



Kathy Cox, State Superintendent of Schools

## **Training for the New Georgia Performance Standards**

Day 1: Standards, Content, and  
Curriculum Mapping

**Content Facilitator's Guide  
Mathematics Grade 8**

*We will lead the nation in improving student achievement.*

## *Use of this Guide*

This training program was developed by the Georgia Department of Education as part of a series of professional development opportunities to help teachers increase student achievement through the use of the Georgia Performance Standards.

The module materials, including a Content Facilitator's Guide, Participant's Guide, and PowerPoint Presentation are available on a CD to designated trainers throughout the state of Georgia who have successfully completed a Train-the-Trainer course offered through the Georgia Department of Education. These trainers have also received supplementary materials.

Materials (guides, presentations, etc.) will be available electronically on <http://www.georgiastandards.org> under the training tab after all trainings of Day 1 have occurred. Consult the trainer for availability.

For more information on this or other GPS training, contact Claire Pierce at (404) 657-7063 or [cpierce@doe.k12.ga.us](mailto:cpierce@doe.k12.ga.us) or Peggy Pool at (404) 657-9063 or [ppool@doe.k12.ga.us](mailto:ppool@doe.k12.ga.us).

## **Table of Contents**

|  |           |
|--|-----------|
| <b>Use of This Guide</b> .....                   | <b>2</b>  |
| <b>Table of Contents</b> .....                   | <b>3</b>  |
| <b>Overview</b> .....                            | <b>4</b>  |
| Module One Objectives.....                       | 5         |
| Leader Roles and Responsibilities.....           | 6         |
| Recommended Training Setup .....                 | 9         |
| Module Materials for Day One of Training.....    | 10        |
| <b>Introduction</b> .....                        | <b>11</b> |
| Getting Acquainted.....                          | 13        |
| Overview of the Module .....                     | 15        |
| <b>Overview of Standards</b> .....               | <b>18</b> |
| Introduction .....                               | 19        |
| What are the Grade 8 Mathematics Standards?..... | 19        |
| <b>Curriculum Mapping</b> .....                  | <b>26</b> |
| What mapping provides .....                      | 28        |
| Group Assignment .....                           | 29        |
| <b>Summary and Follow Up Assignments</b> .....   | <b>32</b> |
| Follow Up Assignment .....                       | 33        |
| georgiastandards.org .....                       | 34        |
| Action Planning.....                             | 35        |
| <b>Appendix Section</b> .....                    | <b>37</b> |
| Eighth Grade Standards.....                      | 38        |
| Vertical Alignment.....                          | 44        |
| Phase In Plane.....                              | 45        |
| Grades 6 and 7 Curriculum Maps .....             | 46        |
| Glossary .....                                   | 48        |
| Resources .....                                  | 50        |
| Standard Cards for 8 <sup>th</sup> grade.....    | 54        |
| Assignment .....                                 | 59        |
| Three Little Pig Builders continued (Task).....  | 61        |
| To the Dump Activity .....                       | 64        |
| Curriculum Map Templates .....                   | 70        |
| All in the Family .....                          | 72        |

## Overview

|                           |  |
|---------------------------|--|
| <b>Module Rationale</b>   | <p>“Georgia will lead the nation in improving student achievement.” This is the goal, and promise, behind the Georgia Performance Standards (GPS). The purpose of this training is two-fold.</p> <p>The first purpose is to <u>introduce participants to the applicable standards</u>. For 2006-2007, these include:</p> <ol style="list-style-type: none"> <li>1. 3-5 Math</li> <li>2. 8 Math</li> <li>3. K-2 Science</li> <li>4. 8 Science</li> <li>5. 6-12 Social Studies</li> </ol> <p>After day one, participants should have a good general idea of the standards. The standards will be explored in more depth in subsequent training days.</p> |
| <b>Module Description</b> | <p>This module includes an instructor-led one-day session that will enhance participant's understanding of the standards, concepts, and curriculum mapping for eighth grade mathematics.</p>   |
| <b>Training Goal</b>      | <p>Demonstrate a deep understanding of the new Georgia Performance Standards and the standards-based education approach, through curriculum mapping, development of formative and summative assessments, classroom implementation, planning for differentiation, and design of instruction matched to standards and research-based best practices.</p> <p>Key words from the goal:</p> <ul style="list-style-type: none"> <li>➤ Deep understanding</li> <li>➤ Georgia Performance Standards (GPS)</li> <li>➤ Curriculum Mapping</li> <li>➤ Assessments</li> <li>➤ Implementation</li> <li>➤ Differentiation</li> <li>➤ Instruction</li> </ul>          |
| <b>Training Goal</b>      | <p>Note that the goal will not be reached by day one of training alone. It will take preparation, six days of GPS training, and follow up to master this goal. Various days of training will deal with different components of the goal, such as curriculum mapping, assessment, instruction, and differentiation.</p>   |

**Module One Objectives**

By the end of day one of training, participants will:

1. Understand the benefits of the GPS.
2. Know the various phases of the GPS rollout plan.
3. Define terms related to the GPS.
4. Identify four parts of each standard.
5. Develop and use a curriculum map.
6. Cultivate a strong awareness of standards-based teaching and learning.
7. Become familiar with the 8<sup>th</sup> grade mathematics GPS along with the expected depth and rigor.
8. Be aware of various support avenues available throughout the state of Georgia that will assist with implementation.
9. Have a deeper understanding of the content addressed within the module.

**Module Sequence**

Introduction

- Four Corners
- Overview of the Module
- What We Know/What We Want to Know
- Three Little Pigs Builders continued

Overview of the Standards

- Benefits of GPS and GPS Implementation
- Content-Specific Information
- To the Dump Activity

Standards-Based Teaching and Learning

- Standards Based Education (SBE)
- SBE and GPS

Putting It All Together

- Use the GPS to develop Curriculum Maps
- All in the Family

Summary and Follow Up Work

- Action Planning
- Follow-up Assignment
- Summary

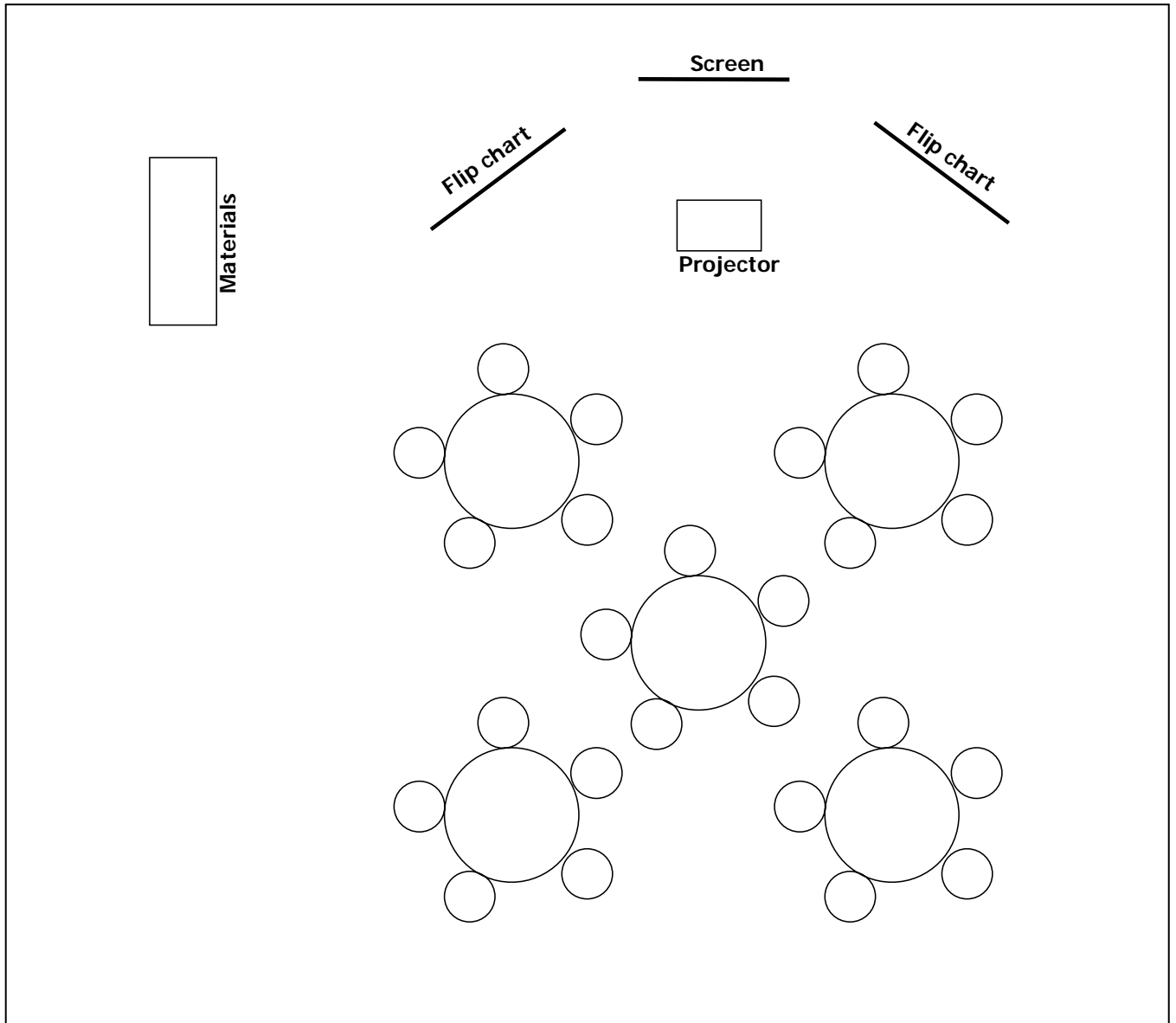
|  |   |
|--|---|
| <b>Leader Roles and Responsibilities</b> | <p>This workshop will require of you a different set of skills than most other instructor-led training programs. There is less presentation and lecture; instead, you will have to use demonstration, questioning, and facilitation skills. This guide includes the basic questions you should ask the participants, but throughout the workshop, you will have to add additional probing questions to get the participants to question their assumptions and continue to refine their understanding of what standards-based teaching is and how it can make a difference.</p>  |
| <b>Target Population</b>                 | <p>The target populations for this training are teachers of 8<sup>th</sup> grade mathematics. This includes teachers of this content in regular education, special education, gifted, and supplemental/alternative positions that need to be knowledgeable of the general curriculum in order to provide accommodations, modifications, and/or support so that students with special needs have access to, and progress in, that curriculum. Teachers will be trained locally.</p>  |
| <b>Module Preparation</b>                | <p>Preparation is critical to a successful training session. Listed below are some tips that will help you prepare for your session.</p> <ol style="list-style-type: none"><li>1. Participate in a Train-the-Trainer session.</li><li>2. Gather all the required articles, texts, and other materials listed in the "Module Materials". A set of books was provided to each school, as listed under "Provided Texts". Become very familiar with these materials and the materials in the "Recommended Readings" list.</li><li>3. Ensure that school administrators understand the preparation and follow up requirements of the course and that the GPS curriculum changes have evolved from a very open public process that included public input from responses sought by the DOE. Current GPS were developed taking into consideration all input from all respondents.</li><li>4. Ensure the participants who are enrolled in your training sessions have the preparation materials and realize it is an absolute requisite to attending the training. The best way to ensure compliance is to have multiple contacts with the participants and their administrators. During these contacts, whether by mail, phone, or e-mail (preferably a combination), ensure that participants have the prework materials, understand the assignment, and are committed to arriving prepared. Anything you can do to establish a relationship with participants will help reduce stress and ensure a meaningful and successful training experience.</li></ol> |

5. Identify a date, times, and location for this training. This may vary from one setting to the next, as you work with local schools and districts to arrange a customized delivery schedule. Prepare a handout with this information and photocopy it for the participants.
6. Determine how course follow-up will be handled. It is very important that professional development be an on-going, job-embedded process, with the training sessions being part of a cohesive plan to help teachers increase skills and knowledge. Here are some questions to answer before conducting the workshop:
  - Will there be any follow-up conference calls or a list serve to discuss progress and provide an information-sharing and networking forum? If so, who will lead them? When? How?
  - How will we ensure that participants complete the follow-up assignments? Who will follow up with reminders? How will we make sure this effort is supported locally?
  - Will there be grade level meetings? Department meetings?
7. Ensure that you have all materials.
8. Gather information about your training site:
  - Mailing address, contact person with phone number (Participant materials need to be shipped to a specific location and someone needs to receive the materials.)
  - Size of room and space to work in small groups
  - Audio visual equipment
    - Projection System
    - Flipcharts with Pads
    - Tape
    - Color Markers
  - Table and chairs: One table for leader (in front), one for materials, enough tables for the number of participants to sit in groups of about four
  - Wall space for your posters and flipcharts
  - Determine plans and payment for refreshments as desired/needed.
  - Review the graphic of the ideal site setup on the following page.
  - Set up your training room the night before the training. If you have never seen the room, this is especially important.
  - Test all equipment and make sure you have all of your materials organized for efficient distribution.

