

CMP3 © 2018

Program Overview

Introduction

CONNECTED MATHEMATICS 3 **CMP3**

Next Generation of Connected Mathematics

- Program structure
- Program components
- Lesson structure
- Assessment
- Differentiation

Illustrations include three math books: *Prime Time* (Factors and Multiples), *Accentuate the Negative* (Integers and Rational Number), and *Thinking With Mathematical Models* (Linear and Inverse Variation). Below the books is a laptop showing a video call between two people and a tablet displaying a website. To the left of the laptop is a cartoon illustration of three diverse students (two girls and one boy) standing together.

In this tutorial, we will explore the next generation of Connected Mathematics-CMP3.

We will start with the program structure and components. Then we will look at the three-part lesson structure. Finally, we will go over key program resources for assessment and differentiation.

Program Philosophy

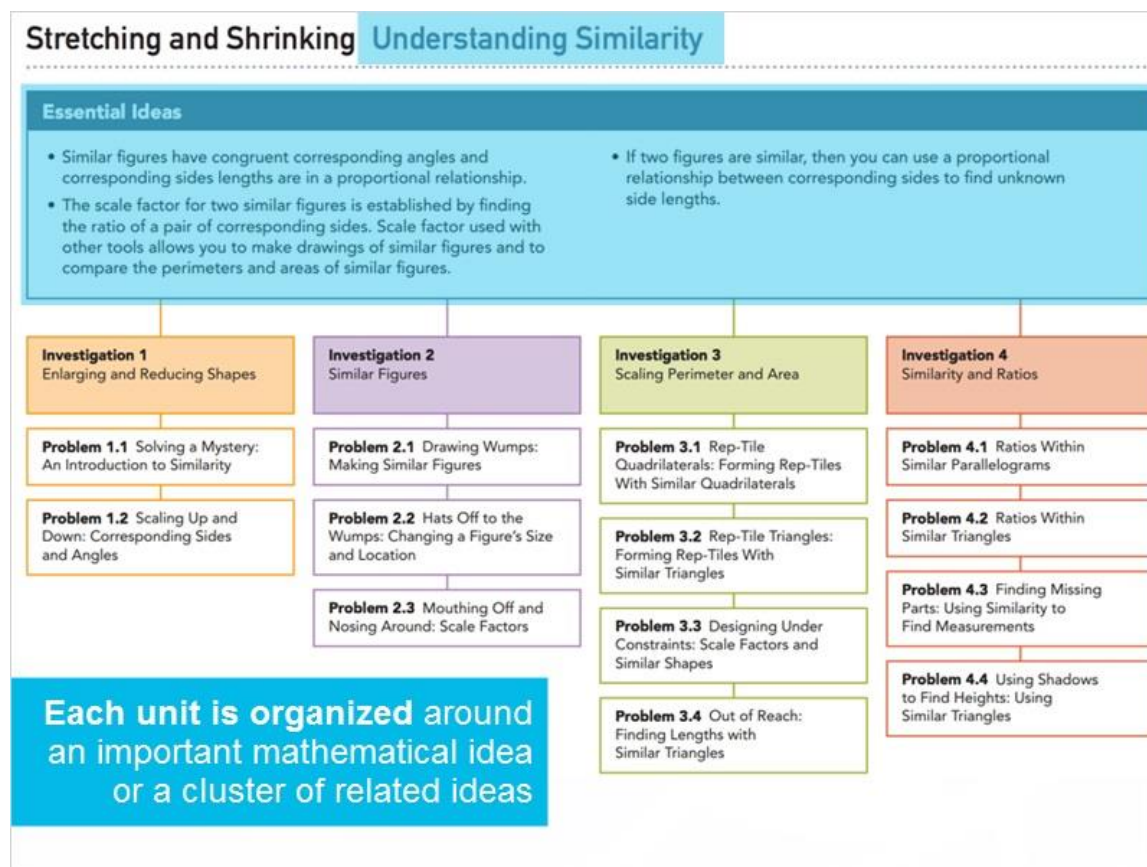


The goal of CMP3 is to
help students develop

- Mathematical knowledge
- Conceptual understanding
- Procedural skills
- Understanding of connections between math topics

CMP3 supports the belief that students should be able to reason and communicate proficiently in mathematics. The overarching goal of CMP3 is to help students develop mathematical knowledge, conceptual understanding, and procedural skills, along with an understanding of the rich connections between math topics-across grades and across content areas. The program also embeds the Common Core State Standards for Mathematics.

Program Structure



CMP3 comprises seven units in Grade 6, eight units in Grade 7, six units in Grade 8, and eight units in Algebra I.

Each unit is organized around an important mathematical idea or a cluster of related ideas. In this unit, the focus is on the concept of similarity.

Each unit is broken down into three to five Investigations. The Investigation builds toward the mathematical goals of the unit. An Investigation comprises about one week of class time.

Each Investigation is then made up of three to five problems. Most problems are designed for students to complete within a single class.

Each unit begins with a Unit Overview. In it, you'll find these sections: Unit Description, Summary of Investigations, Unit Graphic Organizer, Planning Charts, and Parent Letters in English and Spanish. You will also find classroom videos to support the unit instruction.

Program Components

Assign:

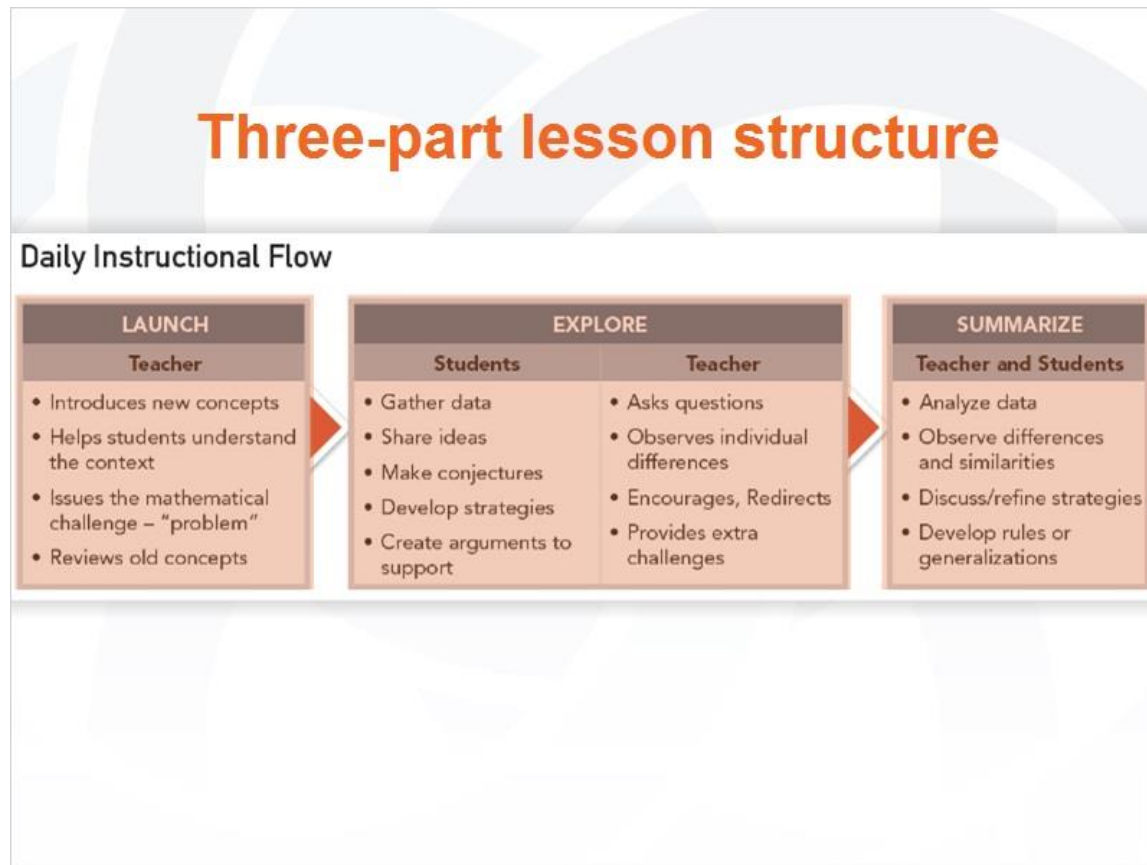
- Activities
- Assessments
- Projects

CMP3 is a blended program of print and digital resources. All of your print components are listed here.

- Teacher's Guide
- Student Edition
- Teacher Resources book
- Implementation Guide
- ExamView Test Generator CD-ROM
- Grade-specific Manipulative Kits

Your digital resources are housed on Savvas Realize™. This is the main platform where you can assign activities, assessments, and projects to students. You can access the Teacher and Student Realize Reader eTexts from Savvas Realize. In the Teacher eText, you will find full lessons, background information, and planning resources. The Student eText includes helpful annotation tools that students can use to complete assignments.

Lesson Structure



Now let's take a closer look at the typical daily instructional flow. CMP3 uses a three-part lesson structure- Launch, Explore, and Summarize.

Launch

4.2 Genetic Traits Finding Percents

Have you ever heard of *genes*? (Not the “jeans” you wear, even though they sound the same.) What color are your eyes? Is your hair curly? Are your earlobes attached? You are born with a unique set of genes that help to determine these traits.

Scientists who study human traits such as eye and hair color are *geneticists*. Geneticists are interested in how common certain human traits are.

Look at the earlobe of a classmate. Is it attached or detached? The type of earlobe you have is a trait determined partly by your genes. Here is a description of four genetic traits:

- A widow’s peak is a V-shaped hairline.
- A dimple is a small indentation, usually near the mouth.
- Straight hair does not have natural waves or curls.
- An earlobe is attached if its lowest point is attached directly to the head.

- Introduce problem situation
- Help students understand context
- Avoid problem-solving instruction

Launch the problem by introducing the problem situation and helping students understand the context. Resist the urge to teach any of the mathematics students will encounter through solving the problem.

Explore



- Students work collaboratively
- Teacher asks probing questions
- Teacher selects strategies for discussion

During the Explore phase of the lesson, students make sense of the problem and work collaboratively to find a solution.

As students work, ask questions, observe individual differences, encourage, and provide extra challenges using the guidance from your Teacher's Guide. Your questions should follow students' lines of thinking rather than directing them to a different way of thinking. During this time, select a few strategies that you can discuss and connect to their thinking as a part of the last phase-Summarize.

Summarize



- Discuss strategies
- Analyze differences and similarities
- Refine strategies
- Develop rules

During the Summarize phase of the lesson, you and your students discuss the strategies you have selected, analyze differences and similarities, refine the strategies, and develop rules or generalizations. Students should be contributing most of the mathematical thinking during these discussions.

Additional Practice and Homework

PEARSON **realize** PROGRAMS CLASSES DATA CENTERS

Connected Mathematics 3 Grade 7 2018 ▾

Table of contents Resources Standards eText Tools ▾

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My content Show teacher resources Create content ▾

