

# Parent's Guide to Exemplars

## What are Exemplars?

*Exemplars K-12: Problem Solving for the Common Core* is a supplemental program that Spring Avenue will be using to support the existing curricula. The Exemplars resource is intended to help teachers embed mathematical problem solving into classroom instruction and assessment.

The Problem Solving for Common Core tasks have been differentiated to include a "more accessible" and a "more challenging" version of the original problem. This feature allows teachers to meet the needs of students at various levels as they explore and practice new math concepts. Teachers can make additional alterations as well to provide an additional layer of differentiation.

## Examples:

<b>More Accessible Version</b>	<b>First Grade Dinosaurs</b>	<b>More Challenging Version</b>
<p>Danny has nine plastic dinosaurs. Danny gives four of his plastic dinosaurs to Lucas. How many plastic dinosaurs does Danny keep for himself? Show all your mathematical thinking.</p>	<p>Danny has eighteen plastic dinosaurs. Danny gives nine of his plastic dinosaurs to Lucas. How many plastic dinosaurs does Danny keep for himself? Show all your mathematical thinking.</p>	<p>Danny has twenty-one plastic dinosaurs. Danny gives nine of his plastic dinosaurs to Lucas. Danny gives three of his plastic dinosaurs to Amy. How many plastic dinosaurs does Danny keep for himself? Show all your mathematical thinking.</p>

<b>More Accessible Version</b>	<b>Third Grade Abigail's Problem</b>	<b>More Challenging Version</b>
<p>Abigail is looking at a pile of pattern blocks. Abigail uses the green blocks to create this problem: "There are four green pattern blocks on the table. Each green block has three sides. How many sides are on all four blocks?" Abigail thinks she can use <math>4 \times 3</math> to answer the question. Is Abigail correct? What is the solution to <math>4 \times 3</math>? Show all your mathematical thinking.</p>	<p>Abigail is looking at a pile of pattern blocks. Abigail says, "I can write a problem about six times four using my pattern blocks." What problem could Abigail write using her pattern blocks? How would you solve Abigail's problem using your pattern blocks? Show all of your mathematical thinking.</p>	<p>Abigail and Diego are using pattern blocks to make up a multiplication problem. Abigail makes up a problem about blue blocks: "There are six blue pattern blocks on the desk. Each blue block has four vertices. How many vertices are on all six blocks?" Diego says he can reverse the numbers and write a problem about a different pattern block. Is Diego correct? Show all your mathematical thinking.</p>

<b>More Accessible Version</b>	<b>Fifth Grade Dimes and Dollars</b>	<b>More Challenging Version</b>
<p>Abigail and Mason are saving money to buy a CD that costs nine dollars. Abigail has thirty dimes. Mason has three dollar bills. Mason thinks that since he has ten times as much money as Abigail, she needs to save all the rest of the money needed to buy the CD. Abigail disagrees. Abigail thinks they both have the same amount of money. Who is correct, Abigail or Mason? Show all of your mathematical thinking.</p>	<p>Abigail and Mason are saving money to buy a CD that costs nine dollars. Abigail has thirty dimes. Mason has three dollar bills. Mason thinks that since he has ten times as much money as Abigail, she needs to save all the rest of the money needed to buy the CD. Abigail disagrees. Abigail thinks they both have the same amount of money. Abigail thinks it would be fair if they each saved half of the money needed to buy the CD. Who is correct, Abigail or Mason? Show all of your mathematical thinking.</p>	<p>Abigail, Mason, and Jeff are saving money to buy a CD that costs twelve dollars. Abigail has thirty dimes. Mason has three dollar bills. Jeff has sixty nickels. Jeff thinks since he has two times as much money as Abigail and 20 times as much money as Mason, that Abigail and Mason need to save all the rest of the money needed to buy the CD. Abigail disagrees. Abigail thinks they all have the same amount of money. Abigail thinks it would be fair if they each saved one-third of the money needed to buy the CD. Who is correct, Abigail or Jeff? Show all of your mathematical thinking.</p>

