

## Grade 7: Science

Project Citizen Steps 2008 edition	2009 Subject Area Standards TN State Performance Indicators (GLE/SPI)*		National Science Education Standards
Step 1 Identifying Public Policy Problems in Your Community p. 10 - 16	GLE 0707.Inq.1 GLE 0707.Inq.2 GLE 0707.Inq.3 GLE 0707.Inq.4	SPI 0707.Inq.1 SPI 0707.Inq.2 SPI0707.Inq.4	<p><b>CONTENT STANDARD A:</b> As a result of activities in grades 5-8, all students should develop</p> <ul style="list-style-type: none"> <li>• Abilities necessary to do scientific inquiry</li> <li>• Understandings about scientific inquiry</li> </ul> <p><b>CONTENT STANDARD E:</b> As a result of activities in grades 5-8, all students should develop</p> <ul style="list-style-type: none"> <li>• Abilities of technological design</li> <li>• Understandings about science and technology</li> </ul> <p><b>CONTENT STANDARD F:</b> As a result of activities in grades 5-8, all students should develop understanding of</p> <ul style="list-style-type: none"> <li>• Personal health</li> <li>• Populations, resources, and environments</li> <li>• Natural hazards</li> <li>• Risks and benefits</li> </ul> <ul style="list-style-type: none"> <li>• Science and technology in society</li> </ul>
Step 2 Selecting a Problem for Class Study p. 17	GLE 0707.Inq.1 GLE 0707.Inq.2 GLE 0707.Inq.3 GLE 0707.Inq.4	SPI 0707.Inq.1 SPI 0707.Inq.2 SPI 0707.Inq.4	
Step 3 Gathering Information and Research p. 18 – 27	GLE 0707.Inq.1 GLE 0707.Inq.2 GLE 0707.Inq.3 GLE 0707.Inq.4 GLE 0707.TE.1	SPI 0707.Inq.1 SPI 0707.Inq.2 SPI 0707.Inq.3 SPI 0707.Inq.4 SPI 0707.Inq.5	
Step 4 Developing a Class Portfolio p. 28 – 49	GLE 0707.Inq.2 GLE 0707.Inq.3 GLE 0707.Inq.4 GLE 0707.TE.2	SPI 0707.Inq.3 SPI.0707.Inq.4 SPI 0707.Inq.5	
Step 5 Presenting Your Portfolio p. 50 – 52	GLE 0707.Inq.5	SPI 0707.Inq.4, SPI 0707.Inq.4	
Step 6 Reflecting on Your Learning Experience p. 53 - 55	GLE 0707.Inq.4, GLE 0707.Inq.5		
	*legend for GLEs and SPIs		

## Sample Classroom Applications

- *Convince the city to sponsor/provide paper recycling for the local schools.*
- GLE 0707.7.5** Differentiate between renewable and nonrenewable resources in terms of their use by man.
- SPI 07077.7.7** Analyze and evaluate the impact of man’s use of Earth’s land, water, and atmospheric.

Activity: How Much to The Landfill? Students hypothesize how much paper is thrown away each day. Students design experiments to determine the answer. For example, students ask each classroom to calculate the amount paper that is thrown away each day for a week using volume of containers. Collect and organize the data. Research how many trees it takes to produce that amount of paper. Research how much energy is used in paper production. Calculate how much can be saved from the landfills. See Alternative Energy Resources sites on the next column for helpful information.

Useful measurements:

- One residential size receptacle for trash - 90 gallons
- Cubic yards per gallon - 202 cubic yards (201.974026 U.S. gallons )conversion from Google Internet Calculator)
- Tons per cubic yard – .26 tons (11/40=0.275) or 550 lbs. (0.275x2,000=550)
- Average weight of a 40 Cubic Yard container of paper – 11 tons or 22,000 pounds. (Information courtesy of J. Fox – Town of Collierville Public Works)

- *Provide seatbelts for student safety on school busses.*
- GLE 0707.11.4** Investigate how Newton’s laws of motion explain an object’s movement.
- SPI 0707.11.4** Identify and explain how Newton’s laws of motion relate to the movement of objects.

Activity: Inertia activities:

Set up stations for students to experiment with inertia and Newton’s First Law of Motion:

Students have a chart with 3 columns to complete:

Station	What happens and Why?	Describe the Forces Acting on the Objects
1 Eggstravaganza		
2. Brick on a String		



## Sample Resources

### General Resources:

Learn and Serve. <http://www.learnandserve.org/>  
This service-learning website includes information about setting up service-learning programs.

Problem Based Learning Framework.  
<http://www.cotf.edu/ete/teacher/teacherout.htm>.  
Information on using problem-based learning strategies in the classroom.

Internet For Classrooms. <http://www.internet4classrooms.com>  
Tennessee curriculum standards with links to enhance learning and reinforcement of the objectives.

Middle School Science Links. <http://www.middleschoolscience.com>  
Links to hands-on, lab activities, and experiments that match the middle school curriculum.

Problem-Based Learning Activities.  
<http://homepage.mac.com/cohora/pbl/pblin.html>  
Problem-based learning activities for classroom.

### Inertia/Newton’s Laws Resources

Science Court site. Cartoon and activities on inertia.  
<http://www.tomsnyder.com/products/productextras/SCISCI/inertia.html>

Sonoma Education. Inertia and Newton’s First Law Activities.  
[http://swift.sonoma.edu/education/newton/newton\\_1/html/newton1.html](http://swift.sonoma.edu/education/newton/newton_1/html/newton1.html)

Harcourt Publishers.  
<http://www.harcourtschool.com/activity/newton/index.html>. Very nice applet for determining acceleration/Newton’s Second Law.