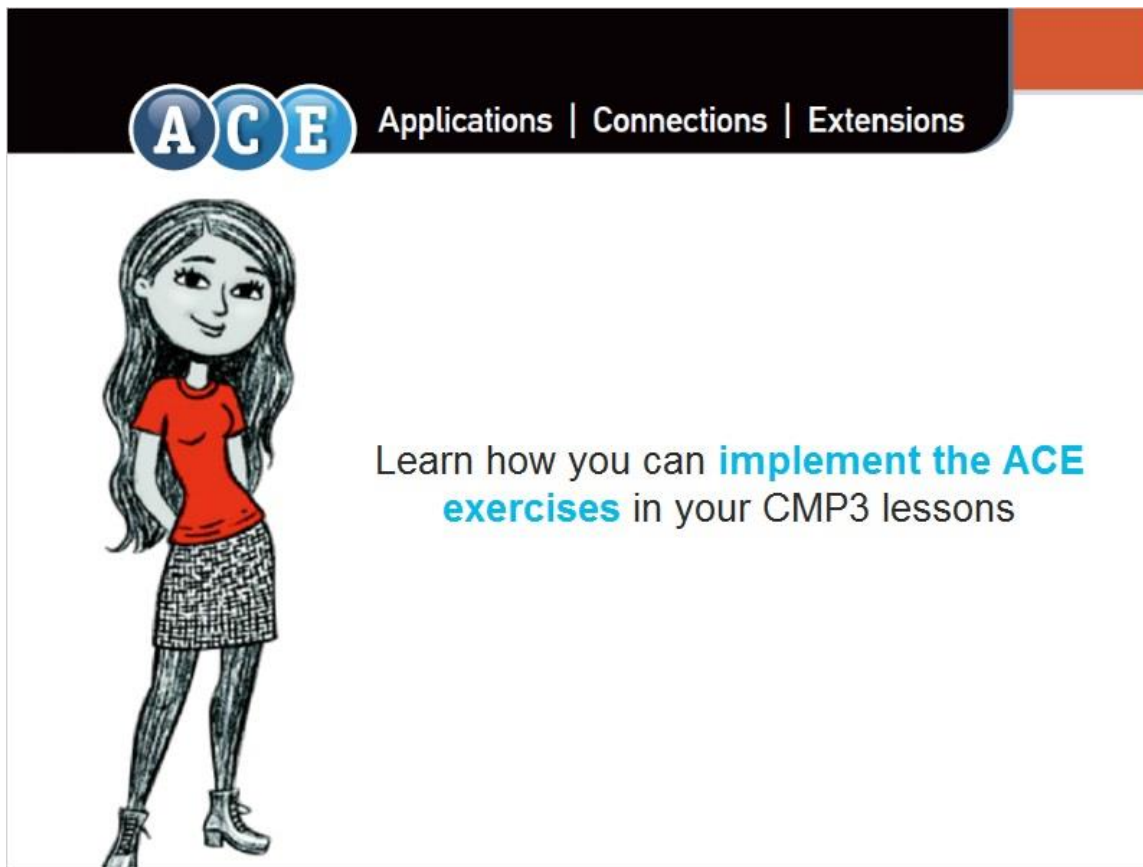
Stretching and Shrinking: Understanding Similarity

- Stretching and Shrinking - Online Teacher Edition
- Stretching and Shrinking - Online Student Edition
 - Assign
- Teacher Connection: Supporting ELL and Struggling Students
- 1 Enlarging and Reducing Shapes
- 2 Similar Figures

Practice pages available in PDF format

Following the lesson, you may choose to assign additional practice to support the lesson content. These practice pages are available in PDF format in the Teacher Resources section on Savvas Realize.

ACE Exercises

A graphic with a black header bar on the left containing the 'ACE' logo (three blue circles with white letters) and the text 'Applications | Connections | Extensions' in white. To the right of the header is an orange rectangle. Below the header, on the left, is a cartoon illustration of a girl with long brown hair, wearing a red t-shirt, a grey patterned skirt, and black boots. To the right of the girl, the text 'Learn how you can implement the ACE exercises in your CMP3 lessons' is displayed, with 'implement the ACE exercises' in blue and 'in your CMP3 lessons' in black.

