As you arrive…

Begin working on the Rectangle Area/Perimeter Task.

(We'll return to this task later in the session.)

Note: The handouts from this session can all be found in the Rectangles with the Same Numerical Area and Perimeter Illustration at mathpractices.edc.org

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EDC Learning transforms lives.

Supporting Teacher Learning About the Common Core State Standards for Mathematical Practice Using Student Dialogues that Model the Standards for Mathematical Practice

Who?

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Plan for Session

- ***Background:*** Learn about resources we are developing to support teacher learning about the standards for mathematical practice

- ***Experience:*** Engage as learners in an abbreviated experience of one mathematics task and student dialogue.

- ***Debrief Supports for Teachers:*** Discuss ways to support teachers using these resources in your settings.

Project Goals

- Increase awareness of the mathematical practices (MPs)
- Support understanding of the MPs connected to content standards
- Cultivate teachers' capacity to identify these MPs in student thinking
- Develop teachers' ability to identify instructional tasks that support these MPs

Products

- Set of Illustrations that exemplify the MPs
- Website that organizes the MP dialogues and resources by grade level and content (mathpractices.edc.org)
- Professional development curriculum for mathematics teachers in grades 5-10

Illustrations Design Principles

- Student dialogues as focal point of Illustration materials
- Illustrate the mathematical practices in context using specific mathematical content
- Clarify the *meaning* of a mathematical practice by showing what a conversation among students who are engaging in the MP might look like
- Strategically choose student characters for the dialogues
- Model productive mathematical discourse