9. Go through the entire Content Facilitator's Guide.
  - Prepare an agenda. (You may also want to mark key times with Post-Its put in your guide.)
  - Use margins to note key points you plan to emphasize.
  - Walk through all activities.
  - Prepare any flipcharts.
  - Make sure your materials are organized according to when you will need them.
  - Make any adjustments that are needed to the activities, room layout, audio-visuals, etc., based on the number of participants.



**Recommended Training Setup**



**Module  
Materials for  
Day One of  
Training****Content Facilitator's Kit contents:**

- Hard copy of the Content Facilitator's Guide (one for each leader)
- CD containing the Content Facilitator's Guide, Participant's Guide and Power Point presentation of the eighth grade mathematics Day 1 Module.

## Other materials needed:

- Name tags
- A variety of colored markers appropriate for flipcharts
- Highlighter markers
- Flipchart paper and stand
- Masking tape to post chart paper
- Index cards for participants to write contact information for your files

## Equipment:

- Projection system for slides
- Computer

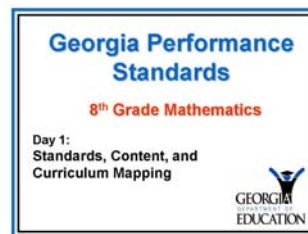
## Introduction

|                   |  |
|-------------------|--|
| <b>Time</b>       | 1 hour   |
| <b>Overview</b>   | In the overview, the participants complete a brief discovery activity to learn the rationale for backward design; i.e., that beginning with the GPS as desired outcomes and then designing instruction and assessment leads to in-depth understanding and mastery of the standards. This activity leads directly into a discussion of the goals of the training. Finally, participants share “what they know” and “what they want to know” about Georgia Performance Standards and their implementation. |
| <b>Objectives</b> | ➤ Warm-up and getting to know each other   |
| <b>Activities</b> | <ul style="list-style-type: none"> <li>➤ Introductions, Housekeeping and Announcements</li> <li>➤ Overview of the Module: Presentation</li> <li>➤ What Do You Know and What Do You Want to Know: Small Group Activity</li> <li>➤ Three Little Pigs Builders continued</li> </ul>   |
| <b>Materials</b>  | <ul style="list-style-type: none"> <li>➤ Flipchart paper</li> <li>➤ Markers</li> <li>➤ Scratch paper</li> <li>➤ Index cards</li> <li>➤ Two clip boards</li> <li>➤ Copies of PG and notebooks for each participant</li> </ul>   |

Notebooks  
Copies of PG  
Parking lot  
Name tags  
Markers  
Flipchart  
Scratch paper  
Masking tape  
Index cards

1. Have everything set up and prepared in advance so that you may be relaxed and able to pleasantly greet the participants.
2. Show slide *GPS 8<sup>th</sup> Grade Mathematics*. Introduce yourself and briefly describe your background.

Slide  
*GPS 8<sup>th</sup> Grade  
Mathematics*



3. Ask participants to *briefly* introduce themselves, with just name and position.
  - Give the participants an index card to fill out information such as their name and contact information. Explain that you will use the information to send them materials and set up a dialogue with the group.
  - Have them note their status in understanding of Georgia Performance Standards: They attended GPS training for 6<sup>th</sup> or 7<sup>th</sup> grade mathematics, they attended redelivery of 6<sup>th</sup> or 7<sup>th</sup> grade mathematics, they have heard about the standards, they have no previous experience with GPS.

Index cards

Slides  
*Getting Acquainted*  
 and  
*Contact Information*

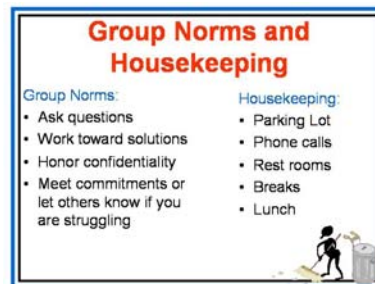
You may wish to share your contact information with them at this time.



Flipchart  
 Markers

4. Present: **Because we have only one day together at this time, it might be helpful to talk about some ways that we can all work together.**
5. Show slide, *Group Norms and Housekeeping*. Ask participants if they would like to add to or change the group norms. Record any needed changes on a flipchart. Then, ask participants to agree to these norms.

Slide  
*Group Norms and Housekeeping*



6. Go over housekeeping rules (phone, breaks, etc.) as appropriate to your schedule and location. The Parking Lot allows participants to put up sticky notes of questions, concerns, suggestions, and typos. Periodically collect those and address any issues during the day.

### ***What Do We Know and What Do We Want to Know: Large Group Activity***

**Our goal today and in the remaining training sessions is to work through a step-by-step process we can use to make sense out of the GPS and to use these standards to plan curriculum units, strategies, and lessons that facilitate student improvement. To do this I need to get a sense of what you know and what you want to know.**

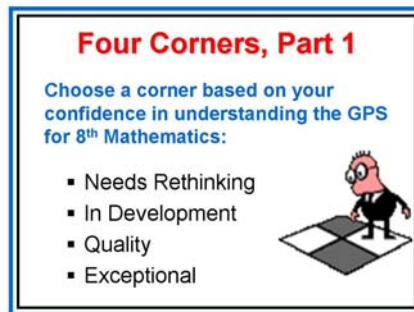
Show Slide *Four Corners, Part 1*.

7. Ask participants to move to the corner that most closely matches their confidence level in understanding the GPS.

Four Corners Game

Flipcharts, markers

Slide  
*Four Corners,  
Part 1*



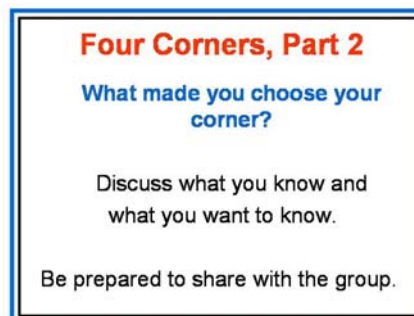
**Four Corners, Part 1**

Choose a corner based on your confidence in understanding the GPS for 8<sup>th</sup> Mathematics:

- Needs Rethinking
- In Development
- Quality
- Exceptional

8. Show slide, *Four Corners, Part 2*. Ask what made them choose that particular corner. Have them discuss among themselves about what they know and want to know

Slide  
*Four Corners,  
Part 2*



**Four Corners, Part 2**

What made you choose your corner?

Discuss what you know and what you want to know.

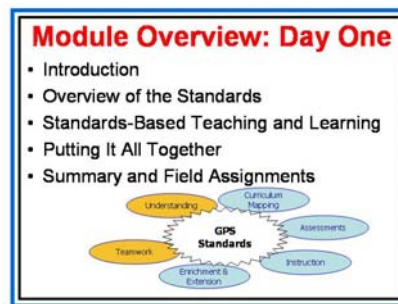
Be prepared to share with the group.

9. Ask for volunteers to share. During the sharing, someone should record the responses on posted chart paper.
10. Briefly note any patterns that you see and/or any items that may be listed on both sides of the room, then tell participants that we will get back to these lists throughout the day.

Once the participants have shared some of the topics and concerns that were discussed in their small groups with the large group, have them return to their seats.

Slide  
*Module Overview*

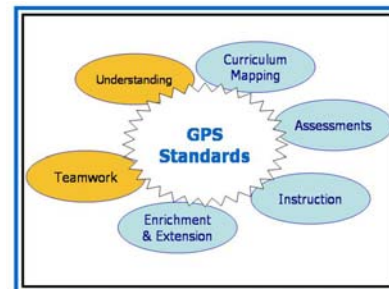
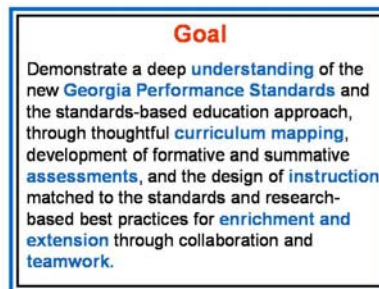
11. Show slide *Module Overview: Day One*, which contains the course overview information.



- As the graphic shows, successful implementation of the new standards requires work in assessment, instruction, etc.
  - Today, we will be laying the foundation for all these other activities as we focus on building a team understanding of the standards and standards-based education—a process for using the standards to increase student achievement.
12. Present: **The goal and today's objectives are listed in the Participant's Guide and on pages 4 and 5 of this guide.**

13. Show the *Goal* slide and the *GPS Standards* slide. Explain:

Slides  
*Goal*  
and  
*GPS Standards*



- This is our goal for the training. Key words are highlighted. As you see, many of these words are the same ones that were in the previous slide.
- This goal cannot be mastered in one day. It requires on-going, job-embedded professional development. It will take all of us working together to fully implement the GPS and reach this goal. We'll be working toward this goal over six days of training.
- We must practice, reflect, collaborate, and receive feedback as we learn.

Slide  
*Days of Training*

Show slide of *Days of Training*. Explain:

- Here is the overall schedule of the training.



Throughout the process we will work as a team and get to the understanding of these concepts. Day 2 will focus on Assessment. We will work together on Days 3 and 4 to support each other in preparation for Classroom Implementation.

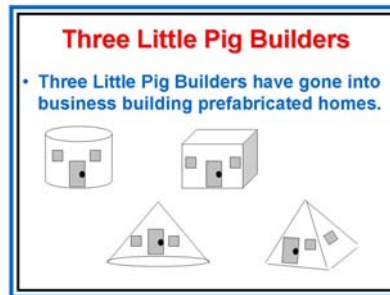
In the year of actual classroom instruction of the Georgia Performance Standards, Days 5 and 6 will focus on differentiation, student work, teacher commentary, and sharing what works with others across the state.

**NOTE THAT THE EIGHTH GRADE TRAINING WILL CONTAIN MUCH MORE MATHEMATICS CONTENT THAN EITHER OF THE SIXTH GRADE OR SEVENTH GRADE TRAINING BECAUSE THE GROUND WORK HAS ALREADY BEEN SET.**

**With this said, are you ready to do some math?**

Show the slide *Three Little Pig Builders*.

Slide  
*Three Little Pig Builders*



PG page 30  
FG page 61

This task is in both the participant's guide and the back of this guide. It is a good opportunity to talk about the frameworks and where to find them.



**Do you know where can you find this task?**

**This is a sixth grade task taken from Unit 8 of the framework. The sixth grade standards do not include finding the surface area of the pyramid or cone. Why is this not in the sixth grade standards? Where is it? Why do you think we could ask eighth graders to find the surface area of a pyramid and cone?**

- Have participants respond to the above questions. Use this as a good introduction to the Pythagorean Theorem.
- Allow time for them to work parts e and f.
- Give a sharing period and facilitate discussion.

14. Explain:

- **Just as this activity required the need for mastering the Pythagorean Theorem as well as maintaining sixth grade standards, our students need to master the use of mathematics through engaging tasks that require thinking and creativity.**
- **The Georgia Performance Standards have been developed by teaching professionals from all over Georgia and the nation. They provide the expectations in mathematics. Implementing the GPS is now our task.**

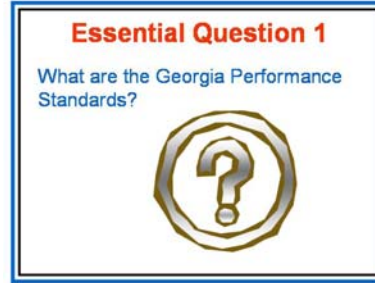
## **Overview of Standards**

|                   |   |
|-------------------|---|
| <b>Time</b>       | 2 hours, 30 minutes   |
| <b>Overview</b>   | In this section, the trainer leads participants through an in-depth examination of the individual seventh grade mathematics standards. Participants view the implementation plan for GPS. Specific myths, or misconceptions, regarding the eighth grade mathematics standards will be addressed throughout this section of the training. Participants are also introduced to the parts of a performance standard and the essential changes and key features of the strands and standards. |
| <b>Objectives</b> | <ul style="list-style-type: none"> <li>➤ Describe the benefits of the GPS.</li> <li>➤ Describe the various phases of the GPS rollout plan.</li> <li>➤ Define terms related to the GPS.</li> <li>➤ Identify four parts of each standard.</li> </ul>  |
| <b>Activities</b> | <ul style="list-style-type: none"> <li>➤ Introduction</li> <li>➤ What Are the New Standards in eighth grade mathematics</li> <li>➤ What Makes the Standards Different</li> <li>➤ To the Dump Activity</li> </ul>  |
| <b>Materials</b>  | <ul style="list-style-type: none"> <li>➤ Copy of standards</li> <li>➤ Chart paper</li> <li>➤ Markers</li> <li>➤ Participant's Guide</li> <li>➤ Overhead projector or computer and LCD projector</li> <li>➤ Transparencies or PowerPoint presentation</li> </ul>   |

**Introduction**

Slide  
*Essential Question 1*

Show slide 12, *Essential Question 1*. Present: **We are going to explore this question first.**



Standards and  
Vertical Alignment

**What are the Grade 8 Mathematics Standards?**

PG page 7  
FG page 38

**It is very important for all of us to be aware of the standards for the other grade levels, especially for the courses that are immediately before and after the one that you are teaching. This chart shows the relationship of the standards that are taught in the Middle School Mathematics GPS.**

This is a good time to discuss the Vertical Alignment Chart.