Multimedia Physics Studio.  
<http://www.glenbrook.k12.il.us/gbssci/phys/mmedia/kinema/accele.html>.  
Excellent animations of Newton’s Laws.

Liz Asks Some Force Questions.  
<http://id.mind.net/~zona/mstm/physics/mechanics/forces/problems/lizAsksSomeForceQuestions/lizAsksSomeForceQuestions.html>. Very nice interactive quiz about forces and motion.

**Grade 7: Science**

Project Citizen Steps 2008 edition	*Science GLE/SPI Legend	National Science Education Standards
	<p><b>Grade Level Expectations</b>  <b>GLE 0707.Inq.7.1</b> Design and conduct open-ended scientific investigations.  <b>GLE 0707.Inq.7.2</b> Use appropriate tools and techniques to gather, organize, analyze, and interpret data.  <b>GLE 0707.Inq.7.3</b> Synthesize information to determine cause and affect relationships between evidence and explanations.  <b>GLE 0707.Inq.7.4</b> Recognize possible sources of bias and error, alternative explanations, and questions for further exploration.  <b>GLE 0707.Inq.7.5</b> Communicate scientific understanding using descriptions, explanations, and models.  <b>GLE 0707.T/E.7.1</b> Explore how technology responds to social, political, and economic needs.  <b>GLE 0707.T/E.7.2</b> Know that the engineering design cycle involves an ongoing series of events that incorporate design constraints, model building, testing, evaluating, modifying, and retesting.  <b>GLE 0707.T/E.7.3</b> Compare the intended benefits with the unintended consequences of a new technology.  <b>GLE 0707.T/E.7.4</b> Differentiate between adaptive and assistive bioengineered products  <b>State Performance Indicators</b>  <b>SPI 0707.Inq.7.1</b> Design a simple experimental procedure with an identified control and appropriate variables.  <b>SPI 0707.Inq.7.2</b> Select tools and procedures needed to conduct a moderately complex experiment.  <b>SPI 0707.Inq.7.3</b> Interpret and translate data into a table, graph, or diagram.  <b>SPI 0707.T/E.7.1</b> Identify the tools and procedures needed to test the design features of a prototype.  <b>SPI 0707.T/E.7.2</b> Evaluate a protocol to determine if the engineering design process was successfully applied.  <b>SPI 0707.T/E.7.3</b> Distinguish between the intended benefits and the unintended consequences of a new technology.</p>	

## Sample Classroom Applications

## Sample Resources

### Descriptions:

1. Eggstravaganza: One hardboiled and one raw egg. Carefully spin to determine which is raw and cooked.
2. Brick on a String: Tie a string around a brick with 1 meter of string. Attach a rubber band to the end of the string. Lift the brick by slowly raising the rubber band.
3. The Dollar Bill Trick: Place the end of a dollar bill between two empty glass soda bottles (or flasks) standing vertically lip-to-lip. The objective is to pull out the bill without upsetting the balance of the bottles. Hold the dollar bill straight out from the two bottles with one hand and use the index finger of the other hand to karate chop the dollar bill downward.
4. Move it out: Place a sheet of paper at the end of the table – end hanging off the edge. Place a heavy book on the paper. Grasp the edge of the paper and pull it very quickly from the table.
5. Weight Lifting -Tape a 30 cm. thread to a 500 – 1,000g weight hanging from a ring stand. Grasp the end of the thread between thumb and index finger. Pull hard and quickly as possible – observe.
6. Magic coin: Put index card over a beaker. Place a quarter or washer on the index card and flick the index card quickly so that the coin goes into the beaker.
7. Catch the coin: Place a coin on your elbow holding your arm outstretched, parallel to the floor with your hand open, near your face. In one very quick move, drop your arm down and catch the coin. You will have to try a few times to get it right.
8. Coin/Washer Challenge: 1. Stack 5 nickels (or washers) in a pile. Knock the bottom coin out from underneath by hitting it with the thin edge of a metal butter knife. You must do this quickly. You may have to try several times.



**Grade 7: Science**

<b>Project Citizen Steps 2008 edition</b>	<b>Science GLE/SPI Legend</b>	<b>National Science Education Standards</b>

Sample Classroom Applications	Sample Resources
<p>•<i>Require school busses to use ethanol or another alternative fuel source.</i></p> <p><b>GLE 0707.7.5</b> Differentiate between renewable and nonrenewable resources in terms of their use by man.</p> <p><b>SPI 07077.7.7</b> Analyze and evaluate the impact of man’s use of Earth’s land, water, and atmospheric.</p> <p>Activity: Energy Quest Webquest. Group students of 3 or 4. Assign each group an alternative energy source: bioenergy, wind energy, solar energy, geothermal, or hydroelectric electricity.</p> <p>Part 1: Make a Research form for them to complete – include these questions:</p> <ol style="list-style-type: none"> <li>1. From where does my energy source come?</li> <li>2. How does my energy source work?</li> <li>3. Has it been used successfully in the past – describe?</li> <li>4. What are the approximate costs? How does the cost compare to fossil fuel costs?</li> <li>5. List the advantages and disadvantages of your energy sources.</li> <li>6. Is there any additional information that will help me when I write my proposal?</li> </ol> <p>Part 2: Have students write a proposal as if they are speaking to the United Nations and giving a recommendation for their energy source (this is explained in the scenario of the web quest.) The proposal should consist of 5 major sections:</p> <ol style="list-style-type: none"> <li>1. Introduction – this is an overall statement of your case and your proposal for a renewable energy resource. It should catch my attention and make me want to read further. It should be NO MORE that two or three sentences in length.</li> <li>2. Statement of Need – this is a statement of the problem and the need for your particular energy source. It shows me that you understand why it is so important to resolve this problem as soon as possible. It should be a minimum of 3 sentences in length.</li> <li>3. Description of Energy Resources – this section should tell me about your energy resource: what it is, how it works, the advantages and disadvantages of this kind of energy resource, its success rate in the past etc. It should be at lease a paragraph long, but no more than one page.</li> <li>4. Budget – this is a brief estimate of costs that will be needed to produce your proposed alternative energy source.</li> <li>5. Summary – this is a brief wrap-up of the main points in your argument. This is your last chance to convince me of your argument, so you should try to present only the MOST convincing points here. It should be no more than 2 or 3 sentences in length.</li> </ol> <p>Part 3: Groups present their proposals in class using appropriate visual aids. The website has presentation guidelines and tips. Divide up the responsibilities as needed in the student groups. Some of the links on the webquest are no longer valid – alternate sites are listed in the next column.</p>	<p><b>Alternative Energy Resources</b></p> <p>Energy Quest. <a href="http://www.geocities.com/brookwebquest1/">http://www.geocities.com/brookwebquest1/</a>. Webquest on alternative energy resources.</p> <p>Tennessee Valley Authority. <a href="http://www.tva.gov">http://www.tva.gov</a> Information on energy resources in Tennessee</p> <p>Alternative Energy. <a href="http://www.alternative-energy-news.info/">http://www.alternative-energy-news.info/</a>. Alternative energy news and information resources about renewable energy.</p> <p>Thinkquest – Alternative Energy Resources. <a href="http://library.thinkquest.org/22361/">http://library.thinkquest.org/22361/</a>. Extensive resources for alternative energy – excellent source.</p>

## Grade 7: English / Language Arts

<p align="center"><b>Project Citizen Steps 2008 edition</b></p>	<p align="center"><b>2009 Subject Area Standard TN Grade Level Expectation(GLE) Grades 7 and 8</b></p>	<p align="center"><b>National Standards for English/Language Arts</b> <a href="http://www.ncte.org/about/over/standards/110846.htm">http://www.ncte.org/about/over/standards/110846.htm</a></p>
<p>Introduction to Project Citizen p. 1-9</p> <p>Step 1 Identifying Public Policy Problems in Your Community p. 10-16</p> <p>Part A Class Discussion p. 10-11</p> <p>Part B Small Group Activity p. 11</p>	<p><b>GLE 0701.2.1/0801.2.1</b> Demonstrate critical listening skills essential for comprehension, evaluation, problem solving, and task completion.</p> <p><b>GLE 0701.2.3/0801.2.5</b> Understand strategies for expressing ideas clearly and effectively in a variety of oral contexts.</p> <p><b>GLE 0701.2.5/0801.2.7</b> Participate in work teams and group discussions.</p> <p><b>GLE 0701.3.2/0801.3.2</b> Employ a variety of prewriting strategies.</p>	<p><i>See appendix for complete text of the National Standards items. Information below represents main idea of the related standards.</i></p> <p><b>4.</b> Audience and purposes</p> <p><b>12.</b> Spoken, written, visual language</p>
<p>Part C Homework Assignments p. 13-16</p>	<p><b>GLE 0701.2.1/0801.2.1</b> Demonstrate critical listening skills essential for comprehension, evaluation, problem solving, and task completion.</p> <p><b>GLE 0701.4.2/0801.4.2</b> Gather relevant information from a variety of print and electronic sources, as well as from direct observation, interviews, and surveys.</p> <p><b>GLE 0701.4.3/0801.4.3</b> Make distinctions about credibility, reliability, consistency, strengths, and limitations of resources, including information gathered from web sites.</p> <p><b>GLE 0701.5.2/0801.5.2</b> Evaluate arguments for false premises, logical fallacies, and quality of evidence.</p> <p><b>GLE 0701.6.3/0801.6.3</b> Read, interpret, and analyze graphics that support informational texts.</p> <p><b>GLE 0701.7.1/0801.7.1</b> Analyze media for their ability to inform, persuade, and entertain.</p>	<p><b>1.</b> Print and non-print texts</p> <p><b>3.</b> Comprehend, interpret, evaluate, appreciate texts</p> <p><b>4.</b> Audience and purposes</p> <p><b>7.</b> Research by generating ideas, questions, problems</p> <p><b>8.</b> Technological and information resources</p> <p><b>12.</b> Spoken, written, visual language</p>

Sample Classroom Applications	Sample Resources
<p>Introduction: Class Discussion</p> <p>Writing assignment: Choose one of the following topics and write a well-developed paragraph or essay:</p> <p>(1) Communities across the United State have many problems in common. Consider an environmental problem you see in our community. Recall what you have heard on the news, read in the newspaper, or heard your parents or other adults discussing. Write about what you already know about the problem or what you have heard.</p> <p>(2) All communities have problems involving community standards. Some of these standards may be in regard to crosswalks, littering, recycling, or other issues where specific guidelines are required. Think about a problem involving standards in our community. Explain what these problems are and support your reasons for citing these problems with examples and details.</p> <p>(3) There are three categories of rights that are important to democracy and to American citizens. These are personal rights, political rights, and economic rights. When people become aware of problems in their communities, they often want government to develop and carry out policies to deal with those problems. These may be problems for which there are existing policies or laws that do not work well or are not being enforced. OR, there are no policies or laws. One example is the large number of people who do not vote in local elections. Another problem that many people argue is that money plays too great a role in the election of government officials. Consider what you have read in the newspaper, seen on the news, or heard your parents or other adults discussing that involves basic liberties.</p> <p><b>Step 1 Part A Class Discussion</b></p> <p>Hold organized class discussions in discussion circles.</p> <p>Brainstorm ideas about community problems.</p> <p>Work in pairs and complete graphic organizer sorting problems into groups based on headings of students' choosing (safety, environment, etc.)</p> <p><b>Step 1 Part B Small Group Activity</b></p> <p>Meet in small groups to discuss topics generated through discussions, brainstorming, and graphic organizers. Answer questions on the Problem Identification and Analysis Form in the <u>Project Citizen</u> guide (p. 11)</p>	<p><b>Print</b></p> <p>Writing prompts listed under Sample Classroom Activities</p> <p><i>Guidelines for Discussion Circles</i> TCCL nb p.321-325 / cd p.348-353*</p> <p><i>Alphabet Chart</i> TCCL nb p.232 / cd p.258</p> <p><i>Graphic organizer</i> TCCL nb p. 167 / cd p.183</p> <p><i>Discussion Web graphic organizer</i> TCCL nb p. 347 / cd p.376</p> <p><u>Project Citizen</u> guide. 2008 edition</p> <p><b>Internet</b></p> <p><u>New York Times on the web Learning Network</u>  <a href="http://www.nytimes.com/learning/teachers/lessons">http://www.nytimes.com/learning/teachers/lessons</a>          Contains extensive daily lesson plans and interactive lessons for students. Lessons are primarily on current events.</p> <p><u>Official White House internet site</u>  <a href="http://www.whitehouse.gov/kids">http://www.whitehouse.gov/kids</a>          Includes links to lessons and activities for students. Lessons are on current or historical events. Many topics will inform students about current civics issues.</p> <p><u>Peace Center of Central Oregon</u>  <a href="http://www.pcoco.org/Discussion_Circles.html">http://www.pcoco.org/Discussion_Circles.html</a>          Lists discussion circles protocols for any age group.</p> <p><u>Graphic Organizers Concept Mapping References</u>  <a href="http://www.graphic.org">http://www.graphic.org</a>          Contains examples of numerous simple graphic organizers. Samples are filled in to guide students in correct use of the specific organizer selected.</p>
<p>TCCL nb/cd– <i>TN Cross-Curricular Learning</i> available as a notebook or as a cd; page numbers are not identical in the two formats.</p>	

**Grade 7: English / Language Arts**

<p align="center"><b>Project Citizen Steps 2008 edition</b></p>	<p align="center"><b>2009 Subject Area Standard TN Grade Level Expectation(GLE)</b></p>	<p align="center"><b>National Standards English/Language Arts</b></p>
<p>Step 2 Selecting a Problem for Class Study A. Class Discussion p. 17</p>	<p><b>GLE 0701.2.1/0801.2.1</b> Demonstrate critical listening skills essential for comprehension, evaluation, problem solving, and task completion. <b>GLE 0701.2.5/0801.2.7</b> Participate in work teams and group discussions.</p>	<p>4. Audience and purposes  12. Spoken, written, visual language</p>
<p>Step 3 Gathering Information A. Class Discussion p. 18-20</p>	<p><b>GLE 0701.4.2/0801.4.2</b> Gather relevant information from a variety of print and electronic sources, as well as from direct observation, interviews, and surveys.</p>	<p>1. Print and non-print texts  3. Comprehend, interpret, evaluate, appreciate texts  7. Research by generating ideas, questions, problems  8. Technological and information resources  12. Spoken, written, visual language</p>
<p>B. Guidelines p. 21-27</p>	<p><b>GLE 0701.2.1/0801.2.1</b> Demonstrate critical listening skills essential for comprehension, evaluation, problem solving, and task completion. <b>GLE 0701.4.2/0801.4.2</b> Gather relevant information from a variety of print and electronic sources, as well as from direct observation, interviews, and surveys. <b>GLE 0701.4.3/0801.4.3</b> Make distinctions about the credibility, reliability, consistency, strengths, and limitations of resources, including information gathered from web sites.</p>	<p>1. Print and non-print texts  3. Comprehend, interpret, evaluate, appreciate texts  7. Research by generating ideas, questions, problems  8. Technological and information resources  12. Spoken, written, visual language</p>
<p>C. Homework Assignments p. 22</p>	<p><b>GLE 0701.2.1/0801.2.1</b> Demonstrate critical listening skills essential for comprehension, evaluation, problem solving, and task completion. <b>GLE 0701.4.2/0801.4.2</b> Gather relevant information from a variety of print and electronic sources, as well as from direct observation, interviews, and surveys.</p>	<p>1. Print and non-print texts  3. Comprehend, interpret, evaluate, appreciate texts  7. Research by generating ideas, questions, problems  8. Technological and information resources</p>