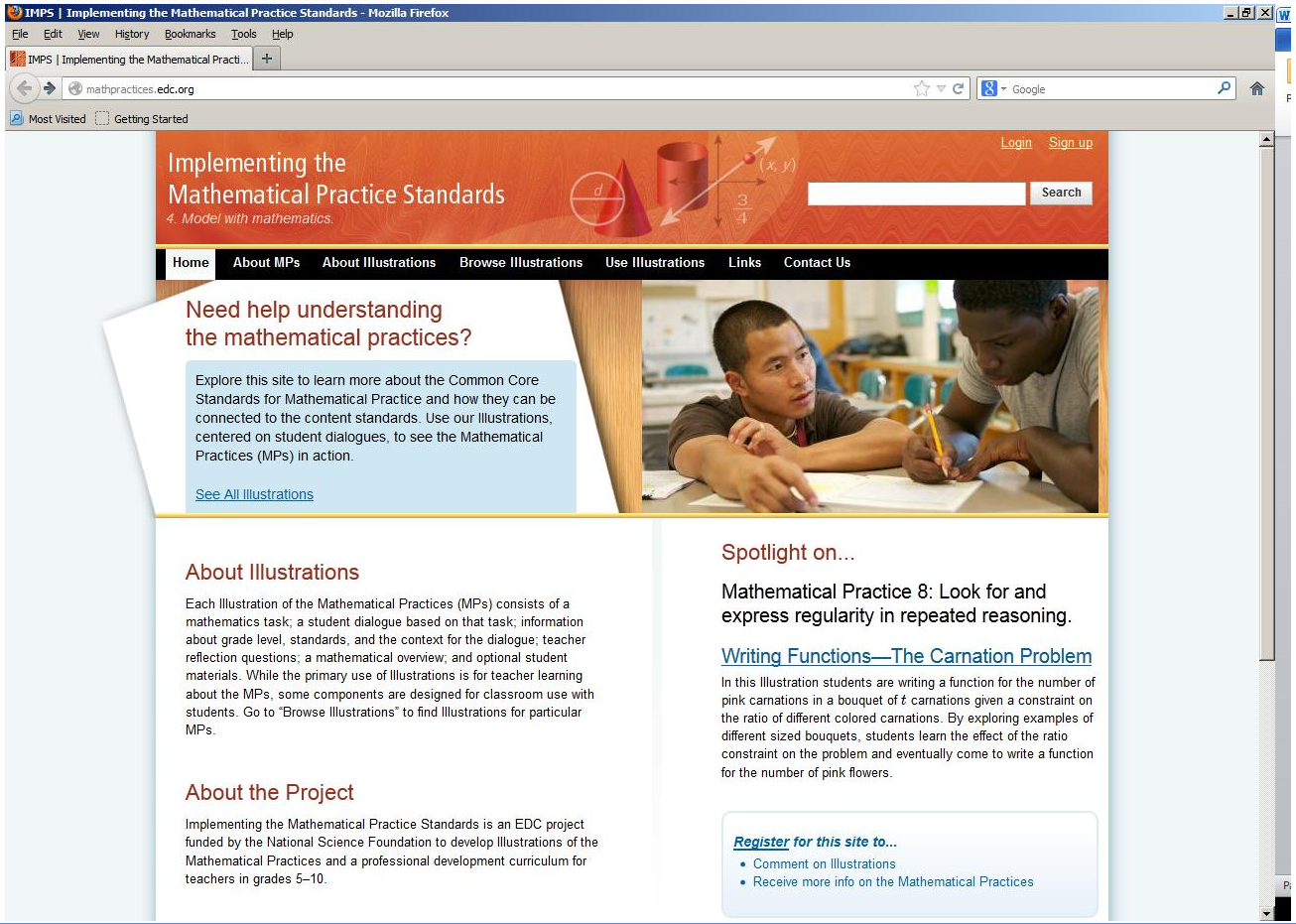
Supporting Materials

- Dialogues are only one component of the resource
- Each dialogue is accompanied by supporting materials:
  - A mathematical problem
  - Discussion/reflection questions or suggested PD activities for teachers
  - A mathematical overview discussing the key points illustrated by the dialogue
  - Follow-up activities and discussion questions for students

About the Illustrations as a Set

- 20 Illustrations developed and reviewed to date *(mathpractices.edc.org; see bookmark with QR code)*
- Illustrations span grade levels from 5-10
- Content domains including number, algebra, geometry, data and statistics
- Multiple mathematical practices identified in each Illustration, several Illustrations for each mathematical practice
- Range of mathematical tasks, some more open-ended

mathpractices.edc.org



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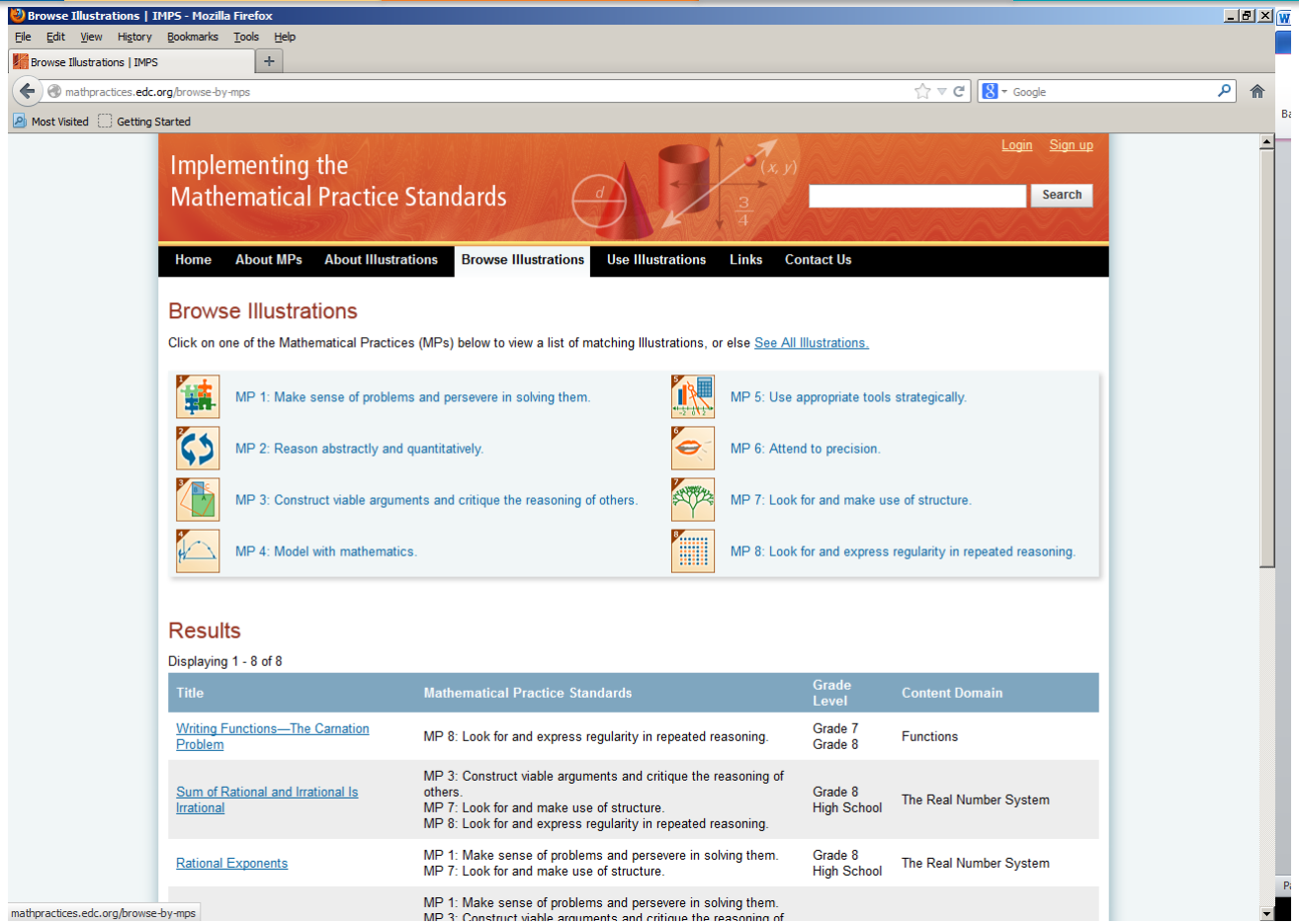

