

Module 2
Participant Guide

Focus on Content Standards

Section 2

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 2

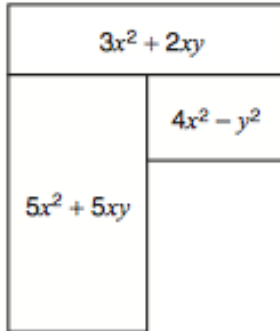
Section 2: The Language of the Content Standards

Who Knows Math

Instructions: Read the five student responses to the problem given below. Record your observations of what each student knows and what they can do.



- 21 The expression inside each of these rectangles represents the area, in square units, of the rectangle.



- Write an algebraic expression in simplified form to represent the sum of the areas of all the rectangles.
- What is the total area, in square units, of the rectangles when $x = 5$ and $y = 2$?

Student 1:



21

$$A - 12x^2 + 7xy - y^2$$

$$B - 12(5)^2 + 7(5)(2) - 2^2$$
$$3600 + 17 - 4$$
$$3600 + 13$$

$$\text{Area} = 3613^2$$

Observations:

Student 2:



21

a.) $12x^2 + 8x - 4$

b.) 186

Observations:

Student 3:



21

a) $12x^2 + 7xy - y^2$

b) 366

$$(5x^2 + 5xy) + (3x^2 + 2xy) + (4x^2 - y^2)$$

$$12x^2 + 7xy - y^2$$

$$12(5)^2 + 7(5)(2) - (2)^2 = 366$$

$$12(25) + 7(10) - 4$$

$$300 + 70 - 4$$

$$370 - 4$$

Observations:

Student 4:



21

$$A.) \begin{matrix} 3x^2 + 2xy \\ 5x^2 + 5xy \\ 4x^2 - y^2 \end{matrix} \qquad 12x^6 + 7xy - y^2$$

$$B.) 5 \times 12 = 60^6 + 7xy - y^2$$

Observations:

Student 5:



21

$$a) \begin{matrix} (3x^2 + 2xy) & + & (5x^2 + 5xy) & + & (4x^2 + y^2) & = & 12x^2 + 7xy + y^2 \\ * & \cdot & * & \cdot & * & & \text{sum of areas} \end{matrix}$$

$$b) \begin{matrix} 12(5)^2 + 7(5)(2) + (2)^2 = 12(25) + 7(10) + 4 = 300 + 70 + 4 \\ = 374 \end{matrix}$$

$$\begin{array}{r} 12 \\ 25 \\ \hline 60 \\ 240 \\ \hline 300 \end{array}$$

The total area is 374 square units

Observations:

Notes on Conceptual Understanding, Procedural Skill and Fluency, and Application of Mathematics

Instructions: Watch the video Mathematics Fluency: A Balanced Approach retrieved from: <http://www.youtube.com/watch?v=ZFUAV00bTwa>. After the video has played, use the space below to record notes on conceptual understanding, procedural skill and fluency, and application of mathematics that you will communicate with your peers back at your school.

Conceptual Understanding

“Students demonstrate *conceptual understanding* in mathematics when they provide evidence that they can recognize, label, and generate examples of concepts; use and interrelate models, diagrams, manipulatives, and varied representations of concepts; identify and apply principles; know and apply facts and definitions; compare, contrast, and integrate related concepts and principles; recognize, interpret, and apply the signs, symbols, and terms used to represent concepts. *Conceptual understanding* reflects a student’s ability to reason in settings involving the careful application of concept of definitions, relations, or representations of either” (Balka, Hull, & Harbin Miles, n.d.).

Notes

Procedural Skill and Fluency

Notes:

Application of Mathematics

Notes: