

Common Core Standards of Mathematical Practice and the Practitioner Level of the Exemplars Math Rubric – Detail

CCSS 1 – Make sense of problems and persevere in solving them.

<p>CCSS – 1 “...start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals.”</p>	<p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> • A systematic approach and/or justification of correct reasoning is present. This may lead to... <ul style="list-style-type: none"> ▫ clarification of the task.
<p>CCSS – 1 “...plan a solution pathway...”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> • A correct strategy is chosen based on mathematical situation in the task.
<p>CCSS – 1 “...consider analogous problems...”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> • Evidence of solidifying prior knowledge and applying it to the problem solving situation is present.
<p>CCSS – 1 “...try special cases and simpler forms of the original problem in order to gain insight into its solution.”</p>	<p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> • A systematic approach and/or justification of correct reasoning is present. This may lead to... <ul style="list-style-type: none"> ▫ clarification of the task. ▫ exploration of mathematical phenomenon.
<p>CCSS – 1 “...monitor and evaluate their progress and change course if necessary.”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> • Planning or monitoring of strategy is evident.
<p>CCSS – 1 “...draw diagrams of important features and relationships, graph data....”</p>	<p>Exemplars Rubric – Representations</p> <ul style="list-style-type: none"> • Appropriate and accurate mathematical representations are constructed and refined to solve problems or portray solutions.
<p>CCSS – 1 “...search for regularity or trends.”</p>	<p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> • A systematic approach and/or justification of correct reasoning is present. This may lead to... <ul style="list-style-type: none"> ▫ noting patterns, structures and regularities. ▫ exploration of mathematical phenomenon.

Common Core Standards of Mathematical Practice and the Practitioner Level of the Exemplars Math Rubric – Detail (cont.)

CCSS 2 – Reason Abstractly and Quantitatively.

<p>CCSS – 2 “...the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols...”</p>	<p>Exemplars Rubric – Communication</p> <ul style="list-style-type: none"> • Formal math language is used throughout the solution... <p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> • Arguments are constructed with adequate mathematical basis. • A systematic approach and /or justification of correct reasoning is present. This may lead to... <ul style="list-style-type: none"> ▫ clarification of the task. ▫ exploration of mathematical phenomenon.
<p>CCSS – 2 “...the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols...”</p>	<p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> • A systematic approach and /or justification of correct reasoning is present. This may lead to... <ul style="list-style-type: none"> ▫ clarification of the task. ▫ exploration of mathematical phenomenon. <p>Exemplars Rubric – Connections</p> <ul style="list-style-type: none"> • Mathematical connections or observations are recognized.
<p>CCSS – 2 “...creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them...”</p>	<p>Exemplars Rubric – Representations</p> <ul style="list-style-type: none"> • Appropriate and accurate mathematical representations are constructed and refined to solve problems or portray solutions.
<p>CCSS – 2 “...knowing and flexibly using different properties of operations and objects.”</p>	<p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> • Arguments are constructed with adequate mathematical basis. <p>Exemplars Rubric – Communication</p> <ul style="list-style-type: none"> • Formal math language is used throughout the solution...

Common Core Standards of Mathematical Practice and the Practitioner Level of the Exemplars Math Rubric – Detail (cont.)

CCSS 3 – Construct viable arguments and critique the reasoning of others.	
<p>CCSS – 3 “...use stated assumptions, definitions, and previously established results in constructing arguments.”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> • Evidence of solidifying prior knowledge and applying it to the problem solving situation is present. <p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> • A systematic approach and /or justification of correct reasoning is present. <p>Exemplars Rubric – Communication</p> <ul style="list-style-type: none"> • A sense of audience or purpose is communicated. • Communication of an approach is evident through a methodical, organized, coherent sequenced and labeled response.
<p>CCSS – 3 “...justify their conclusions, communicate them to others...”</p>	<p>Exemplars Rubric – Communication</p> <ul style="list-style-type: none"> • A sense of audience or purpose is communicated. • Communication of an approach is evident through a methodical, organized, coherent sequenced and labeled response.
<p>CCSS – 3 “... reason inductively about data, making plausible arguments that take into account the context from which the data arose.”</p>	<p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> • A systematic approach and /or justification of correct reasoning is present. This may lead to... <ul style="list-style-type: none"> ▫ exploration of mathematical phenomenon.
<p>CCSS – 3 “...construct arguments using concrete referents such as objects, drawings, diagrams, and actions.”</p>	<p>Exemplars Rubric – Representations</p> <ul style="list-style-type: none"> • Appropriate and accurate mathematical representations are constructed and refined to solve problems or portray solutions.