PD Development

Spring 2013

- Developing PD curriculum
- Pilot Group

2013-2014

- Field Test PD curriculum locally

2014-2015

- Field Test PD curriculum nationally

Professional Development Main Components

- **Doing and Discussing Mathematics**
  - Exploring IMPS mathematics tasks as mathematical learners
  - Discussing own use of standards for mathematical practice (MPs)
- **Analyzing Artifacts of Student Thinking**
  - Dialogues that are part of the Illustrations
  - Video or written work from participants' students based on IMPS tasks
  - Video or written work from sample students (provided with PD materials)
- **Connecting to Classroom Practice**
  - Anticipating and planning for student engagement in MPs
  - Planning around IMPS tasks
  - Adapting tasks from teachers' own curricula

Professional Development Structure

- Ten two-hour sessions
- Sessions can be grouped into larger chunks
- Flow of sessions organized by content strand
- All MPs highlighted over time through Illustrations
- Options for middle school and high school groups

Professional Development Materials

Facilitator Guide

- Session agendas and goals
- Materials and prep
- Activity instructions
- Discussion questions/prompts
- Facilitator Notes

Participant Materials

- Math tasks and dialogues
- Planning protocols
- Student work analysis protocols

Sample student work/video

Exploring an Illustration: Rectangles with the Same Numerical Area and Perimeter

1) Work on mathematics task (individual then pairs)
2) Sharing/debriefing mathematics of task (full group)

3) Read student dialogue – working on math task
4) Discuss dialogue (small groups)
5) Debrief MPs from the task/dialogue (whole group)

6) Review Mathematical Overview

Rectangles with the Same Numerical Area and Perimeter: Math Task

Find the dimensions of all rectangles whose area and perimeter have the same numerical value.

Rectangles with the Same Numerical Area and Perimeter: Discussing Mathematics

What strategies did you use to explore the problem?

How did you start the problem?

How do you know that you've found all the rectangles?

Rectangles with the Same Numerical Area and Perimeter: Reflecting on MPs

What evidence of the MPs did you see in…

1) Your own work on the task?

2) Colleagues' work on the task?

Reading the Student Dialogue

- 3 volunteers read the student dialogue out loud
- Re-read the dialogue individually and note places where students are engaging in MPs

Discussing Student Dialogue

- What evidence do you see of students engaging in the Standards for Mathematical Practice?

Reviewing Mathematical Overview

- What evidence do you see of students engaging in MPs?
- How do the MPs identified in the Mathematical Overview compare to those you identified during your reading of the dialogue? Surprises? Disagreements?
- What other insights or questions do you have after reading the Mathematical Overview?

Supporting Teacher Learning

What challenges do you anticipate for teachers in understanding and implementing the standards for mathematical practice?

How would you use the IMPS dialogues and resources with teachers in your setting to support their learning?

Other PD Components to Support Teachers

- Planning lessons using IMPS tasks.
- Analyzing student work (written or video) from students who worked on tasks.
- Planning lessons using tasks from curriculum.

Implementing the Mathematical Practice Standards

Questions?

mathpractices.edc.org

(QR code on bookmark)

Thank you! (We invite your feedback.)