Delaware Department of Education

Mathematics

GRADE 3 CROSSWALK

Claims-Targets-Standards

This document aligns the Delaware Mathematics Standards with Claims and Assessment Targets.
The Claims and Targets can be used to design classroom lessons and district assessments.
In addition, it serves as a guide in understanding the Smarter Math reports.

Adapted from SBAC Content Specifications and Michigan DOE

5/2016

Mathematics instruction and assessment will reflect broad evidenced-based measures based on what students know and can do. These high level mathematics claims include concepts and procedures, problem solving, modeling and data analysis, and skills in communicating reasoning (see Figure 1).

Claim #1	**Concepts and Procedures** Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.
Claim #2	**Problem Solving** Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.
Claim #3	**Communicating Reasoning** Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Claim #4	**Modeling and Data Analysis** Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.

Figure 1 illustrates the high level in which students will be measured.

Claims –Claims are arguments derived from evidence about college and career readiness.
Targets – Targets are the bridge between the content standards and the assessment evidence that supports the claim. Targets insure sufficiency of evidence to justify each claim.

As a way to provide guidance to mathematics educators, this grade-level crosswalk document illustrates how the standards map to each assessment target and align to the critical areas for each grade as well as the claim which will be measured.

This crosswalk document will allow educators to understand and visualize the interconnectedness of the standards to the assessment. Similarly, the critical areas for each grade level are shown as part of Claim #1 as they illustrate the focus of teaching and learning for students.

Additionally, it is important to understand that the mathematical claims were derived from the Standards for Mathematical Practice. A crosswalk of the claims, standards for mathematical practice, and connecting verbiage are also included to clearly communicate how students can demonstrate processes and proficiencies associated with characteristics of career-and college-readiness.

Claim	Standards for Mathematical Practice
Claim 1- *Students can **explain** and **apply** mathematical concepts and **interpret** and **carry out** mathematical procedures with precision and fluency.*	**5. 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. **6. 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, and 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, students have learned to examine claims and make explicit use of definitions. **7. 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. **8. 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 $(x - 1)(x^3 + x2 + x + 1)$ 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.

Claims	Critical Areas	Targets	Standards
Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.	Developing understanding of multiplication and division and strategies for multiplication and division within 100	**Target A:** Represent and solve problems involving multiplication and division.	3.OA.1 3.OA.2 3.OA.3 3.OA.4
		Target B: Understand properties of multiplication and the relationship between multiplication and division.	3.OA.5 3.OA.6
		Target C: Multiply and divide within 100.	3.OA.7
		Target D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.	3.OA.8 3.OA.9
		Target E: Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT.1 3.NBT.2 3.NBT.3
	Developing understanding of fractions, especially unit fractions (fractions with numerator 1)	**Target F:** Develop understanding of fractions as numbers.	3.NF.1 3.NF.2 3.NF.2a,b 3.NF.3 3.NF.3a,b,c,d
	Developing understanding of the structure of rectangular arrays and of area	**Target I:** Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	3.MD.5 3.MD.5a,b 3.MD.6 3.MD.7 3.MD.7a,b,c,d 3.OA.5 3.G.2
		Target J: Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	3.MD.8
	Describing and analyzing two-dimensional shapes	**Target K:** Reason with shapes and their attributes.	3.G.1 3.G.2
	Supports claim	**Target G:** Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	3.MD.1 3.MD.2
		Target H: Represent and interpret data.	3.MD.3 3.MD.4

Claim	Standards for Mathematical Practice
Claim 2- *Students can* ***solve*** *a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.*	**1. 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. **5. 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. **7. 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 × 5 + 7 × 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*. **8. 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 $(x - 1)(x^3 + x2 + x + 1)$ 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.

Claims	Targets	Standards
Claim 2: Problem Solving Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem-solving strategies.	**Target A:** Apply mathematics to solve well-posed problems in pure mathematics and arising in everyday life, society, and the workplace.	3.OA.1 3.OA.2 3.OA.3 3.OA.4 3.OA.8 3.OA.9 3.NBT.1 3.NBT.2 3.NBT.3 3.MD.1 3.MD.2 3.MD.3 3.MD.4 3.MD.5 3.MD.5a,b 3.MD.6 3.MD.7 3.MD.7a,b,c,d 3.MD.8
	Target B: Select and use appropriate tools strategically.	
	Target C: Interpret results in the context of a situation.	
	Target D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas).	

Claim	Standards for Mathematical Practice
Claim 3- *Students can clearly and precisely **construct viable arguments** to support their own reasoning and to critique the reasoning of others.*	**3 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. **6. 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, and 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, students have learned to examine claims and make explicit use of definitions.

Claims	Targets	Standards
Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.	**Target A:** Test propositions or conjectures with specific examples.	3.OA.5 3.OA.6 3.NF.1 3.NF.2 3.NF.2a,b 3.NF.3 3.NF.3a,b,c,d 3.MD.1 3.MD.2 3.MD.7 3.MD.7a,b,c,d
	Target B: Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.	
	Target C: State logical assumptions being used.	
	Target D: Use the technique of breaking an argument into cases.	
	Target E: Distinguish correct logic or reasoning from that which is flawed and—if there is a flaw in the argument—explain what it is.	
	Target F: Base arguments on concrete references such as objects, drawings, diagrams, and actions.	

Claim	Standards for Mathematical Practice
Claim 4- *Students can* ***analyze*** *complex, real-world scenarios and can* ***construct*** *and* ***use*** *mathematical models to* ***interpret*** *and* ***solve*** *problems.*	**1. Make sense of problems and persevere in solving them.** 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. **4. 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.

Claims	Targets	Standards
Claim 4: Modeling and Data Analysis Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.	**Target A:** Apply mathematics to solve problems arising in everyday life, society, and the workplace.	3.OA.1 3.OA.2 3.OA.3 3.OA.4 3.OA.8 3.OA.9 3.MD.1 3.MD.2 3.MD.5 3.MD.5a,b 3.MD.6 3.MD.7 3.MD.7a,b,c,d 3.MD.8
	Target B: Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem.	
	Target C: State logical assumptions being used.	
	Target D: Interpret results in the context of a situation.	
	Target E: Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon.	
	Target F: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas).	
	Target G: Identify, analyze, and synthesize relevant external resources to pose or solve problems.	