

Illinois Arts Learning Standards and the Common Core State Standards in Mathematics: A Comparison

In a study conducted by the College Board for the National Coalition for Core Arts Standards (2014)¹, the arts anchor standards in the National Core Arts Standards (NCAS) were compared to each of the Common Core (CCSS) anchor standards for English Language Arts, as well as the Standards for Mathematical Practice, with the goal of highlighting any similarities in the types of habits, skills, and abilities that were described in each.

The study determined two levels of alignment:

- **High-level or primary-level alignments** “were instances in which the expectations put forth in each of the two standards being compared were highly similar, and described nearly identical practices in the context of two different subject areas” (The College Board, 2014, p. 6).
- **Secondary-level alignments** were “comparisons that did not yield obvious and straightforward parallels but were still potentially related to one another” (2014, p. 6).

The study determined that “the practices described in each standard may relate to one another in certain instances, and that the cognitive habits that students are expected to engage in do share certain similarities” (2014, p. 6).

The Illinois Arts Learning Standards (IALS), modeled on the NCAS, retain all of the NCAS anchor standards with several modifications:

- **Anchor Standard #3** has been modified from “Refine and complete artistic work” to “**Revise**, refine, and complete artistic work.” The final stages of work in media arts and visual arts can involve revising as well as refining. Adding “revise” to this anchor standard more effectively aligns it with media arts and visual arts and does not negatively impact the other disciplines.
- **Anchor Standard #8** has been modified from “*Interpret intent* of artistic work” to “**Construct meaningful interpretations** of artistic work,” on the grounds that the goal of arts interpretation is not to determine the artist’s intent (nor are we able to do so).

Given that the two sets of anchor standards parallel one another in almost every aspect, the CPS Department of Arts Education reviewed the College Board study results to affirm that the alignments between the NCAS and CCSS hold true for the IALS. The Department determined that all alignments between the IALS and the CCSS can be supported with the same evidence used to draw alignments between the NCAS and the CCSS.

The following tables show alignments between the IALS and the CCSS for Mathematics. Note that while *all IALS/CCSS-Mathematics alignments are designated as secondary*, the study found that many of the anchor standards “produced multiple areas of connection within a single [Mathematics] standard” and that “**the process-oriented approach ... [is] a powerful unifier; both sets of standards spoke in terms of planning for one’s work, analyzing the task or idea at hand, considering the role of context as it relates to a particular problem or idea, and consider tools and resources that will aid in solving a problem, among others**” (2014, p. 11).

Alignments added by the CPS Department of Arts Education are indicated with asterisks (*).

¹ The College Board. (2014). *The Arts and the Common Core: A Comparison of the National Core Arts Standards and the Common Core State Standards*. New York: The College Board.

ARTISTIC PROCESS		STANDARD OF MATHEMATICAL PRACTICE							
		MP1. Make sense of problems and persevere in solving them.	MP2. Reason abstractly and quantitatively.	MP3. Construct viable arguments and critique the reasoning of others.	MP4. Model with mathematics.	MP5. Use appropriate tools strategically.	MP6. Attend to precision.	MP7. Look for and make use of structure.	MP8. Look for and express regularity in repeated reasoning.
CREATING	Cr.1. Generate and conceptualize artistic ideas and work.	✓	✓	✓	✓	✓	✓	✓	✓
	Cr.2. Organize and develop artistic ideas and work.	✓	✓	✓	✓	✓	✓	✓	✓
	Cr.3. Revise, refine, and complete artistic ideas and work.	✓		✓	✓	✓	✓	✓	✓
PERFORMING / PRESENTING / PRODUCING	Pr.4. Analyze, interpret, and select artistic work for presentation.	✓				✓		✓	
	Pr.5. Develop and refine artistic techniques and work for presentation.	✓	✓	✓	✓	✓	✓	✓	✓
	Pr.6. Convey meaning through the presentation of artistic work.	✓	✓	✓	✓		✓		
RESPONDING	Re.7. Perceive and analyze artistic work.	✓	✓	✓	✓	✓	✓	✓	✓
	Re.8. Construct meaningful interpretations of artistic work.	✓	✓	✓	✓		✓	✓	
	Re.9. Apply criteria to evaluate artistic work.	✓	✓	✓	✓	✓	✓		✓
CONNECTING	Cn.10. Synthesize and relate knowledge and personal experiences to make art.				✓				
	Cn.11. Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.			✓	✓	✓			

STANDARD OF MATHEMATICAL PRACTICE

CCSS.MATH.PRACTICE.MP1. Make sense of problems and persevere in solving them.