Sample Classroom Applications	Sample Resources
<p><b>Step 1 Part C Homework Assignments</b></p> <p>Conduct interviews with family, friends, neighbors, school personnel, or others about information pertinent to any topic being studied.</p> <p>Identify information in newspapers or other reliable news-related print sources to support and develop topics being studied in the language arts program.</p> <p>Take notes on an appropriate form (such as Cornell notes) while listening to or watching a report on radio, television, or the Internet. Share the information orally in a group or write a summary.</p>	<p><b>Print</b></p> <p>Assignments and forms provided in <u>Project Citizen</u> guide: Interview form, p. 14; Printed Sources form, p. 15; Radio, Television, Internet Sources form p. 16</p> <p><b>Internet</b></p> <p><i>Our Stories project website designed to help people share their stories.</i>  <a href="http://www.ourstories.org/studentguide.html">http://www.ourstories.org/studentguide.html</a>  Includes steps for conducting an interview. Sample questions are included.</p>
<p><b>Step 2 Selecting a Problem for Class Study</b></p> <p>Students use Four Corners/On the Fence strategy. Undecided students go to the middle of the room—on the fence. Others go to the four corners of the room to stand in the designated corner representing strongly agree or somewhat agree or strongly disagree or somewhat disagree.</p>	<p><b>Print</b></p> <p>Teacher-prepared laminated signs with the categories: 1. Strongly Agree; 2. Agree; 3. Disagree; 4. Strongly Disagree</p> <p><b>Internet</b></p> <p><i>Education World website with practical lesson plans for teachers</i>  <a href="http://www.educationworld.com/a_lesson/03/lp304-04.shtml">http://www.educationworld.com/a_lesson/03/lp304-04.shtml</a>  Sample debate lesson using four corners strategy</p>
<p><b>Step 3 Gathering Information and Research</b></p> <p>Arrange a time for the school librarian/media specialist to instruct students how and where to gather information using the school library and the public library.</p> <p>Distinguish between primary and secondary sources.</p> <p>Use an Information Search</p> <p>Have students work with a continuum from most to least valid source.</p>	<p><b>Print</b></p> <p>TCCL nb p.297-98; cd p.323-24</p> <p>TCCL nb p.385-88; cd p. 414-17</p> <p>TCCL nb p.392 (393-96); cd p. 421 (422-35)</p> <p>Discussion Web graphic organizer  TCCL nb p. 347; cd p.376</p> <p><b>Internet</b></p> <p>University of Cal/Berkeley teaching internet research methods site  <a href="http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/FindInfo.html">http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/FindInfo.html</a>  Includes links to identifying reliability of sites on the web</p>
<p><b>Step 3 Part C Homework Assignments</b></p> <p>Write business letters using performance assessment grading rubric. Letters can be to elected officials, school or community leaders, or other members of the community who have an interest in topics related to improved quality of life for all members of the represented body.</p>	<p><b>Print</b></p> <p>TCCL nb p. 333; cd p. 361</p> <p>Forms provided in <u>Project Citizen</u> guide p. 23-27</p>

**Grade 7: English / Language Arts**

<p align="center"><b>Project Citizen Steps 2008 edition</b></p>	<p align="center"><b>2009 Subject Area Standard TN Grade Level Expectation(GLE)</b></p>	<p align="center"><b>National Standards for English/Language Arts</b></p>
<p>Step 4 Developing a Class Portfolio A. Class Discussion p. 28-34</p>	<p><b>GLE 0701.2.1/0801.2.1</b> Demonstrate critical listening skills essential for comprehension, evaluation, problem solving, and task completion. <b>GLE 0701.2.3/0801.2.5</b> Understand strategies for expressing ideas clearly and effectively in a variety of oral contexts. <b>GLE 0701.2.5/0801.2.7</b> Participate in work teams and group discussions.</p>	<p><b>4.</b> Audience and purposes  <b>6.</b> Language structure, conventions, media Techniques  <b>7.</b> Research by generating ideas, questions, problems  <b>8.</b> Technological and information resources  <b>12.</b> Spoken, written, visual language</p>
<p>C. Evaluation Criteria p. 35</p>	<p><b>GLE 0701.4.3/0801.4.3</b> Make distinctions about credibility, reliability, consistency, strengths, and limitations of resources, including information gathered from web sites. <b>GLE 0701.5.1/0801.5.1</b> Distinguish among facts and opinions, evidence, and inferences. <b>GLE 0701.5.2/0801.5.2</b> Evaluate arguments for false premises, logical fallacies, and quality of evidence. <b>GLE 0701.5.3/0801.5.3</b> Analyze the logical features of an argument, including inductive and deductive elements.</p>	<p><b>3.</b> Comprehend, interpret, evaluate, appreciate texts  <b>7.</b> Research by generating ideas, questions, problems  <b>8.</b> Technological and information resources  <b>12.</b> Spoken, written, visual language</p>
<p>D. Group Instructions p. 36</p>	<p><b>GLE 0701.2.1/0801.2.1</b> Demonstrate critical listening skills essential for comprehension, evaluation, problem solving, and task completion. <b>GLE 0701.2.3/0801.2.5</b> Understand strategies for expressing ideas clearly and effectively in a variety of oral contexts. <b>GLE 0701.2.5/0801.2.7</b> Participate in work teams and group discussions.</p>	<p><b>4.</b> Audience and purposes  <b>12.</b> Spoken, written, visual language</p>