ACE Applications | Connections | Extensions

Learn how you can **implement the ACE exercises** in your CMP3 lessons

At the end of each Investigation, direct your students to the Applications, Connections, and Extensions - or ACE - section to begin their homework. Let's take a closer look at the ACE exercises to learn how you can implement them in your CMP3 lessons.

Applications



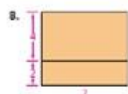
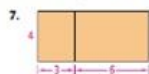
Applications | Connections | Extensions

Applications

For Exercises 1–4, make a conjecture about whether each result will be *odd* or *even*. Use models, pictures, or other reasoning to support your conjectures.

1. an even number minus an even number
2. an odd number minus an odd number
3. an even number minus an odd number
4. an odd number minus an even number
5. How can you tell whether a number is even or odd? Explain or illustrate your answer in at least two different ways.
6. How can you determine whether the sum of several numbers, such as $13 + 45 + 24 + 17$, is even or odd without actually calculating the sum?

For Exercises 7–9, write expressions for the area of each rectangle in two different ways. Then find the area using each expression.



These exercises help students solidify their understanding by providing practice with the ideas and strategies that they learned in the Investigation. These exercises contain contexts both similar to and different from those in the Investigation.

Connections



Applications | Connections | Extensions

Connections

66. Multiple Choice What is my number?

Clue 1: My number has two digits, and each is even.

Clue 2: The sum of my number's digits is 10.

Clue 3: The difference of the two digits of my number is 6.

Clue 4: My number has 4 as a factor.

A. 28 B. 46 C. 64 D. 82

For Exercises 67–74, find the sum, difference, product, or quotient.

67. 50×70

68. 25×70

69. $2,200 \div 22$

70. 50×120

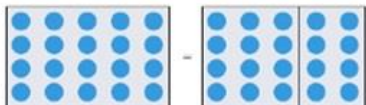
71. $39 + 899$

72. $4,400 - 1,200$

73. $9,900 \div 99$

74. $500 \div 320$

75. Dot patterns can illustrate the Distributive Property. Write a number sentence suggested by the dot patterns below.



A powerful learning strategy is to connect new knowledge to prior learning. The Connections section of the homework provides this opportunity. This section also provides a continued review of concepts and skills across the grades.

Extensions



Applications | Connections | Extensions

Extensions

80. a. Find at least five numbers that belong in each region of the Venn diagram below.
b. What do the numbers in the intersection have in common?



Consecutive numbers are whole numbers in sequence, such as 31, 32, 33 or 52, 53, 54. For Exercises 81–84, think of different consecutive numbers.

81. For any three consecutive numbers, what can you say about odd numbers and even numbers? Explain.
82. a. Mirari conjectures that, for any three consecutive numbers, one number would be divisible by 3. Do you think Mirari is correct? Explain.
b. Gia claims that the sum of any three consecutive whole numbers is divisible by 6. Is this true? Explain.
c. Kim claims that the product of any three consecutive whole numbers is divisible by 6. Is this true? Explain.
d. Does the product of any four consecutive whole numbers have any interesting properties? Explain.
83. How many consecutive numbers do you need to guarantee that one of the numbers is divisible by 5?
84. How many consecutive numbers do you need to guarantee that one of the numbers is divisible by 6?

