

# Mathematics I and Mathematics II Training Materials

The GaDOE is pleased to be able to offer Days 1-5 of the GPS High School Mathematics Training in an online format. Included in these materials you will find the following:

- this guide for using the materials,
- the Research and Resource Manual, and
- eleven video clips of the training sessions included in days 1-3.

This following information provides suggestions and tips for the use of the materials based on what was learned in actual training sessions.

## The Research and Resource Manual

The Research and Resource Manual contains two main types of information.

- **Background information related to the development of the Standards** (pages 4-30)

This section includes a listing of the people involved in the writing and implementation of the curriculum, and articles containing some of the research upon which the curriculum is based. This material will be especially helpful in explaining to students, teachers, parents and other stakeholders why Georgia has chosen an integrated curriculum based on international benchmarks. We recommend that all of the articles in the manual be read by teachers and other educators involved in the effort to raise student achievement in mathematics. The articles address not only the research behind our curriculum but what we know about effective classroom practices. They are particularly useful when read and discussed in teacher meetings, study groups, and learning communities.

- **Instructional Resources** (pages 31-79)

Pages 31-73 contain the actual tasks, articles, and other documents used in the video clips of the training sessions. Use of these materials is addressed in the discussion of video clips. An extensive bibliography of related resources that may be used throughout the school year is provided on pages 74-79.

- [Download Research and Resource Manual](#)

Note: One copy of the Research and Resource Manual was provided to each teacher team that attended Days 1-3 of high school training. The hard copy of the manual includes the Grade-Level Instructional Frameworks for grades 6-8. Because these resources are already online at [georgiastandards.org](http://georgiastandards.org), they are not included in this online version of the manual.

## Video Clips

Eleven video clips are currently posted on this website. They represent the sessions that comprise Days 1-3 of training. Additional video will be added as subsequent days of training are completed.

We suggest that the video clips be watched in order as the training was chronological in nature. On those clips where tasks are worked or articles read, it is most effective to follow this procedure:

- allow participants to watch the “set-up” for the task or article;
- pause the video while participants work the tasks or read the articles;
- allow participants to have their own presentations of tasks or discussions of articles;
- and finally, return to the video to view our trainers’ presentations and discussions.

In the delivery of this training, particular attention should be paid to the incremental development of mathematical concepts. The tasks are designed to enable students (and teachers) to build new understandings based upon prior knowledge. For this reason, it is not enough for the professional developers or the participants to simply read through the tasks. In order to understand this fundamentally different approach to learning mathematics, the tasks, and the mathematics they involve, must be experienced and contemplated. A reasonable amount of time for the working and presentation of a task in this training is approximately ninety minutes.

Before leading training sessions with teachers or other educators, professional developers should go through each clip following the steps suggested above, including the careful working of each task.

There is a list of the documents from the Research and Resource Manual that should be used with each video clip. These materials will need to be downloaded and copied for each participant.

## List of Materials and Tools

The following materials and tools were provided to each participant in Days 1-3 of high school training and will be needed for use with the video clips.

Rulers	Graph paper
Protractors	Markers
Compasses	Colored pencils
Spinners	Chart paper
Color tiles	Graphing calculators
Cuisenaire rods	Post-it Notes

## List of Books Provided to Participants

This list contains the books that will be provided to each teacher attending Days 1-5 of high school training. In some cases, it is advantageous for each mathematics teacher in a school to have a copy of the resource. In other cases, one book per school or mathematics department is sufficient. That distinction has been made on the list.

1. *Integrated Mathematics: Choices and Challenges*  
McGraw, S. A., ed. (2003). Reston, VA  
The National Council of Teachers of Mathematics, Inc.  
ISBN 0- 87353-530-9  
(one per school)
2. *Implementing Standards-based Mathematics Instruction.*  
Stein, M. L., Smith, M. S., Henningsen, M. A. and Silver, E. A. (2000)  
New York, NY: Teachers College Press.  
ISBN 0-8077-3907-3  
(one per teacher)
3. *Guidelines for Assessment and Instruction in Statistics Education*  
Franklin, C.A., et al. 2007 ISBN 978-0-9791747-1-1  
May be downloaded at <http://www.amstat.org/education/gaise>  
(This book should be on the desk of every K-12 teacher who teaches mathematics in Georgia. The hardback copy can be bought for \$15 or it can be downloaded free from the web.)
4. *EDThoughts: What we know about mathematics teaching and learning.*  
Sutton, J., & Krueger, A. (Eds.). (2002)  
Aurora, CO: Mid-continent Research for Education and Learning.  
ISBN-1-893476-02-2  
(one per teacher)