Sample Classroom Applications	Sample Resources
<p><b>Step 4 Part A Class Discussion</b></p> <p>Work in collaborative groups to develop a consensus for a class activity, lesson, work of literature, or project.</p>	<p><b>Print</b> Worksheets provided in <u>Project Citizen</u> Guide p. 29-34</p> <p><b>Internet</b> <i>Berkeley website dedicated to specific teaching strategies.</i> <a href="http://teaching.berkeley.edu/bgd/collaborative.html">http://teaching.berkeley.edu/bgd/collaborative.html</a> Focus is on establishing and monitoring collaborative groups.</p>
<p><b>Step 4 Part C Evaluation Criteria</b></p> <p>Self assess individual or group work. Students should use the rubric provided by a teacher for any lesson to evaluate the quality of the product they have developed. Careful self-examination of assignments develops independent learning.</p>	<p><b>Print</b> Forms provided in <u>Project Citizen</u> Guide p. 49</p> <p><b>Internet</b> <i>Teacher-friendly rubric building site</i> <a href="http://www.rubrics4teachers.com/">http://www.rubrics4teachers.com/</a> This site provides templates online for teachers to create rubrics. There are also many rubrics available for use or for adaptation to any assignment. Teachers can store their rubrics on the web for a limited time.</p>
<p><b>Step 4 Part D Group Instructions and Portfolio Group</b></p> <p>Evaluate a varied selection of art works with attention to form, structure, color, etc., as preparation for using the elements of art in the preparation of the display boards.</p>	<p><b>Print</b> Forms for examining public policy are provided in <u>Project Citizen</u> Guide p. 45-47; p. 49</p> <p><b>Internet</b> <i>Elmers Glue website on creating appealing presentation boards</i> <a href="http://www.elmers.com/products/pdfs/poster.pdf">http://www.elmers.com/products/pdfs/poster.pdf</a></p>

**Grade 7: English / Language Arts**

<p align="center"><b>Project Citizen Steps 2008 edition</b></p>	<p align="center"><b>2009 Subject Area Standard TN Grade Level Expectation(GLE)</b></p>	<p align="center"><b>National Standards for English/Language Arts</b></p>
<p>Step 5 Presenting Your Portfolio A. Opening Oral Presentation p. 50-51</p> <p>B. Follow-Up Questions p. 51</p>	<p><b>GLE 0701.2.1/0801.2.1</b> Demonstrate critical listening skills essential for comprehension, evaluation, problem solving, and task completion.</p> <p><b>GLE 0701.2.3/0801.2.5</b> Understand strategies for expressing ideas clearly and effectively in a variety of oral contexts.</p> <p><b>GLE 0701.2.4/0801.2.6</b> Deliver effective oral presentations.</p> <p><b>GLE 0701.2.5/0801.2.7</b> Participate in work teams and group discussions.</p>	<p><b>4.</b> Audience and purposes</p> <p><b>12.</b> Spoken, written, visual language</p>
<p>Step 6 Reflecting on Learning Experience p. 53-55</p>	<p><b>GLE 0701.2.5/0801.2.7</b> Participate in work teams and group discussions.</p>	<p><b>4.</b> Audience and purposes</p> <p><b>12.</b> Spoken, written, visual language</p>

Sample Classroom Applications	Sample Resources
<p><b>Step 5 Part A Opening Oral Presentation</b></p> <p>Make a persuasive speech to legislator. Prepare by writing a letter to a legislator. Practice the presentation by reading the letter to classmates who use a persuasive letter rubric to score effectiveness of the arguments.</p>	<p><b>Print</b></p> <p>Sample persuasive letter to a legislator TCCL nb p. 361; cd p. 390</p> <p>Assessment rubric for a persuasive letter TCCL nb p. 362064; cd p. 391-93</p> <p>Rubrics TCCL nb p. 35,36, 38-40; cd. P. 38, 39, 41-43</p> <p>Cooperative learning rubric TCCL nb p. 43; cd p. 46</p> <p>Oral presentation rubric TCCL nb p. 330; cd p. 358</p> <p><b>Internet</b></p> <p><i>University of Wisconsin website about rubrics for practical use in classrooms.</i> <a href="http://www.uwstout.edu/soe/profdev/rubrics.shtml#oral">http://www.uwstout.edu/soe/profdev/rubrics.shtml#oral</a> Oral presentation rubric available.</p>
<p><b>Step 5 Part B Follow-up Questions</b></p> <p>Use the six hat discussion strategy. Students are given one of six colors each of which represents a different assignment in the upcoming class discussion. This helps students focus on a task and forces them to present information from a variety of perspectives.</p> <p><b>White:</b> neutral; objective; facts and figures only.  <b>Red:</b> anger; rage; emotions; feelings  <b>Black:</b> somber; serious; points out obstacles  <b>Yellow:</b> sunny; positive about benefits of the idea  <b>Green:</b> creativity; new ideas about making the proposal better or successful  <b>Blue:</b> what needs to be done to make this happen</p>	<p><b>Print</b></p> <p>Modified from <u>Six Thinking Hats</u> by Edward DeBono</p> <p>Laminated pieces of the 6 colors of construction paper for students to hold when assigned a role.</p> <p><b>Internet</b></p> <p><i>Mind Tools Website for Essential Skills</i> <a href="http://www.uwstout.edu/soe/profdev/rubrics.shtml#oral">http://www.uwstout.edu/soe/profdev/rubrics.shtml#oral</a> Includes developed explanation of the Six Thinking Hats strategy. Link to a free worksheet is on the site, as well as examples of student responses.</p>

## Standards for the English Language Arts

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<http://www.ncte.org/about/over/standards/110846.htm>

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
2. Students read a wide range of literature from many periods in many genres to build an understanding of the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience.
3. Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).
4. Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
5. Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
6. Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.
7. Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.
8. Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
9. Students develop an understanding of and respect for diversity in language use, patterns, and dialects across cultures, ethnic groups, geographic regions, and social roles.
10. Students whose first language is not English make use of their first language to develop competency in the English language arts and to develop understanding of content across the curriculum.
11. Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities.
12. Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