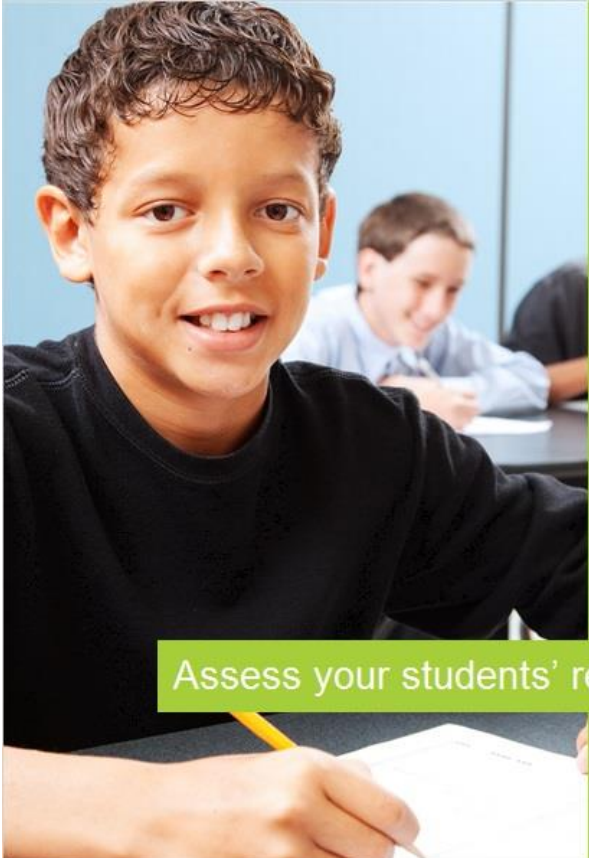
These exercises provide a challenge for students to think beyond what the problems cover in class. The exercises extend students' understanding and require them to look at interesting and related mathematical ideas.

Assessment and Differentiation

The screenshot displays the Pearson Realize platform interface for the 'Connected Mathematics 3 Grade 7 2018' program. The top navigation bar includes links for 'PROGRAMS', 'CLASSES', 'DATA', and 'CENTERS'. Below this, a breadcrumb trail shows 'Table of contents', 'Resources', 'Standards', 'eText', and 'Tools'. The main content area is titled 'Stretching and Shrinking: Understanding Similarity' and lists several resources: 'Stretching and Shrinking - Online Teacher Edition', 'Stretching and Shrinking - Online Student Edition' (with an 'Assign' button), and 'Teacher Connection: Supporting ELL and Struggling Students'. Below these are two investigation sections: '1 Enlarging and Reducing Shapes' and '2 Similar Figures'. A purple callout box on the right side of the main content area states: 'Downloadable assessments and answer keys on Pearson Realize'. To the right of the main content, a 'Teacher resources' sidebar lists various assessment materials, including 'Assessment Answer Key: Stretching and Shrinking (e...)', 'Assessments Answer Key: Stretching and Shrinking', 'Centimeter Grid Paper: Stretching and Shrinking', 'Check Up 1: Stretching and Shrinking', 'Check Up 1: Stretching and Shrinking (editable)', and 'Check Up 2: Stretching and Shrinking'.

CMP3 offers a comprehensive system of assessment to help you monitor and track your students' understanding. You can download the assessments and answer keys from the Teacher Resources section on Savvas Realize. Let's look at some of the key assessment and differentiation opportunities in the program.

Diagnostic Assessments



Name _____ Date _____ Class _____

Stretching and Shrinking

Unit Readiness

1. The length of Turtle A is 3 in. The length of Turtle B is 2 in. Find the ratio of Turtle A's length to Turtle B's length in the form $a : b$. Then write the ratio in fraction form.

2. For a school project, your group contains 3 boys and 4 girls. Complete the table to show ratios equivalent to 3 : 4.

Group Ratio				
Boys	3			
Girls	4	8	12	16

Assess your students' readiness for unit content

1

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Administer the Unit Readiness assessment before beginning each unit to assess your students' readiness for the unit's content.

Summative Assessments



Looking Back is a unit-level summative assessment located in the Student Edition. Some questions will require students to explain their reasoning. The Unit Tests also assess student mastery of each unit's content. Both of these assessments are available as PDF downloads on Savvas Realize. Alternatively, students can complete and submit these assessments digitally, using the Drawpad annotation tools to show their work.

Monitor students' progress using the auto-graded Benchmark Assessments, available in alternating units on Savvas Realize. You can find them in the Practice and Assessments folder, located in the Table of Contents.