Mathematically proficient students 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. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

CREATING	Cr.1. Generate and conceptualize artistic ideas and work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to generate and conceptualize artistic ideas and work:</p> <ul style="list-style-type: none"> ● Explaining to themselves the meaning of a problem and looking for entry points to its solution ● Drawing diagrams of important features and relationships ● Using concrete objects or pictures to help conceptualize and solve a problem ● Continually asking "Does this make sense?"
	Cr.2. Organize and develop artistic ideas and work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to organize and develop artistic ideas and work:</p> <ul style="list-style-type: none"> ● Analyzing givens, constraints, relationships, and goals ● Making conjectures about the form and meaning of the solution ● Planning a solution pathway rather than simply jumping into a solution attempt ● Considering analogous problems ● Monitoring and evaluating progress and changing course if necessary ● Searching for regularity or trends
	Cr.3. Revise, refine, and complete artistic ideas and work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to revise, refine and complete artistic ideas and work:</p> <ul style="list-style-type: none"> ● Checking answers to problems using a different method
PRESENTING / PERFORMING / PRODUCING	Pr.4. Analyze, interpret, and select artistic work for presentation.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to analyze, interpret, and/or select artistic work:</p> <ul style="list-style-type: none"> ● Explaining to themselves the meaning of a problem and looking for entry points to its solution ● Analyzing givens, constraints, relationships, and goals ● Considering analogous problems

	Pr.5. Develop and refine artistic techniques and work for presentation.	Secondary: The following skills or habits described in this standard may relate to the ability to develop and refine artistic techniques and work : <ul style="list-style-type: none"> • Trying special cases and simpler forms of the original problem in order to gain insight into its solution • Monitoring and evaluating progress and changing course if necessary • Continually asking “Does this make sense?”
	Pr.6. Convey meaning through the presentation of artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to convey meaning through the presentation of artistic work : <ul style="list-style-type: none"> • Explaining correspondences between equations, verbal descriptions, tables, and graphs • Drawing diagrams of important features and relationships • Understanding the approaches of others to solving complex problems and identifying correspondences between different approaches
RESPONDING	Re.7. Perceive and analyze artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to perceive and analyze artistic work : <ul style="list-style-type: none"> • Planning a solution pathway • Trying special cases and simpler forms of the original problem in order to gain insight into its solution • Understanding the approaches of others to solving complex problems and identifying correspondences between different approaches
	Re.8. Construct meaningful interpretations of artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to construct meaningful interpretations of artistic work : <ul style="list-style-type: none"> • Explaining to themselves the meaning of a problem • Making conjectures about the form and meaning of the solution
	Re.9. Apply criteria to evaluate artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to apply criteria to evaluate artistic work : <ul style="list-style-type: none"> • Analyzing givens, constraints, relationships, and goals • Continually asking “Does this make sense?”
CONNECTING	Cn.10. Synthesize and relate knowledge and personal experiences to make art.	<i>No correlation</i>
	Cn.11. Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.	<i>No correlation</i>

STANDARD OF MATHEMATICAL PRACTICE

CCSS.MATH.PRACTICE.MP2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of 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; and knowing and flexibly using different properties of operations and objects.

CREATING	Cr.1. Generate and conceptualize artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to generate and conceptualize artistic ideas and work : <ul style="list-style-type: none"> ● Making sense of quantities and their relationships in problem situations
	Cr.2. Organize and develop artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to organize and develop artistic ideas and work : <ul style="list-style-type: none"> ● Decontextualizing and contextualizing ● Creating a coherent representation of the problem at hand ● Attending to the meaning of quantities ● Knowing and flexibly using different properties of operations and objects ● Representing a situation symbolically; manipulating the representing symbols as if they have a life of their own ● Probing into referents for the symbols involved
	Cr.3. Revise, refine, and complete artistic ideas and work.	<i>No correlation</i>
PRESENTING / PERFORMING / PRODUCING	Pr.4. Analyze, interpret, and select artistic work for presentation.	<i>No correlation</i>
	Pr.5. Develop and refine artistic techniques and work for presentation.	Secondary: The following skills or habits described in this standard may relate to the ability to develop and refine artistic techniques and work : <ul style="list-style-type: none"> ● Decontextualizing and contextualizing
	Pr.6. Convey meaning through the presentation of artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to convey meaning through the presentation of artistic work : <ul style="list-style-type: none"> ● Creating a coherent representation of the problem at hand
RESPONDING	Re.7. Perceive and analyze artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to perceive and analyze artistic work : <ul style="list-style-type: none"> ● Making sense of quantities and their relationships in problem situations