15. Show slide *Performance Standards Are...* Present key points:

Slide  
*Performance Standards Are...*

- **Standards apply to every student. GPS is curriculum for ALL students.**

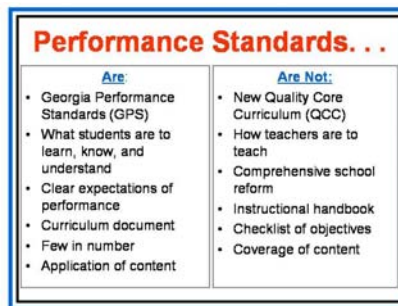


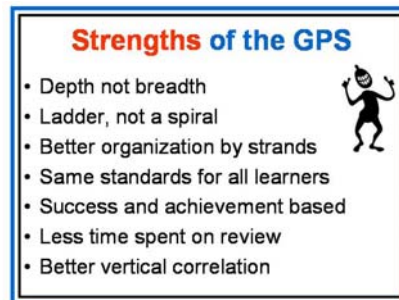
Chart of concerns

16. Continually refer participants to the What We Want to Know and What We Know charts and see if any points are clarified.

17. Show slide *Strengths of the GPS*. Present key points:

- **With the Georgia Performance Standards, we are creating a ladder style curriculum that expects mastery of topics - as opposed to our current spiral curriculum, which contains constant re-teaching.**
- **Assessment (CRCT) will be aligned with the curriculum (GPS).**

Slide  
*Strengths of the GPS*



18. Show slide *Phase-In Plan*. Present key points:

- **This is a 2-year phase-in plan.**
- **The 1<sup>st</sup> year includes content-specific training, professional learning, familiarity with the standards and standards-based education**
- **During the 2<sup>nd</sup> year we begin to teach with the GPS; students are assessed on GPS (CRCT).**

Slide  
*Phase-In Plan*

| Grade | Math Training | Math Teaching |
|-------|---------------|---------------|
| K     | 05-06         | 06-07         |
| 1     | 05-06         | 06-07         |
| 2     | 05-06         | 06-07         |
| 3     | 06-07         | 07-08         |
| 4     | 06-07         | 07-08         |
| 5     | 06-07         | 07-08         |
| 6     | 04-05         | 05-06         |
| 7     | 05-06         | 06-07         |
| 8     | 06-07         | 07-08         |

PG page 14  
FG page 45

19. Show slide *Test Alignment* which explain how the testing components are being phased in.

Slide  
*Test Alignment*

**Test Alignment**

**Criterion-Referenced Competency Tests (CRCT)**

Test alignment is completed during Year II implementation for each content area and grade level.

Slide  
*Grade 8 Math Assessment Timeline*

**Grade 8 Math Assessment Timeline**

- **2006-2007 School year:**  
Grade 8 math CRCT will assess the **QCC**.
- **2007-2008 School year:**  
Grade 8 math CRCT will assess the **GPS**.

This slide explains the CRCT schedule for the change from QCC to GPS.

20. Show slide *Format of Curriculum*. Refer participants to the GPS and ask them to locate each part labeled on the slide.

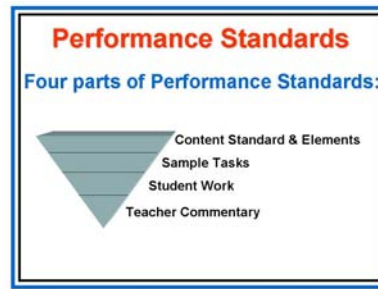
Slide  
*Format of Curriculum*

**Format of Curriculum**

- **Introductory Paragraphs**
  - Overview of Year's Content
  - Instructional Strategies
    - Manipulatives
    - Representation
    - Technology
    - Real-world Context
- **Concepts/Skills to Maintain**
- **Standards with Elements**

Slide  
Performance  
Standards

21. Show slide *Performance Standards*. Present key points:



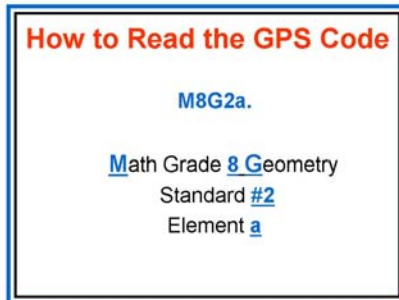
- **Performance Standards:** Performance standards define specific expectations of what students should know and be able to do and how well students must perform to achieve or exceed the standard. Georgia's performance standards are composed of four components: content standards, tasks, student work, and teacher commentary.
- **Content/Characteristics of Mathematics standards:** Standards state the purpose and direction the content is to take, and are followed by elements. Standards define what students are expected to know, understand, and be able to do.
- **Elements:** identify specific learning goals in conjunction with the standard; establish the level of rigor at each grade level as well as the scope of work in the context of the standard.
- *Note: The following components require Georgia teacher input. Collection of these will be ongoing process. Your help is needed.*
- **Tasks:** keyed to relevant standards; provide a sample performance that demonstrates what students should know and be able to do during or by the end of the school year; can serve as activities that will help students achieve the learning goals of the standard or can be used to assess student learning (many serve both purposes). **NOTE:** Although the GPS will include tasks, teachers may develop their own tasks. The tasks in the mathematics frameworks are sample tasks; showing the rigor of assignments that teachers should be using in order to assess student's achievement of the standard. Published tasks are not required –they are illustrative.

- **Student Work**: specifies what it takes to meet the standard and to enable both teachers and students to see what meeting the standard “looks like.” NOTE: Samples of student work show how the student has met the standard. They are not perfect. A piece may not meet all of the elements of the standard, but it will meet the requirements for the part/s (elements) that you (the teacher) have been teaching.
- **Teacher Commentary**: opens communication between students and the classroom teacher as well as within a faculty in order to ensure consistency in assessment and expectations; shows students why they did or did not meet a standard and enables them to take ownership of their own learning. For example, it might say, “This piece of work meets the standard . . .” and then explain specifically how it meets (or does not meet) it.

22. Show slide *How to Read the GPS Code*. Explain the coding and ask participants to interpret several examples.

***Trainer's Note:*** *This has been a source of confusion. Make sure participants are comfortable with the code.*

Slide  
*How to Read the  
GPS Code*



PG page 18  
FG page 48

Also, in the back of both the Participant's Guide and this guide is a Glossary to help with the terms that are used with the Georgia Performance Standards.

23. Show slide *Standards and Elements*. Emphasize:

- **Mathematics standards are assessed at the element level. This may be different from the ELA training. The standard is more general than the element.**
- **Since elements define standards, they are not stand-alones. They can be combined in the unit design.**
- **Elements are not discreet skills to be learned.**

Slide  
*Standards and Elements*

**Standards and Elements**

- **Standard is in bold print:**  
Sets the parameters.
- **Elements are listed under the standard:** Sets the expectations for understanding, what the student should **know and be able to do**.

24. Show slide *Math Standard Example*. Ask participants to identify standard and element, and to describe the differences between them.

➤ **This is an example of an eighth grade content standard.**

Slide  
*Math Standard Example*


**Math Standard Example**

**M8G2. Students will understand and use the Pythagorean theorem.**

**a. Apply properties of right triangles, including the Pythagorean theorem.**

25. Show slide *To the Dump*

Slide  
*To the Dump*

**To The Dump** 

**The mayor of Sunshine is concerned that the landfill will be full before the end of the year.**

**You have been hired to find out if the mayor is correct in her prediction and to determine when the landfill will be full.**

Participants are to read the task.  
Ask them to share their thoughts about it.

PG page 33  
FG page 64

Participants will work the task manually.  
Give leading questions for them if needed such as?

- If the landfill were empty, how much garbage would it contain after the first month? Second month? Third month?  $X^{\text{th}}$  month? (Make a chart.)
- What is the monthly growth rate of garbage in the landfill?

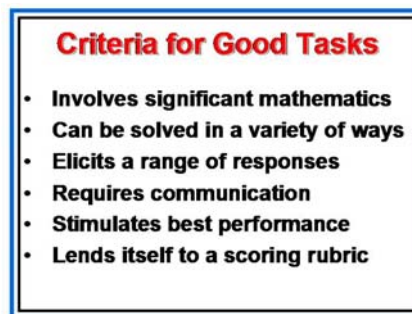


- Write an equation representing the growing amount of garbage in the local landfill at the end of a given month if the landfill is initially empty.
- What quadrant is used to determine when the landfill will be full?
- Graph the equation. What kind of equation is this? (linear)
- What is the slope? What type of relationship/correlation does it represent?
- Write an equation representing the amount of garbage in the local landfill at the end of a given month if it begins with 198,000 tons of trash.
- Graph this equation on the same graph paper as the first equation. How does it relate to the first equation? What does this mean?
- Do you think the mayor's prediction that the landfill will be full by the end of the year is correct?
- What support/evidence can you offer for your prediction?

Ask: **What eighth grade standards are addressed in this task? Is it a good task? Why or why not?**

**These are the criteria given to our framework committees. Do you agree? Explain your response.**

Share what makes a good task.  
Show slide.



Slide  
*Criteria for Good  
Tasks*

Point out that although this task uses slope which is a new concept for eighth graders, it is an extension of the sixth and seventh grade standards concerning  $y = kx$ .

Also mention that the "To the Dump" task is included in one of the GPB webcasts. If possible, this would be an excellent time to show a few minutes of the one that contains this task.

### **Summary: Large Group Activity**

Refer participants to "What We Know" and "What We Want to Know" flipcharts on the walls.

Ask participants to revise the charts as needed based on the discussions and activities so far.

Flipcharts on walls

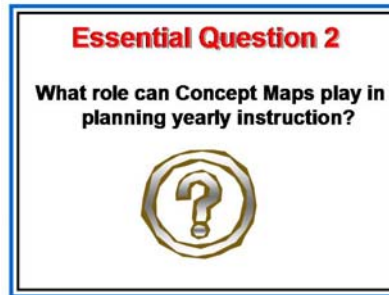
## Curriculum Mapping

|                   |  |
|-------------------|--|
| <b>Overview</b>   | In this section, participants begin to think about the formats and processes that they would like to use to map out their instructional units throughout the school year.  |
| <b>Objective</b>  | <ul style="list-style-type: none"> <li>➤ Explain different aspects of curriculum mapping.</li> </ul>   |
| <b>Activities</b> | <ul style="list-style-type: none"> <li>➤ Basic Principles of Curriculum Mapping</li> <li>➤ Creating a Curriculum Map</li> <li>➤ Analyzing and Reviewing Maps</li> <li>➤ All in the Family</li> </ul>   |
| <b>Materials</b>  | <ul style="list-style-type: none"> <li>➤ Overhead projector, computer and LCD projector</li> <li>➤ PowerPoint presentation</li> <li>➤ Participant's Guide</li> <li>➤ Standards/Elements Cards</li> <li>➤ Chart Paper</li> <li>➤ Markers</li> </ul> <p><b>Trainer's Note:</b> <i>The Heidi Hayes Jacobs book, <u>Mapping the Big Picture</u>, contains 17 sample curriculum maps in the appendix.</i></p> <p>The curriculum map template included in this module is the one that was used for development of the frameworks.</p> <p>Participants are encouraged to use a template that best fits their needs, especially when schools or systems require a particular format.</p> |

## Curriculum Mapping

Show slide.

Slide  
*Essential Question 2*



We are ready to think about Curriculum Mapping. It is important to consider how we group standards to create units and concept mapping helps us with this process.

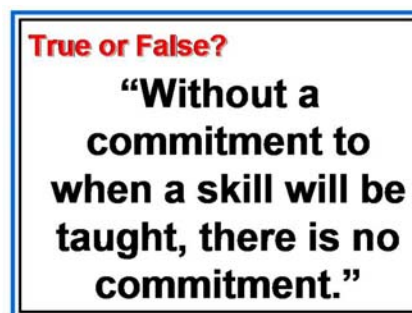
Teachers often work in isolation, or in what we have come to refer to as "private practice," to plan the scope and sequence of their instructional units. Mapping, by contrast, is a collegial or collaborative approach.

➤ In 1993 a group of 23 heart surgeons agreed to observe each other regularly in the operating room and to share their know-how, insights, and approaches. In the two years after their nine-month-long project, the death rate among their patients fell by an astonishing 25 percent. The study shows that merely by emphasizing teamwork and communication instead of functioning like solitary craftsmen, all the doctors brought about major changes in their individual and institutional practices.

- Teachers, like heart surgeons, have traditionally worked in isolation. A powerful lesson can be learned from this study. Many educators now emphatically believe that if our goal is to lower the "death rate" of young minds and see them thrive, we can do it better together than by working alone. ([www.essentialschools.org](http://www.essentialschools.org))

Show slide.

Slide  
*True or False?*



Ask participants to raise their hand if this statement is true.....or false.  
Discuss their thinking and the implications of it being true.

**In Heidi Jacobs Hayes' book, Mapping the Big Picture, page 8, she explains,**  
**"It is critical that each teacher completes a calendar-based map. No one can complete a map for anyone else; otherwise, the data are false. The only professional person who knows what is taught in the classroom is the teacher. Coordinators cannot fill out maps; principals cannot; department chairs cannot fill them out for everyone for the simple reason that they are not in each classroom."**

Show slide.

Slide  
*What Mapping  
Provides*



**Maps work just like itineraries or road maps to show teachers where they are in a particular scope and sequence, what their students have been learning, and where their students need to be by the end of the unit, year, or grade level. They simply show where students have been and where they are going. Teachers need each other's maps to see the bigger, K-12 curriculum perspective.**

**Individual teachers use maps to get a picture of what students experience from grade to grade. Though teachers work in the same building, they may have sketchy knowledge about what goes on in other classrooms. If gaps exist among teachers within buildings, there are chasms among buildings in a district. When this is true, transient students experience a happenstance curriculum.**

**There may be gaps between a standard and what is actually taught. These curriculum gaps negatively impact student learning. Maps may indicate missing pieces in vertical and horizontal articulation.**

**Maps may also reveal repetitions. Too often teachers assume that they are introducing a concept, or even a book, for the first time, and students are subjected to repetitious instruction.**

Maps provide a calendar-based timeline for teachers. This is most helpful for new teachers not experienced in planning for an entire course.

The map should be viewed as a "living" document that plays an integral part in teacher planning each day.

Show slide.

Slide  
*Instructional  
Planning*

**Instructional Planning**

- **Be extremely familiar with grade-level standards**
- **Create a curriculum map**
- **Units**
  - **Identify standards**
  - **Determine acceptable evidence**
  - **Plan instruction**

This is where instructional planning starts, with the curriculum map. A clear knowledge of the standards and their elements is a pre-requisite for beginning this important work.

Show slide.

Slide  
*Group Assignment*

**Group Assignment**

- **Work in small group to organize cards, making connections and distributing strands.**
- **Use your work to create a yearlong curriculum map.**
- **Visit other groups who worked on your grade level.**
- **Make revisions to your map, if needed.**

PG page 23  
FG page 54

Participants may find it helpful to arrange the "cards" in groups to help facilitate thinking and planning.

PG page 39  
FG page 70

Suggest the use of the template in the back of the guide. They may, however, use any format that works for them.

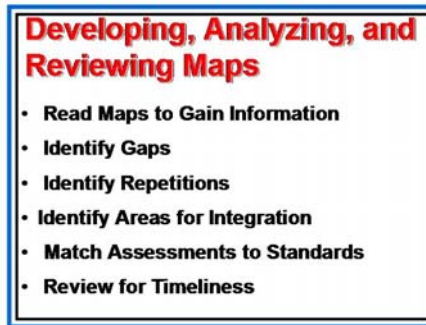
Give them adequate time to work in their groups to develop a useful Curriculum Map.

PG page 15  
FG page 46

Refer to the Curriculum Map from the sixth or seventh grade framework curriculum map only if people are struggling with this task.

Show slide.

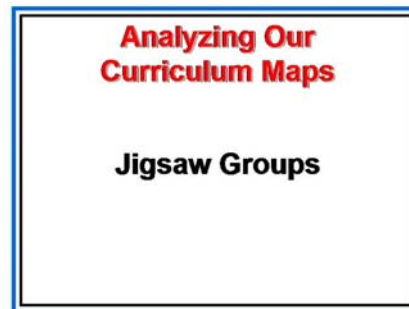
Slide  
*Developing,  
analyzing, and  
Reviewing Maps*



After a sufficient amount of time, call the group back together to discuss how we can analyze our maps. Use the slide to give direction to this process.

Show slide.

Slide  
*Analyzing Our  
Curriculum Maps*



Instead of posting these for everyone to evaluate, have each group pair up with another group to swap maps. Instruct them to use the protocol to evaluate and provide feedback to their partner group.

- **The standards—not the textbook—drive the curriculum. Standards and elements come first, then assessment (Day 2), then the resources.**
- **Connecting the resources, such as textbooks, to the standards helps determine the requisite knowledge and skills to mesh the resources and materials with the standards.**
- **Identify the elements of the standard that will provide the measurable performance criteria for the critical component of the standard.**

**Summary: Large Group Activity (5 minutes)**

26. Refer participants to "What We Know" and "What We Want to Know" flipcharts on the walls.
27. Ask participants to revise the charts as needed, based on the discussions and activities so far.

Show slide *All in the Family*

Slides  
*All in the Family*

PG page 41  
FG page 72



**Now that we have spent today using a few of the eighth grade standards to understand the Day 1 training, let's do another task keeping in mind all that we have discussed today.**

**The task is available in the back of your guide.**

Participants again may share and discuss this task. Be sure to connect it to the applicable standards.

## **Summary and Follow Up Assignments**

|                   |  |
|-------------------|--|
| <b>Time</b>       | 30 minutes   |
| <b>Overview</b>   | Participants are given a follow up assignment to analyze several standards. They begin to develop an action plan. At a minimum, they should determine the time and place of the first meeting and how to work together to complete the assignment. |
| <b>Objectives</b> | <ul style="list-style-type: none"><li>➤ Demonstrate how to lead the Professional Development process in a school.</li></ul>  |
| <b>Activities</b> | <ul style="list-style-type: none"><li>➤ Follow-up Assignment</li><li>➤ Action Planning</li><li>➤ Summary</li></ul>   |
| <b>Materials</b>  | <ul style="list-style-type: none"><li>➤ Participant's Guide</li><li>➤ Notepaper</li><li>➤ Overhead projector or computer and LCD projector</li></ul>   |



### Follow Up Assignment

1. Present: **As I said earlier, it *does* take some work to adopt a new set of standards. It is much more than just trying to find the right standards to “attach” to lesson plans that you already have. If that were the only change, there wouldn't be much point, would there?**
2. Present: **The reason that this course is divided into six days of training over two years is to give you a chance to apply what you've learned as you go, so that you are truly ready to complete a meaningful implementation of the standards—one that will boost student achievement. It's been done in other states and other countries, and we will do it even better here.**
3. Explain:
  - **Your follow-up assignment is to become even more familiar with the GPS eighth grade standards and to review the DOE on-line resources.**

### Summary

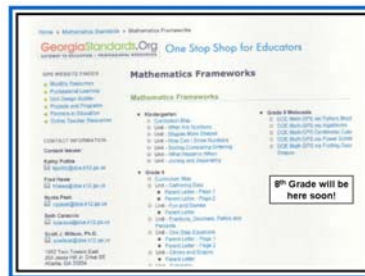
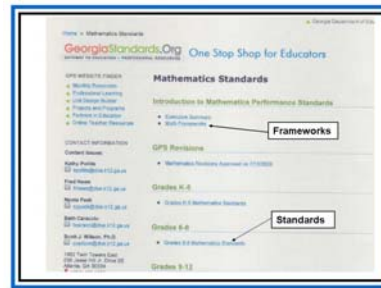
1. Show slide *Days of Training*. Provide overview of the 7-day sequence, explaining how the process will develop over time and how follow-up assignments fit in. If known, provide participants with the date, time, and location for day two of training.

Slide  
*Days of Training*



Slide  
georgiastandards.org

- Participants should understand how to find the training materials necessary for redelivery by using the GADOE website.



How to locate information on the web site  
www.georgiastandards.org.

- **Training Materials (Guides, Power Points, etc.) are found here after all training sessions are completed.**
  - **Frequently Asked Questions (FAQs)**
  - **List of standards for applicable content area and grade level**
  - **Frameworks**
  - **Parent letters**
  - **Webcasts**
  - **Videos are coming**
- Refer participants to “What We Know” and “What We Want to Know” flipcharts on the walls.
  - Ask participants to revise the charts as needed, based on the discussions and activities so far.

## Action Planning

1. Present: **In your Guide, you will find an Action Plan template. This is for you to plan out your group work for both follow-up assignments. I'm going to allow you about 10 minutes to work on your plan now. Minimally, you should determine when and where you'll meet next and what you hope to accomplish in that first meeting.**
2. **The most important resource you have is your Content Facilitator's Guide. Let's take a look at that now and review some of the important pages.**

Slide  
*Discussion of Redelivery Action Plan*

FG page 59

Take time to share helpful pages in the Content Facilitator's Guide, especially the notes in the Overview Section. Be sure to point out the Resources, Glossary that are also in the Participant's Guide.

**Discussion of Redelivery Action Plan**

- Determine your goal for redelivery.
- Determine time allotted.
- Develop timeline of activities.
- List resources and ideas.

3. Allow ten minutes.
4. Ask groups to present their plans.
5. Show slide Field Assignment.

Slide  
*Field Assignment*

**Field Assignment**

- [Redeliver Day 1: Standards, Content, Curriculum Mapping](#)
- Day 2 will focus on determining acceptable evidence. (*Assessment*)
- [Know the Grade 8 Mathematics Standards.](#)
- Think about what evidence is necessary to assess them? *How good is good enough?*

6. Explain: **This follow-up assignment is to become even more familiar with the eighth grade GPS mathematics standards. Also, review the DOE on-line resources.**

**Remember to bring your bag and notebook to the Day 2 training.**

7. Thank participants for their time and efforts and encourage them to make the most of the new GPS.
8. Tell them again how to contact you should they have any questions.

**BLANK PAGE  
ON  
COLORED  
PAPER!**

## ***Eighth Grade Standards***

By the end of grade eight, students will understand various numerical representations, including square roots, exponents and scientific notation; use and apply geometric properties of plane figures, including congruence and the Pythagorean theorem; use symbolic algebra to represent situations and solve problems, especially those that involve linear relationships; solve linear equations, systems of linear equations and inequalities; use equations, tables and graphs to analyze and interpret linear functions; use and understand set theory and simple counting techniques; determine the theoretical probability of simple events; and make inferences from statistical data, particularly data that can be modeled by linear functions.

Instruction and assessment should include the appropriate use of manipulatives and technology. Topics should be represented in multiple ways, such as concrete/pictorial, verbal/written, numeric/data-based, graphical, and symbolic. Concepts should be introduced and used, where appropriate, in the context of realistic phenomena.

### **Concepts/Skills to Maintain**

Operations with rational numbers  
Properties of equalities  
Direct & inverse proportions  
Solving multi-step equations  
Properties of real numbers  
Statistics

## **NUMBER AND OPERATIONS**

**Students will understand the numeric and geometric meaning of square root, apply properties of integer exponents and use scientific notation.**

**M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.**

- a. Find square roots of perfect squares.
- b. Recognize the (positive) square root of a number as a length of a side of a square with a given area.
- c. Recognize square roots as points and as lengths on a number line.

Georgia Department of Education  
Kathy Cox, State Superintendent of Schools  
6/14/2005  
All Rights Reserved

- d. Understand that the square root of 0 is 0 and that every positive number has two square roots that are opposite in sign.
- e. Recognize and use the radical symbol to denote the positive square root of a positive number.
- f. Estimate square roots of positive numbers.
- g. Simplify, add, subtract, multiply, and divide expressions containing square roots.
- h. Distinguish between rational and irrational numbers.
- i. Simplify expressions containing integer exponents.
- j. Express and use numbers in scientific notation.
- k. Use appropriate technologies to solve problems involving square roots, exponents, and scientific notation.

## **GEOMETRY**

**Students will use and apply geometric properties of plane figures, including congruence and the Pythagorean theorem.**

**M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.**

- a. Investigate characteristics of parallel and perpendicular lines both algebraically and geometrically.
- b. Apply properties of angle pairs formed by parallel lines cut by a transversal.
- c. Understand the properties of the ratio of segments of parallel lines cut by one or more transversals.
- d. Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent.

**M8G2. Students will understand and use the Pythagorean theorem.**

- a. Apply properties of right triangles, including the Pythagorean theorem.
- b. Recognize and interpret the Pythagorean theorem as a statement about areas of squares on the sides of a right triangle.