## Notes

## Grade 7: Mathematics

Project Citizen Steps 2008 edition	Subject Area Standard TN State Performance Indicators (SPI) <i>Standard 1 Mathematical Processes</i>	National Council of Teachers of Mathematics Standards
<p>Step 3 Gathering Information and Research p. 18 – 27</p> <p>Step 4 Developing a Class Portfolio p. 28 – 49</p> <p>Step 5 Presenting Your Portfolio p. 50 – 52</p>	<p>SPI 0706.1.1 Use proportional reasoning to solve mixture / concentration problems</p> <p>SPI 0706.1.2 Generalize a variety of patterns to a symbolic rule from tables, graphs, or words</p> <p>SPI 0706.1.3 Recognize whether information given in a table, graph or formula suggests a directly proportional, linear, inversely proportional, or other nonlinear relationships</p> <p>SPI 0706.1.4 Use scales to read maps</p>	<p><b>Measurement</b> Apply appropriate techniques, tools and formulas to determine measurements.</p> <p><b>Data Analysis and Probability</b> Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.</p> <p><b>Communication</b> Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.</p> <p><b>Algebra</b> Understand patterns, relations, and functions. Use mathematical models to represent and understand quantitative relationships. Analyze change in various contexts.</p> <p><b>Measurement</b> Apply appropriate techniques, tools and formulas to determine measurements.</p>

Sample Classroom Applications	Sample Resources
<p><i>Standard 1 Mathematical Process</i></p> <p><b>Example for SPI 0706.1.1</b> Depending on the problem chosen, students may use proportional reasoning to address a pollution problem. Cross curriculum connections with science.</p> <p><b>Example for SPI 0706.1.2</b> Students will need experience in creating a variety of tables and graphs. They then need to choose appropriate tables and graphs to display data for boards.</p> <p><b>Example for SPI 0706.1.3</b> Students are required to keep a grade sheet. They can take this information and create a spreadsheet. From the spread sheet they can create graphs. This practice may be used to create graphs for boards.</p> <p><b>Example for SPI 0706.1.4</b> Depending on the problem chosen, students may use maps on board to address an area of the community.</p>	<p><i>Project Citizen Math Web Sites</i></p> <p><a href="http://www.schoolhousetech.com/">http://www.schoolhousetech.com/</a></p> <p><a href="http://www.lessonplanet.com/search/Math?OVRAW=math%20lesson%20plan&amp;OVKEY=math%20lesson%20plan&amp;OVMTC=standard&amp;OVADID=17786608511&amp;OVKWID=2206887511">http://www.lessonplanet.com/search/Math?OVRAW=math%20lesson%20plan&amp;OVKEY=math%20lesson%20plan&amp;OVMTC=standard&amp;OVADID=17786608511&amp;OVKWID=2206887511</a></p> <p><a href="http://www.tutor.com/">http://www.tutor.com/</a></p> <p><a href="http://www.mathforum.com/">http://www.mathforum.com/</a></p> <p><a href="http://www.kutasoftware.com/">http://www.kutasoftware.com/</a></p> <p><a href="http://www.math.com/">http://www.math.com/</a></p> <p><a href="http://www.edhelper.com/math.htm?gclid=CL-9k6GezJICFR11godDgNZcA">http://www.edhelper.com/math.htm?gclid=CL-9k6GezJICFR11godDgNZcA</a></p>

**Grade 7: Mathematics**

<p><b>Project Citizen Steps 2008 edition</b></p>	<p><b>Subject Area Standard TN State Performance Indicators (SPI)</b></p> <p><i>Standard 2Numbers Operations</i></p>	<p><b>National Council of Teachers of Mathematics Standards</b></p>
<p>Step 3 Gathering Information and Research p. 18 – 27</p> <p>Step 4 Developing a Class Portfolio p. 28 – 49</p> <p>Step 5 Presenting Your Portfolio p. 50 – 52</p>	<p>SPI 0706.2.1 Simplify numerical expressions involving rational numbers</p> <p>SPI 0706.2.2 Compare rational numbers using appropriate inequality symbols</p> <p>SPI 0706.2.3 Use rational numbers and roots of perfect squares / cubes to solve contextual problems</p> <p>SPI 0706.2.4 Determine the approximate location of square / cube roots on a number line</p> <p>SPI 0706.2.5 Solve contextual problems that involve operations with integers</p> <p>SPI 0706.2.6 Express the ratio between two quantities as a percent, and a percent as a ratio or fraction</p> <p>SPI 0706.2.7 Use ratios and proportions to solve problems</p>	<p><b>Number and Operations</b> Compute fluently and make reasonable estimates.</p> <p>Understanding numbers, ways of representing numbers, relationships among numbers, and number systems. Compute fluently and make reasonable estimates.</p> <p>Understand meanings of operations and how they relate to one another.</p> <p>Understanding numbers, ways of representing numbers, relationships among numbers, and number systems.</p> <p>Understand meanings of operations and how they relate to one another.</p> <p>Understanding numbers, ways of representing numbers, relationships among numbers, and number systems.</p>