	Re.8. Construct meaningful interpretations of artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to construct meaningful interpretations of artistic work : <ul style="list-style-type: none"> ● Decontextualizing and contextualizing ● Creating a coherent representation of the problem at hand ● Attending to the meaning of quantities
	Re.9. Apply criteria to evaluate artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to apply criteria to evaluate artistic work : <ul style="list-style-type: none"> ● Decontextualizing and contextualizing* ● Attending to the meaning of quantities*
CONNECTING	Cn.10. Synthesize and relate knowledge and personal experiences to make art.	<i>No correlation</i>
	Cn.11. Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.	<i>No correlation</i>

*Alignments added by the CPS Department of Arts Education.

STANDARD OF MATHEMATICAL PRACTICE

CCSS.MATH.PRACTICE.MP3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

CREATING	Cr.1. Generate and conceptualize artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to generate and conceptualize artistic ideas and work : <ul style="list-style-type: none"> ● Analyzing situations by breaking them into cases
	Cr.2. Organize and develop artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to organize and develop artistic ideas and work : <ul style="list-style-type: none"> ● Making conjectures and building a logical progression of statements to explore the truth of their conjectures ● Constructing arguments using concrete referents such as objects, drawings, diagrams, and actions
	Cr.3. Revise, refine, and complete artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to revise, refine, and complete artistic ideas and work : <ul style="list-style-type: none"> ● Justifying conclusions, communicating them to others, and responding to the arguments of others
PRESENTING / PERFORMING / PRODUCING	Pr.4. Analyze, interpret, and select artistic work for presentation.	<i>No correlation</i>
	Pr.5. Develop and refine artistic techniques and work for presentation.	Secondary: The following skills or habits described in this standard may relate to the ability to develop and refine artistic techniques and work : <ul style="list-style-type: none"> ● Constructing arguments ● Making conjectures and building a logical progression of statements to explore the truth of [those] conjectures ● Comparing the effectiveness of two plausible arguments

	Pr.6. Convey meaning through the presentation of artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to convey meaning through the presentation of artistic work : <ul style="list-style-type: none"> • Justifying conclusions, communicating them to others, and responding to the arguments of others
RESPONDING	Re.7. Perceive and analyze artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to perceive and analyze artistic work : <ul style="list-style-type: none"> • Analyzing situations by breaking them into cases
	Re.8. Construct meaningful interpretations of artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to construct meaningful interpretations of artistic work : <ul style="list-style-type: none"> • Making conjectures and building a logical progression of statements to explore the truth of [those] conjectures
	Re.9. Apply criteria to evaluate artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to apply criteria to evaluate artistic work : <ul style="list-style-type: none"> • Using stated assumptions, definitions, and previously established results in constructing arguments • Recognizing and using counterexamples • Making plausible arguments that take into account the context from which the data arose • Determining the domains to which an argument applies
CONNECTING	Cn.10. Synthesize and relate knowledge and personal experiences to make art.	<i>No correlation</i>
	Cn.11. Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.	Secondary: The following skills or habits described in this standard may relate to the ability to relate artistic ideas and works with societal, cultural, and historical context to deepen understanding : <ul style="list-style-type: none"> • Making plausible arguments that take into account the context from which the data arose

STANDARD OF MATHEMATICAL PRACTICE

CCSS.MATH.PRACTICE.MP4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to 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. They routinely 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.