## **ALGEBRA**

**Students will use linear algebra to represent, analyze and solve problems. They will use equations, tables, and graphs to investigate linear relations and functions, paying particular attention to slope as a rate of change.**

**M8A1. Students will use algebra to represent, analyze, and solve problems.**

- a. Represent a given situation using algebraic expressions or equations in one variable.
- b. Simplify and evaluate algebraic expressions.
- c. Solve algebraic equations in one variable, including equations involving absolute values.
- d. Interpret solutions in problem contexts.

**M8A2. Students will understand and graph inequalities in one variable.**

- a. Represent a given situation using an inequality in one variable.
- b. Use the properties of inequality to solve inequalities.
- c. Graph the solution of an inequality on a number line.
- d. Interpret solutions in problem contexts.

**M8A3. Students will understand relations and linear functions.**

- a. Recognize a relation as a correspondence between varying quantities.
- b. Recognize a function as a correspondence between inputs and outputs where the output for each input must be unique.
- c. Distinguish between relations that are functions and those that are not functions.
- d. Recognize functions in a variety of representations and a variety of contexts.
- e. Use tables to describe sequences recursively and with a formula in closed form.
- f. Understand and recognize arithmetic sequences as linear functions with whole number input values.
- g. Interpret the constant difference in an arithmetic sequence as the slope of the associated linear function.
- h. Identify relations and functions as linear or nonlinear.
- i. Translate among verbal, tabular, graphic, and algebraic representations of functions.

**M8A4. Students will graph and analyze graphs of linear equations.**

- a. Interpret slope as a rate of change.
- b. Determine the meaning of the slope and y-intercept in a given situation.
- c. Graph equations of the form  $y = mx + b$ .
- d. Graph equations of the form  $ax + by = c$ .
- e. Determine the equation of a line given a graph, numerical information that defines the line, or a context involving a linear relationship.
- f. Solve problems involving linear relationships.



**M8A5. Students will understand systems of linear equations and use them to solve problems.**

- a. Given a problem context, write an appropriate system of linear equations.
- b. Solve systems of equations graphically and algebraically, using technology as appropriate.
- c. Interpret solutions in problem contexts.

**DATA ANALYSIS AND PROBABILITY**

**Students will use and understand set theory and simple counting techniques; determine the theoretical probability of simple events; and make inferences from data, particularly data that can be modeled by linear functions.**

**M8D1. Students will apply basic concepts of set theory.**

- a. Demonstrate relationships among sets through use of Venn diagrams.
- b. Determine subsets, complements, intersection, and union of sets.
- c. Use set notation to denote elements of a set.

**M8D2. Students will determine the number of outcomes related to a given event.**

- a. Use tree diagrams to find the number of outcomes.
- b. Apply the addition and multiplication principles of counting.

**M8D3. Students will use the basic laws of probability.**

- a. Find the probability of simple independent events.
- b. Find the probability of compound independent events.

**M8D4. Students will organize, interpret, and make inferences from statistical data**

- a. Gather data that can be modeled with a linear function.
- b. Estimate and determine a line of best fit from a scatter plot.

**Terms/Symbols:**

square root, radical,  $\sqrt{\quad}$ , rational, irrational, exponent, additive inverse, multiplicative inverse, scientific notation, significant digits, inequality, sequence, arithmetic sequence, recursive, linear function, function, relation, rate of change, slope, intercept, linear equation, linear inequality, like terms, system of linear equations, transversal, vertical angles, complementary angles, supplementary angles, alternate interior angles, alternate exterior angles, corresponding angles, Pythagorean theorem, legs, hypotenuse, set,  $\{ \}$ , element,  $\in$ , subset,  $\subset$ , complement of a set, intersection,  $\cap$ , union,  $\cup$ , Venn diagram, tree diagram, multiplication principle, addition principle, line of best fit

## Process Standards

**The following process standards are essential to mastering each of the mathematics content standards. They emphasize critical dimensions of the mathematical proficiency that all students need.**

**M8P1. Students will solve problems (using appropriate technology).**

- a. Build new mathematical knowledge through problem solving.
- b. Solve problems that arise in mathematics and in other contexts.
- c. Apply and adapt a variety of appropriate strategies to solve problems.
- d. Monitor and reflect on the process of mathematical problem solving.

**M8P2. Students will reason and evaluate mathematical arguments.**

- a. Recognize reasoning and proof as fundamental aspects of mathematics.
- b. Make and investigate mathematical conjectures.
- c. Develop and evaluate mathematical arguments and proofs.
- d. Select and use various types of reasoning and methods of proof.

**M8P3. Students will communicate mathematically.**

- a. Organize and consolidate their mathematical thinking through communication.
- b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.
- c. Analyze and evaluate the mathematical thinking and strategies of others.
- d. Use the language of mathematics to express mathematical ideas precisely.

**M8P4. Students will make connections among mathematical ideas and to other disciplines.**

- a. Recognize and use connections among mathematical ideas.
- b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
- c. Recognize and apply mathematics in contexts outside of mathematics.

**M8P5. Students will represent mathematics in multiple ways.**

- a. Create and use representations to organize, record, and communicate mathematical ideas.
- b. Select, apply, and translate among mathematical representations to solve problems.
- c. Use representations to model and interpret physical, social, and mathematical phenomena.

**Reading Standard Comment**

After the elementary years, students are seriously engaged in reading for learning. This process sweeps across all disciplinary domains, extending even to the area of personal learning. Students encounter a variety of informational as well as fictional texts, and they experience text in all genres and modes of discourse. In the study of various disciplines of learning (language arts, mathematics, science, social studies), students must learn through reading the communities of discourse of each of those disciplines. Each subject has its own specific vocabulary, and for students to excel in all subjects, they must learn the specific vocabulary of those subject areas *in context*. Beginning with the middle grades years, students begin to self-select reading materials based on personal interests established through classroom learning. Students become curious about science, mathematics, history, and literature as they form contexts for those subjects related to their personal and classroom experiences. As students explore academic areas through reading, they develop favorite subjects and become confident in their verbal discourse about those subjects. Reading across curriculum content develops both academic and personal interests in students. As students read, they develop both content and contextual vocabulary. They also build good habits for reading, researching, and learning. The Reading Across the Curriculum standard focuses on the academic and personal skills students acquire as they read in all areas of learning.

**MRC. Students will enhance reading in all curriculum areas by:**

- a. Reading in all curriculum areas
  - Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas
  - Read both informational and fictional texts in a variety of genres and modes of discourse
  - Read technical texts related to various subject areas
- b. Discussing books
  - Discuss messages and themes from books in all subject areas.
  - Respond to a variety of texts in multiple modes of discourse.
  - Relate messages and themes from one subject area to messages and themes in another area.
  - Evaluate the merit of texts in every subject discipline.
  - Examine author's purpose in writing.
  - Recognize the features of disciplinary texts.
- c. Building vocabulary knowledge
  - Demonstrate an understanding of contextual vocabulary in various subjects.
  - Use content vocabulary in writing and speaking.

Georgia Department of Education  
Kathy Cox, State Superintendent of Schools  
6/14/2005

All Rights Reserved

## Middle School Mathematics

|                                      | 6 <sup>th</sup> Grade  | 7 <sup>th</sup> Grade  | 8 <sup>th</sup> Grade   |
|--------------------------------------|--|--|---|
| <b>Numbers and Operations</b>        | <ul style="list-style-type: none"> <li>• Factors and multiples</li> <li>• Fundamental Theorem of Arithmetic</li> <li>• GCF and LCM</li> <li>• Compute with fractions and mixed numbers (unlike denominators)</li> <li>• Equivalent fractions, decimals, and percents</li> </ul>  | <ul style="list-style-type: none"> <li>• Absolute value</li> <li>• Compare &amp; order rational numbers</li> <li>• Compute &amp; solve problems with positive and negative rational numbers</li> </ul>   | <ul style="list-style-type: none"> <li>• Square roots of perfect squares</li> <li>• Rational vs Irrational numbers</li> <li>• Simplify expressions with integer exponents</li> <li>• Scientific Notation</li> </ul> |
| <b>Measurement</b>                   | <ul style="list-style-type: none"> <li>• Convert units using proportions</li> <li>• Volume of right rectangular prisms, right circular cylinders, pyramids and cones</li> <li>• Surface area of right rectangular prisms, right circular cylinders</li> </ul>  |  |   |
| <b>Geometry</b>                      | <ul style="list-style-type: none"> <li>• Line &amp; rotational symmetry</li> <li>• Ratio, proportion and scale factor with similar plane figures</li> <li>• Scale drawings</li> <li>• Compare/contrast right prisms/pyramids and cylinders/cones</li> <li>• Views of solid figures</li> <li>• Nets (prisms, cylinders, pyramids, and cones)</li> </ul> | <ul style="list-style-type: none"> <li>• Basic constructions</li> <li>• Transformations</li> <li>• Properties of similarity</li> <li>• 3-D figures formed by translations &amp; rotations in space</li> <li>• Cross sections of cones, cylinders, pyramids and prisms</li> </ul> | <ul style="list-style-type: none"> <li>• Properties of parallel and perpendicular lines</li> <li>• Meaning of congruence</li> <li>• Pythagorean Theorem</li> </ul>  |
| <b>Algebra</b>                       | <ul style="list-style-type: none"> <li>• Ratio for quantitative relationship</li> <li>• Write &amp; solve proportions</li> <li>• Write &amp; solve simple one-step equations</li> </ul>  | <ul style="list-style-type: none"> <li>• Algebraic expressions</li> <li>• Linear equations in one variable</li> <li>• Relationships between two variables</li> </ul>   | <ul style="list-style-type: none"> <li>• Represent, analyze, and solve problems</li> <li>• Inequalities in one variable</li> <li>• Relations and Linear functions</li> </ul>  |
| <b>Data Analysis and Probability</b> | <ul style="list-style-type: none"> <li>• Question, Collect Data, Make Graphs</li> <li>• Experimental/ Theoretical Probability</li> <li>• Predictions from investigations</li> </ul>  | <ul style="list-style-type: none"> <li>• Question, Collect Data, Make Graphs, Interpret results</li> </ul>   | <ul style="list-style-type: none"> <li>• Set theory</li> <li>• Tree Diagrams/ Counting Principles</li> <li>• Basic laws of probability</li> <li>• Organize, interpret, make inferences form data</li> </ul>         |
| <b>Process Skills</b>                | Problem Solving, Arguments, Communicate, Connections, Multiple Representations   | Problem Solving, Arguments, Communicate, Connections, Multiple Representations   | Problem Solving, Arguments, Communicate, Connections, Multiple Representations  |

**Phase In Plan**

| <b>Grade</b> | <b>Math Training</b> | <b>Math Teaching</b> |
|--------------|----------------------|----------------------|
| <b>K</b>     | 05-06                | <b>06-07</b>         |
| <b>1</b>     | 05-06                | <b>06-07</b>         |
| <b>2</b>     | 05-06                | <b>06-07</b>         |
| <b>3</b>     | <b>06-07</b>         | <b>07-08</b>         |
| <b>4</b>     | <b>06-07</b>         | <b>07-08</b>         |
| <b>5</b>     | <b>06-07</b>         | <b>07-08</b>         |
| 6            | 04-05                | 05-06                |
| <b>7</b>     | <b>05-06</b>         | <b>06-07</b>         |
| <b>8</b>     | <b>06-07</b>         | <b>07-08</b>         |

| <b>Georgia Performance Standards: Sixth Grade Curriculum Map</b>            |   |   |                               |                           |                               |                     |               |                               |                        |                          |
|---|---|---|-------------------------------|---------------------------|-------------------------------|---------------------|---------------|-------------------------------|------------------------|--------------------------|
| <b>1<sup>st</sup> 9 weeks</b>   |   |   | <b>2<sup>nd</sup> 9 weeks</b> |                           | <b>3<sup>rd</sup> 9 weeks</b> |                     |               | <b>4<sup>th</sup> 9 weeks</b> |                        |                          |
| <b>Unit 1</b>   | <b>Unit 2</b>   | <b>Unit 3</b>                                   | <b>Unit 4</b>                 | <b>Unit 5</b>             | <b>Unit 6</b>                 | <b>Unit 7</b>       | <b>Unit 8</b> | <b>Unit 9</b>                 | <b>Unit 10</b>         | <b>Unit 11</b>           |
| 4 weeks   | 3 weeks   | 5 weeks   | 2 weeks                       | 4 weeks                   | 2 weeks                       | 3 weeks             | 4 weeks       | 3 weeks                       | 3 weeks                | 3 weeks                  |
| <b>Gathering Data</b>   | <b>Fun and Games:</b><br>Extending and Applying Number Theory | <b>Fractions, Decimals, Ratios and Percents</b> | <b>One-Step Equations</b>     | <b>Circles and Graphs</b> | <b>Symmetry</b>               | <b>Scale Factor</b> | <b>Solids</b> | <b>Direct Proportion</b>      | <b>Games of Chance</b> | <b>Show what we Know</b> |
| <b>All units will include skills to maintain and the Process Standards.</b> |   |   |                               |                           |                               |                     |               |                               |                        | <b>GPS Testing</b>       |

**NOTE:** Mathematical standards are interwoven and should be addressed throughout the year in as many different units and activities as possible in order to stress the natural connections that exist among mathematical topics.

| <b>Georgia Performance Standards: Seventh Grade Curriculum Map</b>          |                            |                               |                       |                               |                  |                               |                   |
|---|----------------------------|-------------------------------|-----------------------|-------------------------------|------------------|-------------------------------|-------------------|
| <b>1<sup>st</sup> 9 weeks</b>   |                            | <b>2<sup>nd</sup> 9 weeks</b> |                       | <b>3<sup>rd</sup> 9 weeks</b> |                  | <b>4<sup>th</sup> 9 weeks</b> |                   |
| <b>Unit 1</b>   | <b>Unit 2</b>              | <b>Unit 3</b>                 | <b>Unit 4</b>         | <b>Unit 5</b>                 | <b>Unit 6</b>    | <b>Unit 7</b>                 | <b>Unit 8</b>     |
| 5 weeks   | 4 weeks                    | 5 weeks                       | 4 weeks               | 6 weeks                       | 3 weeks          | 3 weeks                       | 6 weeks           |
| Dealing with Data   | Patterns and Relationships | Rational Reasoning            | Flip, Slide, and Turn | Staying in Shape              | Values that Vary | Slices and Shadows            | Show What We Know |
| <b>All units will include skills to maintain and the Process Standards.</b> |                            |                               |                       |                               |                  |                               |                   |

**NOTE:** Mathematical standards are interwoven and should be addressed throughout the year in as many different units and activities as possible in order to stress the natural connections that exist among mathematical topics.