<b>Sample Classroom Applications</b>	<b>Sample Resources</b>

**Grade 7: Mathematics**

<p><b>Project Citizen Steps 2008 edition</b></p>	<p><b>Subject Area Standard TN State Performance Indicators (SPI)</b></p>	<p><b>National Council of Teachers of Mathematics Standards</b></p>
<p>Step 3 Gathering Information and Research p. 18 – 27</p> <p>Step 4 Developing a Class Portfolio p. 28 – 49</p> <p>Step 5 Presenting Your Portfolio p. 50 – 52</p>	<p style="text-align: center;"><i>Standard 3Algebra</i></p> <p>SPI 0706.3.1 Evaluate algebraic expressions involving rational values for coefficients and/or variables</p> <p>SPI 0706.3.2 Determine whether a relation (represented in various ways) is a function</p> <p>SPI 0706.3.3 Given a table of inputs <math>x</math> and outputs <math>f(x)</math>, identify the function rule and continue the pattern</p> <p>SPI 0706.3.4 Interpret the slope of a line as a unit rate given the graph of a proportional relationship</p> <p>SPI 0706.3.5 Represent proportional relationships with equations, tables and graphs</p> <p>SPI 0706.3.6 Solve linear equations with rational coefficients symbolically or graphically</p> <p>SPI 0706.3.7 Translate between verbal and symbolic representations of real-world phenomena involving linear equations</p> <p>SPI 0706.3.8 Solve contextual problems involving two-step linear equations</p> <p>SPI 0706.3.9 Solve linear inequalities in one variable with rational coefficients symbolically or graphically</p>	<p><b>Algebra</b> Represent and analyze mathematical situations and structures using algebraic symbols.</p> <p>Use patterns, relations, and functions.</p> <p>Analyze change in various contexts.</p> <p>Use mathematical models to represent and understand quantitative relationships. Model and solve contextualized problem using various representations, such as graphs, tables, and equations.</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols. Use mathematical models to represent and understand quantitative relationships.</p> <p>Represent and analyze mathematical situation and structures using algebraic symbols.</p> <p>Analyze change in various contexts.</p> <p>Represent and analyze mathematical situations and structures using algebraic symbols. Use mathematical models to represent and understand quantitative relationships.</p>

Sample Classroom Applications	Sample Resources
<p><i>Standard 3Algebra</i></p> <p><b>Example for SPI 0706.3.1</b> Variables may be used to represent solutions to problems.</p> <p><b>Example for SPI 0706.3.2, SPI 0706.3.3, SPI 0706.3.6</b> The problem may be represented at a function and translated into a graph to demonstrate growth, decay or possible solutions to the problem.</p> <p><b>Example for, SPI 0706.3.4</b> Unit rate may be used to represent a part of the problem or a solution to the problem. e.g., MPG in transportations savings; pounds of paper saved per year.</p> <p><b>Example for SPI 0706.3.5</b> Graphs, tables and equations will be used to represent data on each board of the problem.</p> <p><b>Example for SPI 0706.3.7</b> The problem may be used to translate parts of the problem into algebraic symbols.</p> <p><b>Example for SPI 0706.3.8</b> The problem may be represented an algebraic and set up as two step equations.</p> <p><b>Example for SPI 0706.3.9</b> The problem may be represented as a linear inequality to demonstrate variations or non-solutions.</p>	

**Grade 7: Mathematics**

Project Citizen Steps	Subject Area Standard TN State Performance Indicators (SPI)	National Council of Teachers of Mathematics Standards
<p>Step 3 Gathering Information and Research p. 18 – 27</p> <p>Step 4 Developing a Class Portfolio p. 28 – 49</p> <p>Step 5 Presenting Your Portfolio p. 50 – 52</p>	<p><i>Standard 4 Geometry Measurement</i></p> <p>SPI 0706.4.1 Solve contextual problems involving similar triangles</p> <p>SPI 0706.4.2 Use SSS, SAS, and AA to determine if two triangles are similar</p> <p>SPI 0706.4.3 Apply scale factor to solve problems involving area and volume</p>	<p><i>Geometry</i></p> <p>Apply transformation and use symmetry to analyze mathematical situations</p>
	<p><i>Standard 5 Data Analysis, Statistics, Probability</i></p> <p>SPI 0706.5.1 Interpret and employ various graphs and charts to represent data</p> <p>SPI 0706.5.2 Select suitable graph types (such as bar graphs, histograms, line graphs, circle graphs, box-and-whisker plots, and stem-and-leaf plots) and use them to create accurate representations of given data.</p> <p>SPI 0706.5.3 Calculate and interpret the mean, median, upper-quartile, lower-quartile, and interquartile range of a set of data.</p> <p>SPI 0706.5.4 Use theoretical probability to make predictions.</p>	<p><i>Data Analysis And Probability</i></p> <p>Select and use appropriate statistical methods to analyze data.</p> <p>Understand and apply basic concepts of probability.</p>

Sample Classroom Applications	Sample Resources
<p style="text-align: center;"><i>Standard 4 Geometry Measurement</i></p> <p><b>Example for SPI 0706.4.1, SPI 0706.4.2</b>            Proportional layout and spacing on boards.            Similar triangles may be used as background for data on boards to represent larger and smaller parts of the problem.</p> <p><b>Example for SPI 0706.4.3</b>            Depending on the problem, scale factor may be used in the actual description of the problem.            Scale factor may be used in proportional layout of the boards.</p> <p style="text-align: center;"><i>Standard 5 Data Analysis, Statistics, Probability</i></p> <p><b>Example for SPI 0706.5.1, SPI 0706.5.2, SPI 0706.5.3</b>            Information gathered from surveys will be displayed in graphs and charts on boards.</p> <p><b>Example for SPI 0706.5.3</b>            Box-and-whisker may be used to represent data depending on the problem.</p>	

## Notes