CREATING	Cr.1. Generate and conceptualize artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to generate and conceptualize artistic ideas and work : <ul style="list-style-type: none"> ● Making assumptions and approximations to simplify a complicated situation ● Mapping relationships using such tools as diagrams, two-way tables, graphs, flowcharts, and formulas
	Cr.2. Organize and develop artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to organize and develop artistic ideas and work : <ul style="list-style-type: none"> ● Making assumptions and approximations to simplify a complicated situation ● Identifying important quantities in a practical situation
	Cr.3. Revise, refine, and complete artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to revise, refine, and complete artistic ideas and work : <ul style="list-style-type: none"> ● Analyzing relationships mathematically to draw conclusions ● Interpreting mathematical results in the context of the situation and reflecting on whether the results make sense, possibly improving the model if it has not served its purpose ● Knowing a work may need revision later
PRESENTING / PERFORMING / PRODUCING	Pr.4. Analyze, interpret, and select artistic work for presentation.	<i>No correlation</i>
	Pr.5. Develop and refine artistic techniques and work for presentation.	Secondary: The following skills or habits described in this standard may relate to the ability to develop and refine artistic techniques and work : <ul style="list-style-type: none"> ● Making assumptions and approximations to simplify a complicated situation
	Pr.6. Convey meaning through the presentation of artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to convey meaning through the presentation of artistic work : <ul style="list-style-type: none"> ● Reflecting on whether the results make sense, possibly improving the model if it has not served its purpose

RESPONDING	Re.7. Perceive and analyze artistic work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to perceive and analyze artistic work:</p> <ul style="list-style-type: none"> • Making assumptions and approximations to simplify a complicated situation • Identifying important quantities in a practical situation and mapping their relationships using such tools as diagrams, two-way tables, graphs, flowcharts, and formulas • Analyzing relationships mathematically to draw conclusions
	Re.8. Construct meaningful interpretations of artistic work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to construct meaningful interpretations of artistic work:</p> <ul style="list-style-type: none"> • Interpreting mathematical results in the context of the situation
	Re.9. Apply criteria to evaluate artistic work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to apply criteria to evaluate artistic work:</p> <ul style="list-style-type: none"> • Reflecting on whether the results make sense • Analyzing relationships mathematically to draw conclusions
CONNECTING	Cn.10. Synthesize and relate knowledge and personal experiences to make art.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to synthesize and relate knowledge and personal experiences to make art:</p> <ul style="list-style-type: none"> • Solving problems arising in everyday life, society, and the workplace
	Cn.11. Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to relate artistic ideas and works with societal, cultural, and historical context to deepen understanding:</p> <ul style="list-style-type: none"> • Solving problems arising in everyday life, society, and the workplace

STANDARD OF MATHEMATICAL PRACTICE

CCSS.MATH.PRACTICE.MP5. Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

CREATING	Cr.1. Generate and conceptualize artistic ideas and work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to generate and conceptualize artistic ideas and work:</p> <ul style="list-style-type: none"> ● Considering the available tools when solving a mathematical problem ● Being sufficiently familiar with tools appropriate for [one's] grade or course to make sound decisions about when each of these tools might be helpful ● Using resources to pose or solve problems
	Cr.2. Organize and develop artistic ideas and work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to organize and develop artistic ideas and work:</p> <ul style="list-style-type: none"> ● Detecting possible errors by strategically using estimation and other mathematical knowledge ● Knowing that technology can enable [one] to visualize the results of varying assumptions, explore consequences, and compare predictions with data ● Identifying relevant external mathematical resources, such as digital content, and using them to pose or solve problems.
	Cr.3. Revise, refine, and complete artistic ideas and work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to revise, refine, and complete artistic ideas and work:</p> <ul style="list-style-type: none"> ● Using technological tools to explore and deepen [one's] understanding of concepts
PRESENTING / PERFORMING / PRODUCING	Pr.4. Analyze, interpret, and select artistic work for presentation.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to analyze, interpret, and select artistic work for presentation:</p> <ul style="list-style-type: none"> ● Considering the available tools when solving a mathematical problem ● Being sufficiently familiar with tools appropriate for [one's] grade or course to make sound decisions about when each of these tools might be helpful