# How are Exemplars tasks graded?

## Exemplars Assessment Rubrics

An important component of this program is the Exemplars Assessment Rubric. The scoring rubric allows teachers to examine student work against a set of analytic assessment criteria to determine where the student is performing in relationship to each of these criteria. This assessment tool is designed to identify what is important, define what meets the standard and distinguish between different levels of student performance. The Exemplars rubric consists of four performance levels — Novice, Apprentice, Practitioner (meets the standard) and Expert— and five assessment categories (Problem Solving, Reasoning and Proof, Communication, Connections and Representation). The rubric criteria reflect the Common Core Standards for Mathematical Practice and parallel the NCTM Process Standards.

## Exemplars Student Rubrics

Rubrics can provide students with valuable information about what is expected and what kind of work meets the standard. They can also be used as a basis for self- and peer-assessment. In addition to the assessment rubric, Exemplars has also created one for students called the Jigsaw Rubric.

### Exemplars® Jigsaw Student Rubric

Level	Problem Solving	Reasoning and Proof	Communication	Connections	Representation
<b>Novice</b> Makes an effort No or little understanding	I did not understand the problem. 	My math thinking is not correct. 	I used no math language and/or math notation. 	I did not notice anything about the problem or the numbers in my work. 	I did not use a math representation to help solve the problem and explain my work. 
<b>Apprentice</b> Okay, good try Unclear if student understands	I only understand part of the problem. My strategy works for part of the problem. 	Some of my math thinking is correct. 	I used some math language and/or math notation. 	I tried to notice something, but it is not about the math in the problem. 	I tried to use a math representation to help solve the problem and explain my work, but it has mistakes in it. 
<b>Practitioner</b> Excellent Clear Strong understanding Meets the standard	I understand the problem and my strategy works. My answer is correct. 	All of my math thinking is correct. 	I used math language and/or math notation accurately throughout my work. 	I noticed something about my math work. 	I made a math representation to help solve the problem and explain my work, and it is labeled and correct. 
<b>Expert</b> Wow, awesome! Exceptional understanding!	I understand the problem. My answer is correct. I used a rule, and/or verified that my strategy is correct. 	I showed that I knew more about a math idea that I used in my plan. Or, I explained my rule. 	I used a lot of specific math language and/or notation accurately throughout my work. 	I noticed something in my work, and used that to extend my answer and/or I showed how this problem is like another problem. 	I used another math representation to help solve the problem and explain my work in another way. 

## How you can you support at home?

To be successful, students must be able to apply skills and concepts to problem-solving situations and to communicate their thinking to others.

### **Be positive about math.**

- Let your child know that everyone can learn math.
- Let your child know that you think math is important and fun.
- Point out the ways in which different family members use math in their jobs.
- Be positive about your own math abilities. Try to avoid saying "I was never good at math" or "I never liked math".
- Encourage your child to be persistent if a problem seems difficult.
- Praise your child when he or she makes an effort, and share in the excitement when he or she solves a problem or understands something for the first time.
- Treat errors as opportunities to help your child learn something new.

### **Show your kids math at work in their world.**

- Get your kids used to math by thinking out loud when making calculations. Then, let your children work out some real-life puzzles themselves.

### **Ask questions.**

- Your child's responses to questions will give you an idea of what he or she knows, where gaps in understanding may lie, and how you can help clarify misconceptions. Be sure to ask open ended questions and give your child plenty of time to answer.
  - What are you thinking?
  - What are you trying to find out?
  - What do you already know?
  - What is the first step in solving the problem?
  - How did you know that?
  - Is that always true? Why?
  - Why did you choose the operation (or the numbers) you did to solve the problem?
  - Does this make sense?
  - Can you think of another way to solve the problem?
  - Show me the steps you used to find the answer.
  - How could you check the answer to make sure it makes sense?
  - Do you see a pattern? If so, describe it.