PA Core Standards: Mathematics

Introduction

The 2020–21 school year presents a unique set of opportunities and challenges due to the disruption to instruction in spring 2020 as well as the uncertainty as the school year unfolds. Educators know that every school year there are students who require support in addressing unfinished learning from prior grades, a challenge that will be felt more prominently in the 2020–21 school year. It is vitally important that educators are supported to make deliberate instructional choices that allow all students to effectively engage with grade-level work.

The most effective and equitable way to support students in their learning is to ensure that the vast majority of time is spent engaging with grade-level content, remediating with precision and only as necessary. It is entirely possible to hold high expectations for all students while addressing unfinished learning in the context of grade-level work. Since time is a scarce commodity in classrooms — made more limited by anticipated closures and remote or hybrid learning models in the fall of 2020 — strategic instructional choices about which content to prioritize must be made.[1]

Assessing students at the start of the year will identify learning gaps and provide data to inform grade level instruction — as well as incorporating both remediation and acceleration along the way. Diagnostic Assessments determine student strengths, weaknesses, knowledge, and skills. Administering diagnostic assessments permits the instructor to intervene at the point where students begin to struggle or when they are performing below grade level expectations (running record, informal reading assessments, surveys, initial writing prompts, Classroom Diagnostic Tests [CDT]). Diagnostic assessments allow teachers to adjust the curriculum to meet the unique needs of all students. While some concepts have greater emphasis in a particular year, all standards deserve a defined level of instruction. Neglecting concepts may result in learning gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

This guidance document is designed to identify and define areas of high-level focus in Mathematics instruction supported by key PA Academic Standards. Note that while all standards deserve a defined level of instruction, neglecting key concepts may result in learning gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

Not all content in a given grade is emphasized equally in the standards. Some focus areas require greater emphasis then others based on the depth of the ideas, the time taken to master, and/or their importance to the future mathematics grade levels. More time in these areas is also necessary for students to meet the Standards for Mathematical Practice (MP).

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[1] Adapted from 2020–21 Priority Instructional Content in English Language Arts/literacy and Mathematics, Student Achievement Partners/Achieve the Core. May 2020

GRADE 6 FOCUS OF INSTRUCTION (2020-2021)

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Focus Areas of Instruction	PA Academic Standards
Numbers and Operations	**CC.2.1.6.D.1** *Understand ratio concepts and use ratio reasoning to solve problems.*
• **Ratios, Proportions & Percents:** Represent ratio relationships in various forms, Determine unit rates in context. Convert measurement units using equivalent ratios. Solve problems using ratio and rate reasoning. • **Number Systems:** Interpret and compute quotients of fraction. Apply and extend previous understandings of multiplication and division to divide fractions by fractions. • **Rational Numbers:** Compare and order rational numbers. Use the distributive property to express a sum of two numbers. Use positive and negative numbers to represent quantities in real world contexts. Plot integers and other rational numbers on a number line and on a coordinate graph, Interpret the opposite and absolute value of an integer as its distance from zero on a number line.	**CC.2.1.6.E.1** *Apply and extend previous understandings of multiplication and division to divide fractions by fractions.* **CC.2.1.6.E.4** *Apply and extend previous understandings of numbers to the system of rational numbers.* **CC.2.2.6.B.1** *Apply and extend previous understandings of arithmetic to algebraic expressions.* **CC.2.2.6.B.2** *Understand the process of solving a one-variable equation or inequality and apply it to real-world and mathematical problems.* **CC.2.2.6.B.3** *Represent and analyze quantitative relationships between dependent and independent variables.* **CC.2.3.6.A.1** *Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.* **CC.2.4.6.B.1** *Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.*
Algebraic Concepts	
• **Algebraic Expressions and Equations:** Write, identify and evaluate numerical expressions involving exponents. Write, read and evaluate algebraic expressions. Apply the properties of operations to generate equivalent expressions. Solve and interpret one variable equations or inequalities in real world and mathematical problems. Represent and analyze quantitative relationships between Independent and dependent variables.	**Standards for Mathematics Practices** **MP1:** *Make sense of problems and persevere in solving them.* *Allow students to check their thinking by asking themselves, "What is the most efficient way to solve the problem?", "Does this make sense?", and "Can I solve the problem in a different way?"*
Geometry	
• **Area, Surface Area and Volume:** Determine the area of triangles. quadrilaterals, irregular polygons and compound polygons. Find volumes of right rectangular prisms with fractional edge lengths.	**MP2:** *Reason abstractly and quantitatively.* *Allow mathematical discourse that supports active listening, promotes diverse perspectives and insights, and allows students to consider others' reasoning to advance their own mathematical understanding.*
Measurement, Data and Probability	
• **Data Distribution:** Display data in dot plots, histograms and box-and-whisker plots. Determine quantitative measures of center and variability.	**MP3:** *Construct viable arguments and critique the reasoning of others.* *Encourage students to construct mathematical arguments and engage in the reasoning of others, such as when they are working collaboratively to develop the formula or making an argument to generalize the relationship.*