 **Glossary**

|                            |   |
|----------------------------|---|
| CONTENT STANDARDS:         | Content standards state the purpose and direction the content is to take, and are generally followed by elements. Content standards define what students are expected to know, understand, and be able to do.   |
| CURRICULUM DOCUMENT:       | The Georgia Performance Standards document is the curriculum document that contains all standards that should be learned by all students.   |
| ELEMENTS:                  | Elements are part of the content standards that identify specific learning goals associated with the standard.  |
| PERFORMANCE STANDARDS:     | Performance standards define specific expectations of what students should know and be able to do and how well students must perform to achieve or exceed the standard. Georgia's performance standards are composed of four components: content standards, tasks, student work, and teacher commentary.  |
| PROCESS STANDARDS:         | Process standards define the means used to develop patterns of thought and behavior that lead to conceptual understanding and mathematical literacy.  |
| STANDARD:                  | Something set up and established by authority as a rule for the measure of quantity, weight, extent, value, or quality.   |
| STANDARDS-BASED EDUCATION: | In standards-based classrooms, standards are the starting point for classroom instruction that ensures high expectations for all students.  |
| STRAND:                    | A strand is an organizing tool used to group standards by content. For example, the English language arts curriculum contains strands of reading, writing, listening, speaking, and viewing. K-5 science curriculum contains a life science strand, physical science strand, and an earth science strand. |



**STUDENT WORK:**

Examples of successful student work are included to specify what it takes to meet the standard and to enable both teachers and students to see what meeting the standard “looks like.”

**TASKS:**

Keyed to the relevant standards, tasks provide a sample performance that demonstrates to teachers what students should know and be able to do during or by the end of the course. Some tasks can serve as activities that will help students achieve the learning goals of the standard, while others can be used to assess student learning; many serve both purposes. Although the Georgia Performance Standards include tasks, teachers may develop their own tasks.

**TEACHER COMMENTARY:**

Teacher commentary is meant to open the pathways of communication between students and the classroom teacher as well as within faculty in order to ensure consistency within assessment and expectations. Commentary shows students why they did or did not meet a standard and enables them to take ownership of their own learning.

---

## ***Provided Texts***

**Mathematics resources that are ordered to be distributed during the eighth grade training this year are listed below.**

Northey, Sheryn Spencer. *Handbook on Differentiated Instruction of Middle and High Schools*. Larchmont, NY: Eye on Education, 2005.

Van de Walle, John A. *Elementary and Middle School Mathematics: Teaching Developmentally, Sixth Edition, International Edition*. New York, NY: Longman Press, 2004.

Berkeley, Harvard, Michigan State, Shell Centre. *Balanced Assessment for the mathematics Curriculum High School Packages 1 and 2*. National Science Foundation: Dale Seymour Publications, Regents of the University of California 1999.

Berkeley, Harvard, Michigan State, Shell Centre. *Balanced Assessment for the mathematics Curriculum Advanced High School Packages 1 and 2*. National Science Foundation: Dale Seymour Publications, Regents of the University of California 1999.

**Mathematics resources that were distributed to trainers during last year's seventh grade training are listed below.**

Danielson, Charlotte. *A Collection of Performance Tasks and Rubrics: Middle School Mathematics*. Larchmont, NY: Eye on Education, 1997.

Northey, Sheryn Spencer. *Handbook on Differentiated Instruction of Middle and High Schools*. Larchmont, NY: Eye on Education, 2005.

Van de Walle, John A. *Elementary and Middle School Mathematics: Teaching Developmentally, Fifth Edition*. New York, NY: Longman Press, 2004.

Van de Walle, John I. And LouAnn Lovin. *Teaching Student-Centered mathematics: Grades 5-8*. Boston, MA: Pearson Allyn & Bacon, 2006.

**Each school received one copy of each book listed below during the 2004-2005 school year. This box of books was addressed to the principal of the school.**

Hayes Jacobs, Heidi. *Mapping the Big Pictures: Integrating Curriculum and Assessment K-12*. Alexandria, VA: Association for Supervision and Curriculum Development. 1997.

Marzano, Robert J. *What Works in Schools: Translating Research into Action*. Alexandria, VA: Association for Supervision and Curriculum Development. 2003.

- Robert J. Marzano, Debra Pickering, and Jay McTighe. *Assessing Student Outcomes: Performance Assessment Using the Dimensions of Learning Model*. Alexandria, VA: Association for Supervision and Curriculum Development. 1993.
- Marzano, Robert J, Debra J. Pickering, and Jane E. Pollock. *Classroom Instruction That Works: Research-Based Strategies for Increasing Student Achievement*. Alexandria, VA: Association for Supervision and Curriculum Development. 2001.
- Marzano, Robert J, Jana Marzano, & Debra Pickering. *Classroom Management That Works: Research-Based Strategies for Every Teacher*. Alexandria, VA: Association for Supervision and Curriculum Development. 2003.
- Strong, Richard W., Harvey F. Silver, and Matthew J. Perini. *Teaching What Matters Most: Standards and Strategies for Raising Student Achievement*. Alexandria, VA: Association for Supervision and Curriculum Development. 2001.
- Tomlinson, Carol Ann. *How to Differentiate Instruction in Mixed-Ability Classrooms, 2<sup>nd</sup> edition*. Alexandria, VA: Association for Supervision and Curriculum Development. 2001.
- Wiggins, Grant and Jay McTighe. *Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development. 1998.
- Wiggins, Grant and Jay McTighe. *Understanding by Design Study Guide*. Alexandria, VA: Association for Supervision and Curriculum Development. 2000.

---

## Professional Organizations

National Council of Teachers of Mathematics—NCTM—<http://www.nctm.org>  
Georgia Council of Teachers of Mathematics—GCTM—<http://www.gctm.org>

## Web Sites

Units (incorporating Learning Focused components). Connected Learning. <http://www.title3.org/>.

BOCES is a cooperative service organization that helps school districts save money by pooling resources and sharing costs.

Illuminations <http://illuminations.nctm.org/index.asp>

Intermath <http://www.intermath-uga.gatech.edu>

National Library of Virtual Manipulatives <http://nlvm.usu.edu/en/nav/vlibrary.html>

## Special Education Resources

*Access, Participation, & Progress in the General K-12 Curriculum.* National Center on Accessing the General Curriculum ([ncaog.org](http://ncaog.org)).

Approximately 70 general and special educators and parents attended the National Capacity Building Institute on Access, Participation, and Progress in the General Curriculum, held on July 10, in Arlington, VA. The article includes the proceedings from the Institute.

*Aligning Special Education with NCLB.* [www.ldonline.org](http://www.ldonline.org).

The No Child Left Behind Act (NCLB) is a standards-based reform movement. This movement emphasizes standards and the alignment of curriculum and assessment to those standards. States established what is to be taught. The goal of standards is to increase academic achievement levels. A related goal is to close the achievement gap for students who have traditionally been at-risk for academic failure or lack of success. This group includes students with disabilities.

Thompson, S., Thurlow, M., Quenemoen, R.F., & Esler, A. (2001). *Addressing Standards and Assessments on State IEP Forms*, National Center on Educational Outcomes (NCEO Synthesis Report 38)

This article summarizes data on each State's use of standards in developing Individualized Education Programs (IEP) for students with disabilities. All fifty states were asked to send their IEP forms and to indicate whether the forms were required, recommended, or simply sample forms. Out of the 41 states with IEP forms, only 5 states specifically addressed the general curriculum on their forms. Recommendations for IEP forms that provide decision-making guidance involving access to the general curriculum are summarized.

*Writing Standards-based IEPs.* Colorado Department of Education. [www.cde.org](http://www.cde.org).

The Colorado Department of Education provides information for teachers on developing standards-driven IEPs. The summary includes a definition of standards-driven IEPs, characteristics of standards-driven IEPs, and a rationale for standards-driven IEPs.

## Resources for Differentiation

Association for Supervision and Curriculum Development. *At Work in the Differentiated Classroom.* Alexandria, VA. Author. (video staff development set). 2001.

Chapman C. & Gregory, G. *Differentiated Instruction Strategies for Writing in the Content Areas.* Thousand Oaks, CA: Corwin Press. 2003.

Coil, C. *Standards-Based Activities and Assessments for the Differentiated Classroom.* Marion, IL: Pieces of Learning. 2004.

Tomlinson, C. *Fulfilling the Promise of the Differentiated Classroom: Strategies and Tools for Responsive Teaching.* Alexandria, VA: Association for Supervision and Curriculum Development. 2003.

Winebrenner, S. *Teaching Gifted Kids in the Regular Classroom.* Minneapolis, MN: Free Spirit. 1992.

|  |  |   |
|--|--|---|
| <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>a. Find square roots of perfect squares.</p>  | <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>b. Recognize the (positive) square root of a number as a length of a side of a square with a given area.</p>      | <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>c. Recognize square roots as points and as lengths on a number line.</p>   |
| <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>d. Understand that the square root of 0 is 0 and that every positive number has two square roots that are opposite in sign.</p> | <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>e. Recognize and use the radical symbol to denote the positive square root of a positive number.</p>              | <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>f. Estimate square roots of positive numbers.</p>  |
| <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>g. Simplify, add, subtract, multiply, and divide expressions containing square roots.</p>                                       | <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>h. Distinguish between rational and irrational numbers.</p>   | <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>i. Simplify expressions containing integer exponents.</p>  |
| <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>j. Express and use numbers in scientific notation.</p>  | <p><b>M8N1. Students will understand different representations of numbers including square roots, exponents, and scientific notation.</b></p> <p>k. Use appropriate technologies to solve problems involving square roots, exponents, and scientific notation.</p> | <p><b>M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.</b></p> <p>a. Investigate characteristics of parallel and perpendicular lines both algebraically and geometrically.</p> |

|   |  |   |
|---|--|---|
| <p><b>M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.</b><br/>b. Apply properties of angle pairs formed by parallel lines cut by a transversal.</p> | <p><b>M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.</b><br/>c. Understand the properties of the ratio of segments of parallel lines cut by one or more transversals.</p> | <p><b>M8G1. Students will understand and apply the properties of parallel and perpendicular lines and understand the meaning of congruence.</b><br/>d. Understand the meaning of congruence: that all corresponding angles are congruent and all corresponding sides are congruent.</p> |
| <p><b>M8G2. Students will understand and use the Pythagorean theorem.</b><br/>a. Apply properties of right triangles, including the Pythagorean theorem.</p>  | <p><b>M8G2. Students will understand and use the Pythagorean theorem.</b><br/>b. Recognize and interpret the Pythagorean theorem as a statement about areas of squares on the sides of a right triangle.</p>   | <p><b>M8A1. Students will use algebra to represent, analyze, and solve problems.</b><br/>a. Represent a given situation using algebraic expressions or equations in one variable.</p>   |
| <p><b>M8A1. Students will use algebra to represent, analyze, and solve problems.</b><br/>b. Simplify and evaluate algebraic expressions.</p>  | <p><b>M8A1. Students will use algebra to represent, analyze, and solve problems.</b><br/>c. Solve algebraic equations in one variable, including equations involving absolute values.</p>  | <p><b>M8A1. Students will use algebra to represent, analyze, and solve problems.</b><br/>d. Interpret solutions in problem contexts.</p>  |
| <p><b>M8A2. Students will understand and graph inequalities in one variable.</b><br/>a. Represent a given situation using an inequality in one variable.</p>  | <p><b>M8A2. Students will understand and graph inequalities in one variable.</b><br/>b. Use the properties of inequality to solve inequalities.</p>  | <p><b>M8A2. Students will understand and graph inequalities in one variable.</b><br/>c. Graph the solution of an inequality on a number line.</p>   |
| <p><b>M8A2. Students will understand and graph inequalities in one variable.</b><br/>d. Interpret solutions in problem contexts.</p>  | <p><b>M8A3. Students will understand relations and linear functions.</b><br/>a. Recognize a relation as a correspondence between varying quantities.</p>   | <p><b>M8A3. Students will understand relations and linear functions.</b><br/>b. Recognize a function as a correspondence between inputs and outputs where the output for each input must be unique.</p>   |