Common Core Standards of Mathematical Practice and the Practitioner Level of the Exemplars Math Rubric – Detail (cont.)

CCSS 4 – Model with mathematics.	
<p>CCSS – 4 “...apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> Evidence of solidifying prior knowledge and applying it to the problem solving situation is present. <p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> Arguments are constructed with adequate mathematical basis. <p>Exemplars Rubric – Communication</p> <ul style="list-style-type: none"> Formal math language is used throughout the solution...
<p>CCSS – 4 “...apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later.”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> Evidence of solidifying prior knowledge and applying it to the problem solving situation is present. Planning or monitoring of strategy is evident.
<p>CCSS – 4 “...identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions.”</p>	<p>Exemplars Rubric – Representations</p> <ul style="list-style-type: none"> Appropriate and accurate mathematical representations are constructed and refined to solve problems or portray solutions.
<p>CCSS – 4 “...interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> Planning or monitoring of strategy is evident. <p>Exemplars Rubric – Reasoning and Proof</p> <ul style="list-style-type: none"> A systematic approach and/or justification of correct reasoning is present.

Common Core Standards of Mathematical Practice and the Practitioner Level of the Exemplars Math Rubric – Detail (cont.)

CCSS 5 – Use appropriate tools strategically.	
<p>CCSS – 5 “...consider the available tools when solving a mathematical problem... make sound decisions about when each of these tools might be helpful...”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> • Planning or monitoring of strategy is evident.
<p>CCSS – 5 “...detect possible errors by strategically using estimation and other mathematical knowledge.”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> • Evidence of solidifying prior knowledge and applying it to the problem solving situation is present. • Planning or monitoring of strategy is evident.
CCSS 6 – Attend to precision.	
<p>CCSS – 6 “...communicate precisely to others... use clear definitions in discussion...”</p>	<p>Exemplars Rubric – Communication</p> <ul style="list-style-type: none"> • A sense of audience or purpose is communicated. • Communication of an approach is evident through a methodical, organized, coherent sequenced and labeled response. • Formal math language is used throughout the solution...
<p>CCSS – 6 “...careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem.”</p>	<p>Exemplars Rubric – Representations</p> <ul style="list-style-type: none"> • Appropriate and accurate mathematical representations are constructed and refined to solve problems or portray solutions.
<p>CCSS – 6 “...calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context.”</p>	<p>Exemplars Rubric – Problem Solving</p> <ul style="list-style-type: none"> • The Practitioner must achieve a correct answer.

Common Core Standards of Mathematical Practice and the Practitioner Level of the Exemplars Math Rubric – Detail (cont.)

CCSS 7 – Look for and make use of structure.

CCSS – 7

“...discern a pattern or structure.”

Exemplars Rubric – Reasoning and Proof

- A systematic approach and/or justification of correct reasoning is present. This may lead to...
 - noting patterns, structures and regularities.
 - exploration of mathematical phenomenon.

Exemplars Rubric – Connections

- Mathematical connections or observations are recognized.

CCSS – 7

“...step back for an overview and shift perspective.”

Exemplars Rubric – Problem Solving

- Planning or monitoring of strategy is evident.

CCSS 8 – Look for and express regularity in repeated reasoning.

CCSS – 8

“...notice if calculations are repeated, and look both for general methods and for shortcuts.”

Exemplars Rubric – Problem Solving

- Planning or monitoring of strategy is evident.

Exemplars Rubric – Reasoning and Proof

- A systematic approach and/or justification of correct reasoning is present. This may lead to...
 - noting patterns, structures and regularities.

Exemplars Rubric – Connections

- Mathematical connections or observations are recognized.

CCSS – 8

“...continually evaluate the reasonableness of their intermediate results.”

Exemplars Rubric – Problem Solving

- Planning or monitoring of strategy is evident.