	<p>Pr.5. Develop and refine artistic techniques and work for presentation.</p>	<p>Secondary: The following skills or habits described in this standard may relate to the ability to develop and refine artistic techniques and work:</p> <ul style="list-style-type: none"> • Detecting possible errors by strategically using estimation and other mathematical knowledge • Knowing that technology can enable [one] to visualize the results of varying assumptions, explore consequences, and compare predictions • Using technological tools to explore and deepen [one's] understanding of concepts
	<p>Pr.6. Convey meaning through the presentation of artistic work.</p>	<p><i>No correlation</i></p>
<p>RESPONDING</p>	<p>Re.7. Perceive and analyze artistic work.</p>	<p>Secondary: The following skills or habits described in this standard may relate to the ability to perceive and analyze artistic work:</p> <ul style="list-style-type: none"> • Being sufficiently familiar with tools appropriate for [one's] grade or course to make sound decisions about when each of these tools might be helpful • Detecting possible errors by strategically using estimation and other mathematical knowledge
	<p>Re.8. Construct meaningful interpretations of artistic work.</p>	<p><i>No correlation</i></p>
	<p>Re.9. Apply criteria to evaluate artistic work.</p>	<p>Secondary: The following skills or habits described in this standard may relate to the ability to apply criteria to evaluate artistic work:</p> <ul style="list-style-type: none"> • Analyzing graphs of functions and solutions generated using a graphing calculator
<p>CONNECTING</p>	<p>Cn.10. Synthesize and relate knowledge and personal experiences to make art.</p>	<p><i>No correlation</i></p>
	<p>Cn.11. Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.</p>	<p>Secondary: The following skills or habits described in this standard may relate to the ability to relate artistic ideas and works with societal, cultural, and historical context to deepen understanding:</p> <ul style="list-style-type: none"> • Identifying relevant external mathematical resources, such as digital content, and using them to pose or solve problems • Detecting possible errors by strategically using estimation and other mathematical knowledge

STANDARD OF MATHEMATICAL PRACTICE

CCSS.MATH.PRACTICE.MP6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

CREATING	Cr.1. Generate and conceptualize artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to generate and conceptualize artistic ideas and work : <ul style="list-style-type: none"> • Using clear definitions • Stating the meaning of [chosen] symbols
	Cr.2. Organize and develop artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to organize and develop artistic ideas and work : <ul style="list-style-type: none"> • Calculating accurately and efficiently • Expressing numerical answers with a degree of precision appropriate for the problem context • Giving carefully formulated explanations • Examining claims and making explicit use of definitions
	Cr.3. Revise, refine, and complete artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to revise, refine, and complete artistic ideas and work : <ul style="list-style-type: none"> • Giving carefully formulated explanations • Examining claims and making explicit use of definitions
PRESENTING / PERFORMING / PRODUCING	Pr.4. Analyze, interpret, and select artistic work for presentation.	No correlation
	Pr.5. Develop and refine artistic techniques and work for presentation.	Secondary: The following skills or habits described in this standard may relate to the ability to develop and refine artistic techniques and work : <ul style="list-style-type: none"> • Calculate accurately and efficiently and express numerical answers with a degree of precision appropriate for the problem context

	Pr.6. Convey meaning through the presentation of artistic work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to convey meaning through the presentation of artistic work:</p> <ul style="list-style-type: none"> • Communicating precisely to others • Using clear definitions • Stating the meaning of [chosen] symbols • Specifying units of measure • Giving carefully formulated explanations
RESPONDING	Re.7. Perceive and analyze artistic work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to perceive and analyze artistic work:</p> <ul style="list-style-type: none"> • Stating the meaning of [chosen] symbols
	Re.8. Construct meaningful interpretations of artistic work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to construct meaningful interpretations of artistic work:</p> <ul style="list-style-type: none"> • Stating the meaning of [chosen] symbols • Giving carefully formulated explanations
	Re.9. Apply criteria to evaluate artistic work.	<p>Secondary: The following skills or habits described in this standard may relate to the ability to apply criteria to evaluate artistic work:</p> <ul style="list-style-type: none"> • Examining claims and making explicit use of definitions
CONNECTING	Cn.10. Synthesize and relate knowledge and personal experiences to make art.	<i>No correlation</i>
	Cn.11. Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.	<i>No correlation</i>

STANDARD OF MATHEMATICAL PRACTICE

CCSS.MATH.PRACTICE.MP7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .

CREATING	Cr.1. Generate and conceptualize artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to generate and conceptualize artistic ideas and work : <ul style="list-style-type: none"> Looking closely to discern a pattern or structure Recognizing the significance of an existing line in a geometric figure Stepping back for an overview and to shift perspective
	Cr.2. Organize and develop artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to organize and develop artistic ideas and work : <ul style="list-style-type: none"> Stepping back for an overview and to shift perspective Seeing complicated things, such as some algebraic expressions, as single objects or as being composed of several objects
	Cr.3. Revise, refine, and complete artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to revise, refine, and complete artistic ideas and work : <ul style="list-style-type: none"> Stepping back for an overview and to shift perspective*
PRESENTING / PERFORMING / PRODUCING	Pr.4. Analyze, interpret, and select artistic work for presentation.	Secondary: The following skills or habits described in this standard may relate to the ability to analyze, interpret, and select artistic work for presentation : <ul style="list-style-type: none"> Looking closely to discern a pattern or structure Seeing complicated things, such as some algebraic expressions, as single objects or as being composed of several objects
	Pr.5. Develop and refine artistic techniques and work for presentation.	Secondary: The following skills or habits described in this standard may relate to the ability to develop and refine artistic techniques and work : <ul style="list-style-type: none"> Seeing complicated things, such as some algebraic expressions, as single objects or as being composed of several objects
	Pr.6. Convey meaning through the presentation of artistic work.	<i>No correlation</i>

RESPONDING	Re.7. Perceive and analyze artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to perceive and analyze artistic work : <ul style="list-style-type: none"> • Looking closely to discern a pattern or structure • Recognizing the significance of an existing line in a geometric figure • Seeing complicated things, such as some algebraic expressions, as single objects or as being composed of several objects
	Re.8. Construct meaningful interpretations of artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to construct meaningful interpretations of artistic work : <ul style="list-style-type: none"> • Stepping back for an overview and to shift perspective
	Re.9. Apply criteria to evaluate artistic work.	<i>No correlation</i>
CONNECTING	Cn.10. Synthesize and relate knowledge and personal experiences to make art.	<i>No correlation</i>
	Cn.11. Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.	<i>No correlation</i>

*Alignment added by the CPS Department of Arts Education to correspond to the revised anchor standard.

STANDARD OF MATHEMATICAL PRACTICE

CCSS.MATH.PRACTICE.MP8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x - 1)(x^2 + x + 1)$, and $(x - 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

CREATING	Cr.1. Generate and conceptualize artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to generate and conceptualize artistic ideas and work : <ul style="list-style-type: none"> • Noticing if calculations are repeated and looking both for general methods and for shortcuts
	Cr.2. Organize and develop artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to organize and develop artistic ideas and work : <ul style="list-style-type: none"> • Noticing if calculations are repeated and looking both for general methods and for shortcuts • Maintaining oversight of the process while attending to the details*
	Cr.3. Revise, refine, and complete artistic ideas and work.	Secondary: The following skills or habits described in this standard may relate to the ability to revise, refine, and complete artistic ideas and work : <ul style="list-style-type: none"> • Maintaining oversight of the process while attending to the details • Continually evaluating the reasonableness of intermediate results
PRESENTING / PERFORMING / PRODUCING	Pr.4. Analyze, interpret, and select artistic work for presentation.	<i>No correlation</i>
	Pr.5. Develop and refine artistic techniques and work for presentation.	Secondary: The following skills or habits described in this standard may relate to the ability to develop and refine artistic techniques and work : <ul style="list-style-type: none"> • Maintaining oversight of the process while attending to the details • Continually evaluating the reasonableness of intermediate results
	Pr.6. Convey meaning through the presentation of artistic work.	<i>No correlation</i>

RESPONDING	Re.7. Perceive and analyze artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to perceive and analyze artistic work : <ul style="list-style-type: none"> • Noticing if calculations are repeated and looking both for general methods and for shortcuts • Maintaining oversight of the process while attending to the details
	Re.8. Construct meaningful interpretations of artistic work.	<i>No correlation</i>
	Re.9. Apply criteria to evaluate artistic work.	Secondary: The following skills or habits described in this standard may relate to the ability to apply criteria to evaluate artistic work : <ul style="list-style-type: none"> • Continually evaluating the reasonableness of intermediate results
CONNECTING	Cn.10. Synthesize and relate knowledge and personal experiences to make art.	<i>No correlation</i>
	Cn.11. Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding.	<i>No correlation</i>

*Alignment added by the CPS Department of Arts Education.