|   |   |   |
|---|---|---|
| <p><b>M8A3. Students will understand relations and linear functions.</b><br/>c. Distinguish between relations that are functions and those that are not functions.</p>                | <p><b>M8A3. Students will understand relations and linear functions.</b><br/>d. Recognize functions in a variety of representations and a variety of contexts.</p>                              | <p><b>M8A3. Students will understand relations and linear functions.</b><br/>e. Use tables to describe sequences recursively and with a formula in closed form.</p>   |
| <p><b>M8A3. Students will understand relations and linear functions.</b><br/>f. Understand and recognize arithmetic sequences as linear functions with whole number input values.</p> | <p><b>M8A3. Students will understand relations and linear functions.</b><br/>g. Interpret the constant difference in an arithmetic sequence as the slope of the associated linear function.</p> | <p><b>M8A3. Students will understand relations and linear functions.</b><br/>h. Identify relations and functions as linear or nonlinear.</p>  |
| <p><b>M8A3. Students will understand relations and linear functions.</b><br/>i. Translate among verbal, tabular, graphic, and algebraic representations of functions.</p>             | <p><b>M8A4. Students will graph and analyze graphs of linear equations.</b><br/>a. Interpret slope as a rate of change.</p>   | <p><b>M8A4. Students will graph and analyze graphs of linear equations.</b><br/>b. Determine the meaning of the slope and y-intercept in a given situation.</p>   |
| <p><b>M8A4. Students will graph and analyze graphs of linear equations.</b><br/>c. Graph equations of the form <math>y = mx + b</math>.</p>   | <p><b>M8A4. Students will graph and analyze graphs of linear equations.</b><br/>d. Graph equations of the form <math>ax + by = c</math>.</p>  | <p><b>M8A4. Students will graph and analyze graphs of linear equations.</b><br/>e. Determine the equation of a line given a graph, numerical information that defines the line, or a context involving a linear relationship.</p> |
| <p><b>M8A4. Students will graph and analyze graphs of linear equations.</b><br/>f. Solve problems involving linear relationships.</p>   | <p><b>M8A5. Students will understand systems of linear equations and use them to solve problems.</b><br/>a. Given a problem context, write an appropriate system of linear equations.</p>       | <p><b>M8A5. Students will understand systems of linear equations and use them to solve problems.</b><br/>b. Solve systems of equations graphically and algebraically, using technology as appropriate.</p>                        |
| <p><b>M8A5. Students will understand systems of linear equations and use them to solve problems.</b><br/>c. Interpret solutions in problem contexts.</p>                              | <p><b>M8D1. Students will apply basic concepts of set theory.</b><br/>a. Demonstrate relationships among sets through use of Venn diagrams.</p>   | <p><b>M8D1. Students will apply basic concepts of set theory.</b><br/>b. Determine subsets, complements, intersection, and union of sets.</p>   |



|  |   |   |
|--|---|---|
| <p><b>M8D1. Students will apply basic concepts of set theory.</b><br/>c. Use set notation to denote elements of a set.</p>   | <p><b>M8D2. Students will determine the number of outcomes related to a given event.</b><br/>a. Use tree diagrams to find the number of outcomes.</p>       | <p><b>M8D2. Students will determine the number of outcomes related to a given event.</b><br/>b. Apply the addition and multiplication principles of counting.</p> |
| <p><b>M8D3. Students will use the basic laws of probability.</b><br/>a. Find the probability of simple independent events.</p>   | <p><b>M8D3. Students will use the basic laws of probability.</b><br/>b. Find the probability of compound independent events.</p>                            | <p><b>M8D4. Students will organize, interpret, and make inferences from statistical data</b><br/>a. Gather data that can be modeled with a linear function.</p>   |
| <p><b>M8D4. Students will organize, interpret, and make inferences from statistical data</b><br/>b. Estimate and determine a line of best fit from a scatter plot.</p> | <p><b>M8P1. Students will solve problems (using appropriate technology).</b><br/>a. Build new mathematical knowledge through problem solving.</p>           | <p><b>M8P1. Students will solve problems (using appropriate technology).</b><br/>b. Solve problems that arise in mathematics and in other contexts.</p>           |
| <p><b>M8P1. Students will solve problems (using appropriate technology).</b><br/>c. Apply and adapt a variety of appropriate strategies to solve problems.</p>         | <p><b>M8P1. Students will solve problems (using appropriate technology).</b><br/>d. Monitor and reflect on the process of mathematical problem solving.</p> | <p><b>M8P2. Students will reason and evaluate mathematical arguments.</b><br/>a. Recognize reasoning and proof as fundamental aspects of mathematics.</p>         |
| <p><b>M8P2. Students will reason and evaluate mathematical arguments.</b><br/>b. Make and investigate mathematical conjectures.</p>                                    | <p><b>M8P2. Students will reason and evaluate mathematical arguments.</b><br/>c. Develop and evaluate mathematical arguments and proofs.</p>                | <p><b>M8P2. Students will reason and evaluate mathematical arguments.</b><br/>d. Select and use various types of reasoning and methods of proof.</p>              |

|  |  |   |
|--|--|---|
| <p><b>M8P3. Students will communicate mathematically.</b><br/>a. Organize and consolidate their mathematical thinking through communication.</p>                                 | <p><b>M8P3. Students will communicate mathematically.</b><br/>b. Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.</p>      | <p><b>M8P3. Students will communicate mathematically.</b><br/>c. Analyze and evaluate the mathematical thinking and strategies of others.</p>   |
| <p><b>M8P3. Students will communicate mathematically.</b><br/>d. Use the language of mathematics to express mathematical ideas precisely.</p>                                    | <p><b>M8P4. Students will make connections among mathematical ideas and to other disciplines.</b><br/>a. Recognize and use connections among mathematical ideas.</p>     | <p><b>M8P4. Students will make connections among mathematical ideas and to other disciplines.</b><br/>b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.</p> |
| <p><b>M8P4. Students will make connections among mathematical ideas and to other disciplines.</b><br/>c. Recognize and apply mathematics in contexts outside of mathematics.</p> | <p><b>M8P5. Students will represent mathematics in multiple ways.</b><br/>a. Create and use representations to organize, record, and communicate mathematical ideas.</p> | <p><b>M8P5. Students will represent mathematics in multiple ways.</b><br/>b. Select, apply, and translate among mathematical representations to solve problems.</p>   |
| <p><b>M8P5. Students will represent mathematics in multiple ways.</b><br/>c. Use representations to model and interpret physical, social, and mathematical phenomena.</p>        |  |   |

## **Assignment**

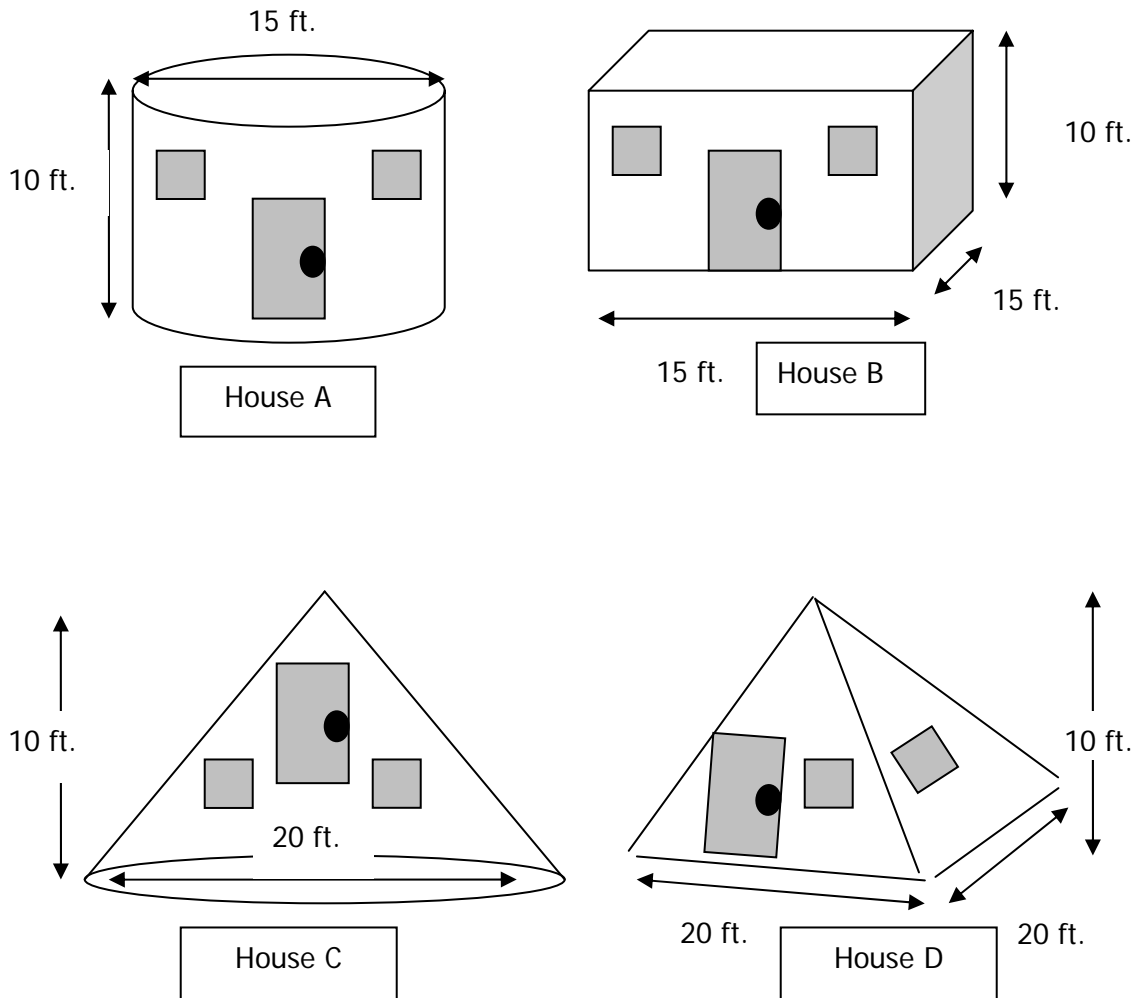
- **Review the Eighth Grade Mathematics Georgia Performance Standards.**
- **Think about what evidence is necessary to access them? How good is good enough?**
- **Bring your GPS Training notebook with you to the Day 2 Training.**



**BLANK PAGE  
ON  
COLORED  
PAPER!**

## Three Little Pig Builders continued

Three Little Pig Builders have gone into business building the prefabricated homes shown below.



- Give the geometric name for each house and estimate its volume.
- Three Little Pig Builders have decided to charge \$30,000 for House A. What is the fair market value of each of the other homes assuming that the cost of each home is proportional to its volume?  
Make a table to organize your data. Use words and symbols (including proportions and formulas) to explain your reasoning.
- Estimate the surface area of House A and House B.
- The inside of House A and House B are in need of painting before they can be sold. Each home has a 3 ft. by 5 ft. door and two 2 ft. by 2 ft. windows that do not need painting. All of the walls need painting including the floors and ceilings. A gallon of paint costs \$25 and covers  $300 \text{ ft}^2$ . Three Little Pig Builders require that a work order be submitted for approval before making any purchases. Write a work order that explains how much paint needs to be purchased and the cost of the purchase. Be sure that your work order explains in detail how you know the amount of paint and money needed for the purchase.

## Three Little Pig Builders continued

### **Eighth grade:**

- e) Estimate the surface area of House C and House D.
- f) The inside of House C and House D are in need of painting before they can be sold. Each home has a 3 ft. by 5 ft. door and two 2 ft. by 2 ft. windows that do not need painting. All of the walls need painting including the floors. A gallon of paint costs \$25 and covers 300 ft<sup>2</sup>. Three Little Pig Builders require that a work order be submitted for approval before making any purchases. Write a work order that explains how much paint needs to be purchased and the cost of the purchase. Be sure that your work order explains in detail how you know the amount of paint and money needed for the purchase.



# To the Dump Activity

Adapted from *Intermediate Projects, Resource Kit for TI Graphing Calculators*

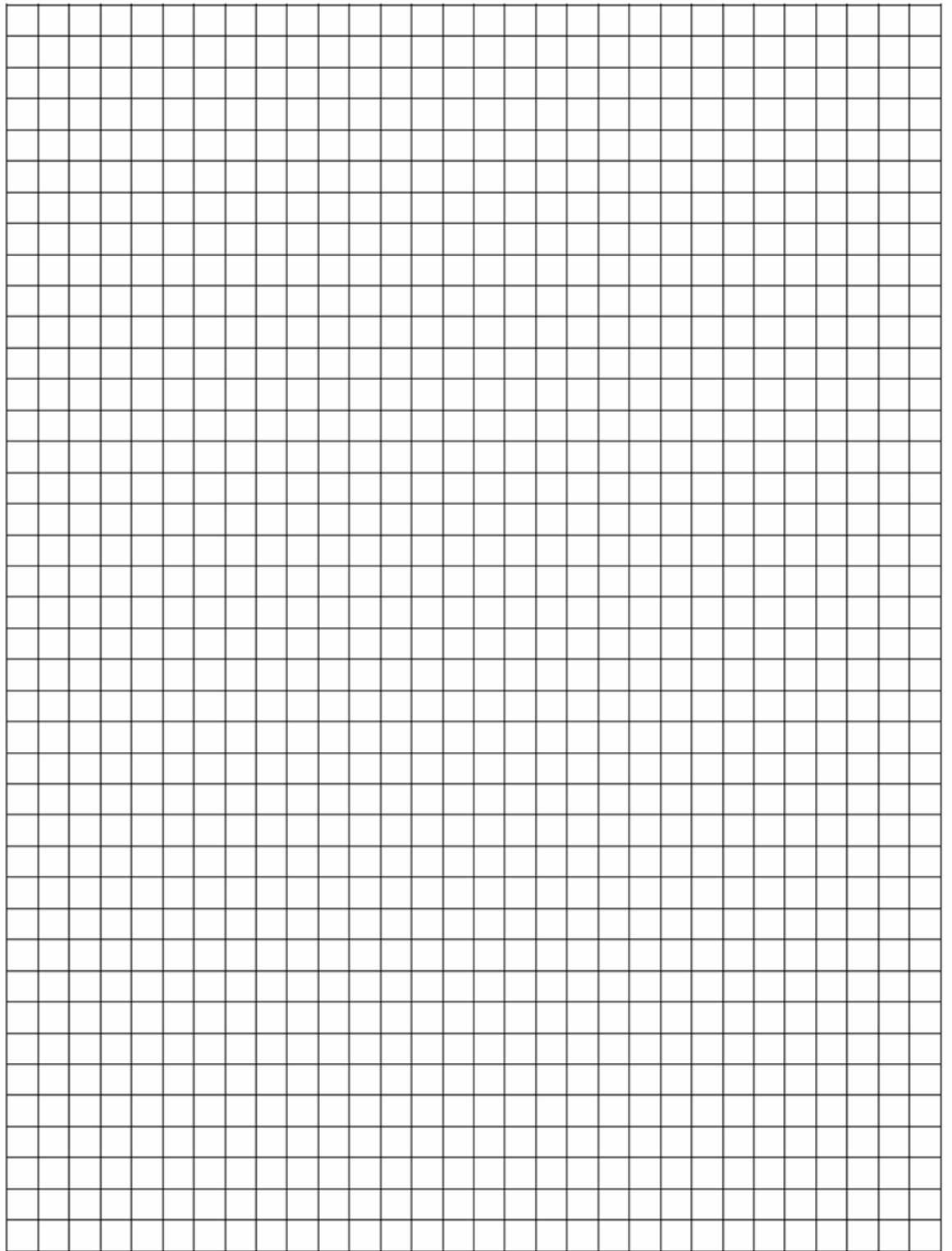


In the town of Sunshine, it was reported at the March town meeting that there were currently 198,000 tons of trash in the town landfill and that each month another 1,210 tons of garbage are added to the landfill. The mayor is concerned that at this rate, the landfill will be full before the end of the year. The landfill manager has told the city council that the dump will hold approximately 225,000 tons of garbage. You have been hired to find out if the mayor is correct in her prediction and to determine when the landfill will be full. You are to present your findings at the next city council meeting.

If the city council could reduce the amount of trash dumped in the landfill by two-thirds, how many more months would the council have before the landfill was completely full? Explain how you reached your decision and support it with graphs and tables.

- Prepare a statement supporting or refuting the mayor's prediction.
- Create a poster or a PowerPoint presentation of the information collected and an analysis of the data. (Include a graph, table, and written explanation.)





# To the Dump Data Collection Sheet



Adapted from *Intermediate Projects, Resource Kit for TI Graphing Calculators*  
 ©Teacher Created Materials, Inc. #10258 (i1420) – *Intermediate TI Graphing Calculators*

|   |  |
|---|--|
| 1. What do you know about the city council's problems?  |  |
| 2. Do you believe the mayor's prediction is correct?  |  |
| 3. Write an equation to represent the growing amount of garbage in the city dump.   |  |
| 4. Use the graphing calculator to graph the equation. Sketch the graph of the equation.   |  |
| 5. What is the slope? What does it represent on the graph?  |  |
| 6. How are you going to determine when the dump will be full? Is there more than one way to determine when the dump will be full? If so, what are they? |  |
| 7. Was the mayor's prediction correct? In what month will the dump be completely full? How many months will this actually take?                         |  |

Provide a statement for the city council based on your investigation of the problem.

---

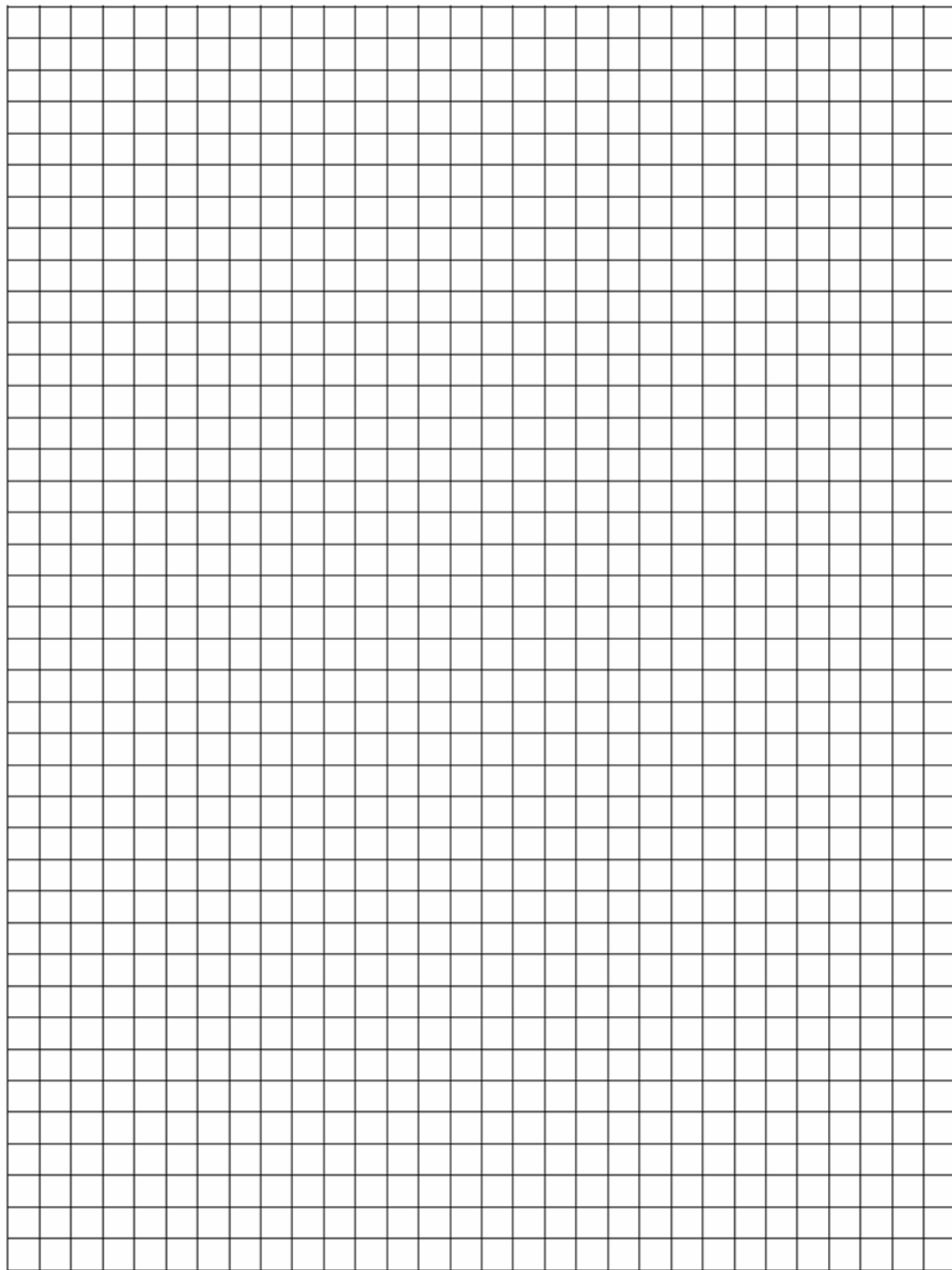


---



---





# To the Dump Data Collection Sheet



Adapted from *Intermediate Projects*, Resource Kit for TI Graphing Calculators  
 ©Teacher Created Materials, Inc. #10258 (i1420) – *Intermediate TI Graphing Calculators*

|   |  |
|---|--|
| 1. What do you know about the city council's problems?  |  |
| 2. Do you believe the mayor's prediction is correct?  |  |
| 3. Write an equation to represent the growing amount of garbage in the city dump.   |  |
| 4. Use the graphing calculator to graph the equation. Sketch the graph of the equation.   |  |
| 5. What is the slope? What does it represent on the graph?  |  |
| 6. How are you going to determine when the dump will be full? Is there more than one way to determine when the dump will be full? If so, what are they? |  |
| 7. Was the mayor's prediction correct? In what month will the dump be completely full? How many months will this actually take?                         |  |

Provide a statement for the city council based on your investigation of the problem.

---



---



---

***Curriculum Map Template GPS Mathematics***

|  |  |  |  |  |  |  |  |                                |                    |
|--|--|--|--|--|--|--|--|--------------------------------|--------------------|
| <b>Unit #</b>  |  |  |  |  |  |  |  |                                |                    |
| <b># of weeks</b>  |  |  |  |  |  |  |  |                                |                    |
| <b>Topic</b>   |  |  |  |  |  |  |  | <b>Putting it all together</b> |                    |
| <b>Key Standards/ Elements</b><br><br>-----<br><b>Supporting Standards/ Elements</b><br><br>-----<br><b>Concepts/ Skills to Maintain</b> |  |  |  |  |  |  |  | <b>All standards</b>           |                    |
| <b>All units will include skills to maintain and the Process Standards.</b>  |  |  |  |  |  |  |  |                                | <b>GPS Testing</b> |

### *Curriculum Map Template GPS Mathematics*

|  |  |  |  |  |  |  |  |                                |
|--|--|--|--|--|--|--|--|--------------------------------|
| <b>Unit #</b>  |  |  |  |  |  |  |  |                                |
| <b># of weeks</b>  |  |  |  |  |  |  |  |                                |
| <b>Topic</b>   |  |  |  |  |  |  |  | <b>Putting it all together</b> |
| <b>Key Standards/ Elements</b><br><br>-----<br><b>Supporting Standards/ Elements</b><br><br>_____<br><b>Concepts/ Skills to Maintain</b> |  |  |  |  |  |  |  | <b>All standards</b>           |
| <b>All units will include skills to maintain and the Process Standards.</b>  |  |  |  |  |  |  |  | <b>GPS Testing</b>             |



## All in the Family

You have just found out that your best friend's mother is expecting quintuplets!

She says that she can't wait to have five new little sisters. You are trying to explain to her that she may have some brothers on the way. To settle the debate, find the probability for each combination of brothers and sisters your friend may end up with and justify your answer showing how you know.

Because you are so excited about this news, you want to go ahead and purchase a gift for each of the babies (pink for the girls and blue for the boys).

Using the probabilities found above, make a wise financial decision about how many of each color gift you should buy to most likely have enough of the right colors when the babies arrive. Explain why you made your decision.