Formative Assessments

Name _____
Date _____
Class _____

Shapes and Designs

Partner Quiz *for use after Investigation 2*

1. a. Can you use a square to tile a floor? Explain why or why not.

b. Can you use a regular pentagon to tile a floor? Explain why or why not.

Focus Question: What does it mean for two figures to be similar?

Suggested Questions

Students' work with the rubber-band stretchers often raises interesting questions.

- **What would happen if I made a three-band stretcher?**
Notice that with a three-band stretcher there are two knots. The size change is different based on whether you use the knot closer to the anchor point (3 times larger) or the knot closer to the pencil (1.5 times larger).
- **Do I get exactly the same drawing if I switch the ends of my two-band stretcher?**
No. It is rarely the case that the two rubber bands are exactly alike in stretchiness and length. Furthermore, it is very difficult to get the bands to contribute equally to the knot. The net result is usually that the image is a bit more (less) than twice as large as the original in length. Switching the ends of the rubber band will then make the image a bit less (more) than twice as large.
- **How could we use something like the rubber-band stretcher to make an image smaller than the original?**
This is a bit tricky, but possible to imagine. The standard stretcher method uses the knot to trace the smaller original and the end of the stretcher to trace the larger image. To shrink a figure, we need to switch the roles of the knot and the end. We would need to put a pencil at the knot and use the end of the stretcher to trace the original and have a friend or third hand to help.

Formative assessments:

- Suggested Questions
- Check-Ups
- Partner Quizzes

a triangle to have a 54° angle and a 126° angle? Explain

low is a regular hexagon. Find the value of x .

An important way to assess students is through **direct observation**

An important way to assess students in CMP3 is through direct observation as they engage with the mathematics.

Use the Suggested Questions throughout the Launch, Explore, and Summarize phases of each problem to uncover students' ways of thinking and prompt further discussion.

Check-Ups and Partner Quizzes are pencil-and-paper formative assessments for students. Quiz questions are richer and more challenging, whereas Check-Ups focus more on skills practice.

Differentiation

Part IV
A Curriculum for All Students

The Connected Mathematics Project (CMP) holds high expectations for its students—all of its students. This belief is reflected in the ideology and the overarching goal of the curriculum:


All students should be able to reason and communicate proficiently in mathematics. They should have knowledge of and skill in the use of vocabulary, forms of representation, materials, tools, techniques, and intellectual methods of the discipline of mathematics. This knowledge should include the ability to define and solve problems with reason, insight, inventiveness, and technical proficiency.

CMP teaches conceptual knowledge and skill. As in the above goal, skill means not only proficiency, but also the ability to use mathematics to make sense of situations. CMP helps students to understand the methods, algorithms, and strategies they use.

In a problem-centered curriculum like CMP, the important mathematical concepts and processes are embedded in the context of the problem. The context of the problem helps students develop understanding and skills. It also helps them retrieve and apply their knowledge as needed for future learning. This pedagogical grounding is valuable for all students.

CMP can be and has been successfully implemented in classrooms that include special needs students, gifted students, and English Language Learners. We believe that CMP provides all students with opportunities to engage in cooperative learning, to assume leadership roles, and to enhance self-esteem and self-acceptance. This section shows how effective strategies for special groups of students are already built into the CMP curriculum. Note that many of the strategies described in the following sections also work for all students.

There is a rich database of research around CMP. Many of these studies involve student learning, including special groups. For more information, see www.connectedmath.msu.edu or www.connectedmathematics3.com.

