

Module 3
Participant Guide

Focus on Teaching and Learning

Section 3

Connecticut Core Standards for Mathematics



Grades 6–12

Systems of Professional Learning

Connecticut Core Standards Systems of Professional Learning

The material in this guide was developed by Public Consulting Group in collaboration with staff from the Connecticut State Department of Education and the RESC Alliance. The development team would like to specifically thank Ellen Cohn, Charlene Tate Nichols, and Jennifer Webb from the Connecticut State Department of Education; Leslie Abbatiello from ACES; and Robb Geier, Elizabeth O’Toole, and Cheryl Liebling from Public Consulting Group.

The Systems of Professional Learning project includes a series of professional learning experiences for Connecticut Core Standards District Coaches in English Language Arts, Mathematics, Humanities, Science, Technology, Engineering, Mathematics (STEM), and Student/Educator Support Staff (SESS).

Participants will have continued support for the implementation of the new standards through virtual networking opportunities and online resources to support the training of educators throughout the state of Connecticut.

Instrumental in the design and development of the Systems of Professional Learning materials from PCG were: Sharon DeCarlo, Debra Berlin, Jennifer McGregor, Judy Buck, Michelle Wade, Nora Kelley, Diane Stump, and Melissa Pierce.

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Section 3

Section 3: Teaching and Learning with the UDL Principles

Identifying UDL Strategies–Video Observation

Instructions: As you watch the video, *Conjecturing About Functions*, look for the instructional strategies being used to address the UDL Principles. Record the teacher actions and student actions you observed.

Note: The video can be found here: <https://www.teachingchannel.org/videos/conjecture-lesson-plan>.

Did you see evidence of the following and if so, what was the teacher doing and what were the students doing?

Principle	Strategy Used
<p>Principle 1: Provide Multiple Means of Representation</p>	
<p>Principle 2: Provide Multiple Means of Action and Expression</p>	
<p>Principle 3: Provide Multiple Means of Engagement</p>	

Geometry Performance Task

Instructions: Use the following information as you discuss the geometry performance task on the next page.

Task Description: This performance task asks students to visualize geometric shapes, identify plane figures and their attributes, prove triangles are congruent, determine the area of quadrilaterals, make geometric conjectures, and justify geometric arguments.

Standards being addressed:

G.CO.10: Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180° ; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.

G.SRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

***G.CO.6:** Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

***G.CO.7:** Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.

***G.CO.9:** Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant.

**Depending on the student's solution path they may not demonstrate understanding of these standards.*

SMP 1: Make sense of problems and persevere in solving them.

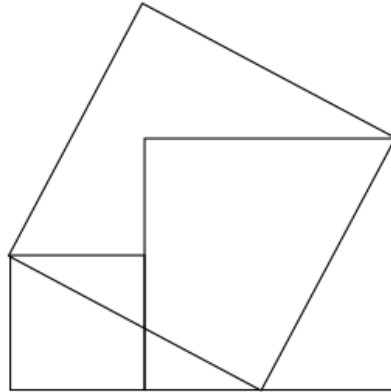
SMP 3: Construct viable arguments and critique the reasoning of others.

SMP 6: Attend to precision.

Company Logo

From NYC Department of Education

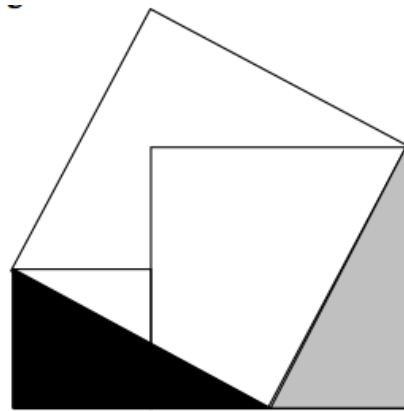
A company has designed a new logo using overlapping squares.



1. How many squares do you see in the logo? _____
Describe where you see the squares.

2. The logo designer colored two triangles in the logo.

How are the two triangles related? Justify your answer.



3. What are the relationships between the sizes of the three squares in the original logo? Explain your findings.

**Grade High School Math
Company Logo
Common Core Learning Standards/Universal Design for Learning**

From NYC Department of Education

Below are some ideas of how this Common Core Task is aligned with the three principles of UDL; providing options in representation, action/expression, and engagement. As UDL calls for multiple options, the possible list is endless. Please use this as a starting point. Think about your own group of students and assess whether these are options you can use.

REPRESENTATION: *The “what” of learning.* How does the task present information and content in different ways? How students gather facts and categorize what they see, hear, and read. How are they identifying letters, words, or an author's style?

In this task, teachers can...

Make explicit links between information provided in texts and any accompanying representation of that information in illustrations, equations, charts, or diagrams by reviewing mathematical definitions and have the students create accompanying examples.

ACTION/EXPRESSION: *The “how” of learning.* How does the task differentiate the ways that students can express what they know? How do they plan and perform tasks? How do students organize and express their ideas?

In this task, teachers can...

Use social media and interactive web tools (e.g., discussion forums, chats, web design, annotation tools, storyboards, comic strips, animation presentations) by asking students to find examples of logos and advertisements, as well as incorporate software to identify, measure, and manipulate geometric shapes.

ENGAGEMENT: *The “why” of learning.* How does the task stimulate interest and motivation for learning? How do students get engaged? How are they challenged, excited, or interested?

Optimize relevance, value and authenticity by including activities that foster the use of imagination to solve novel and relevant problems, or make sense of complex ideas in creative ways.

Note: This activity can also be accessed from Connecticut Core Standards website:

http://ctcorestandards.org/?page_id=2016

Instructions: Use the chart below to record at least one option that might be provided when implementing the Company Logo task to address each of the nine UDL guidelines.

Provide Multiple Means of Representation	Guideline 1	
	Guideline 2	
	Guideline 3	
Provide Multiple Means of Action & Expression	Guideline 4	
	Guideline 5	
	Guideline 6	
Provide Multiple Means of Engagement	Guideline 7	
	Guideline 8	
	Guideline 9	

Outlining a Lesson

Instructions: Use the questions below to guide your thinking as you plan a lesson outline around an identified set of CCS-Math Standards.

Questions to Guide Your Thinking

Adapted from NYC Department of Education

Concepts and Skills to Consider

- What **CCS-Math Standard(s)** for this grade is/are being addressed?
- What task is being used in the lesson?
- What concepts does the student need to know—*so that they will be able to complete the task successfully?*
- How will I prepare students who have not yet mastered these concepts—*so that they will be able to complete the task successfully?*
- What concepts will the student learn after the completion of task?

- What prerequisite skills does the student need to have mastered—*so that they will be able to complete the task successfully?*
- How will I prepare students who have not yet mastered these skills—*so that they will be able to complete the task successfully?*
- What new skills will the students have mastered upon completion of the task?

Provide Multiple Means of Representation

- How am I going to ensure that key information is equally perceptible by **all** students—*so that they will be able to complete the task/unit successfully?*
- How am I going to ensure accessibility, clarity, and comprehensibility for **all** students—*so that they will be able to complete the task/unit successfully?*
- How am I going to provide the necessary scaffolds to ensure that **all** students have access to knowledge and can assimilate new information—*so that they will be able to complete the task/unit successfully?*

Provide Multiple Means of Action and Expression

- Have materials been provided with which all students can interact, navigate, and express what they know—*so that they will be able to complete the task/unit successfully?*
- Have I provided alternative modalities for expression, to level the playing field and to allow all students the opportunity to express knowledge, ideas, and concepts in the learning environment—*so that they will be able to complete the task/unit successfully?*
- How have I provided necessary strategies and scaffolds for students to be more plan-full and strategic—*so that they will be able to complete the task/unit successfully?*

Provide Multiple Means of Engagement

- Have I provided alternative ways to recruit student interest, ways that reflect inter- and intra-individual differences among students—*so that they will be able to complete the task/unit successfully?*
- Have I provided options for students who differ in motivation and self-regulation skills—*so that they will be able to complete the task/unit successfully?*
- Have I provided alternatives to support students with different aptitudes and prior experience to effectively manage their own engagement and affect—*so that they will be able to complete the task/unit successfully?*