 **Part IV of**
Implementing and Teaching CMP3

Differentiation strategies:

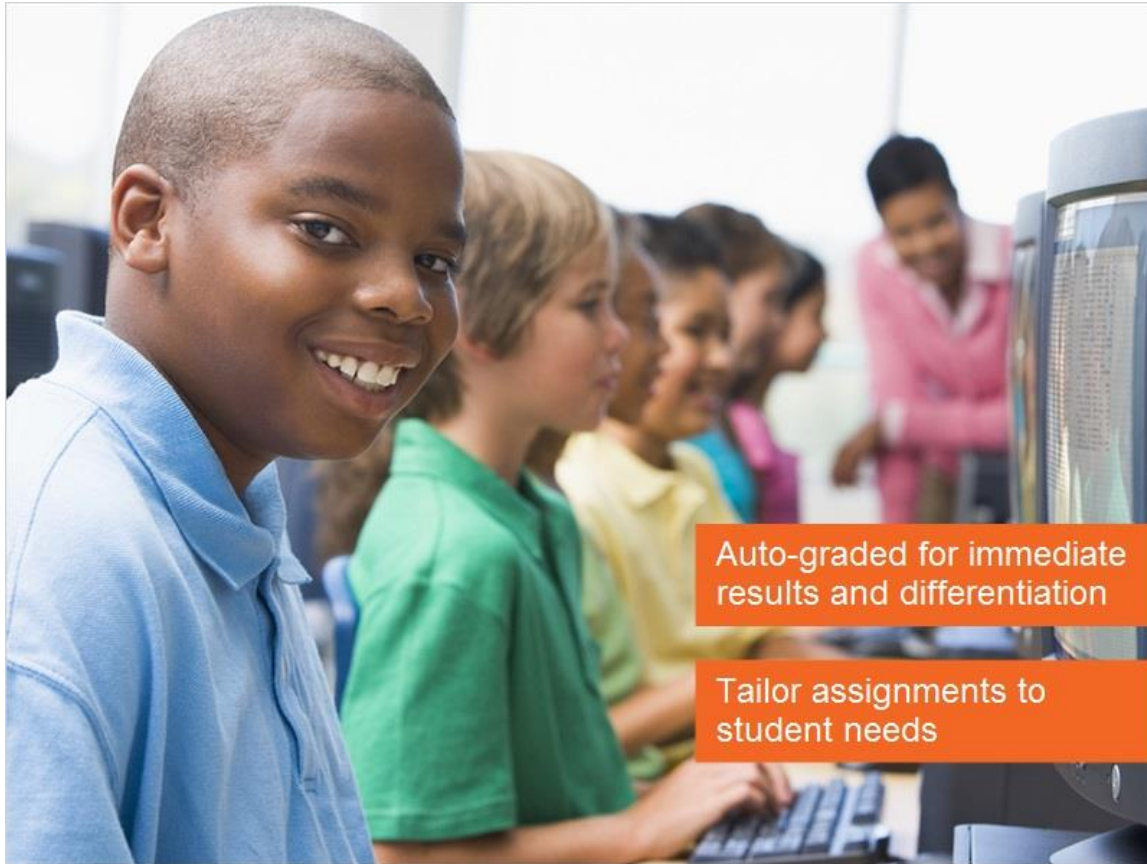
- English Language Learners
- Advanced students
- Learners with diverse needs

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CMP3 embeds differentiation through its focus on student thinking as the foundation for instruction.

Refer to Part IV of *Implementing and Teaching CMP3* for specific differentiation strategies for English Language Learners, advanced students, and other learners with diverse needs.

MathXL for School



MathXL® for School skills practice is available along with every problem. If your school has purchased a MathXL for School subscription, you have access to additional assessment and differentiation options. You can find these materials in the Practice and Assessments folder.

Because these materials are auto-graded, you receive immediate results and gain important insight into your students' progress and performance throughout the year. MathXL for School helps you differentiate by tailoring assignments to students' instructional needs.

Closing

On-Demand Tutorials & Guides



Live Webinars & Workshops



Support Tools & Resources



In this tutorial, we learned about the program structure and components, including the three-part lesson structure. We also reviewed assessment and differentiation resources that help inform your instruction.

For additional CMP3 tutorials, visit MyPearsonTraining.com.