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# 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).

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

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# GRADE 4 FOCUS OF INSTRUCTION (2020-2021)

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| Focus Areas of Instruction | PA Academic Standards |
|---|---|
| **Numbers and Operations**<br>• **Place Value Properties of Operations:** Demonstrate an understanding of multi-digit whole numbers. Compare and round multi-digit numbers. Perform multi-digit arithmetic.<br>• **Fractions & Decimals:** Demonstrate an understanding of fraction equivalence. Compare and order fractions. Solve problems involving fractions and mixed numbers, Use decimal notation for decimal fractions. Compare decimals and decimal fractions.<br><br>**Algebraic Concepts**<br>• **Represent and Solve Problems, Number Theory, Patterns:** Represent and solve problems verbally as equations. Use factors to represent numbers in various ways. Recognize that a whole number is a multiple of each of its factors. Generate and analyze patterns that follow a single rule.<br><br>**Geometry**<br>• **Geometric Shapes and Figures:** Draw and identify lines and angles. Classify shapes by properties of their lines and angles.<br><br>**Measurement, Data and Probability**<br>• **Measurement, Data Displays:** Solve problems involving measurements. Convert larger unit to smaller unit. Translate one type of data display to another. Represent and interpret data involving fractions.<br><br>. | **CC.2.1.4.B.1** *Apply place-value concepts to show an understanding of multidigit whole numbers.*<br><br>**CC.2.1.4.B.2** *Use place-value understanding and properties of operations to perform multi-digit arithmetic.*<br><br>**CC.2.1.4.C.1** *Extend the understanding of fractions to show equivalence and ordering.*<br><br>**CC.2.1.4.C.2** *Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.*<br><br>**CC.2.1.4.C.3** *Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., 19/100).*<br><br>**CC.2.2.4.A.1** *Represent and solve problems involving the four operations.*<br><br>**CC.2.2.4.A.2** *Develop and/or apply number theory concepts to find factors and multiples.*<br><br>**CC.2.2.4.A.4** *Generate and analyze patterns using one rule.*<br><br>**CC.2.3.4.A.1** *Draw lines and angles and identify these in two-dimensional figures.*<br><br>**CC.2.3.4.A.2** *Classify two dimensional figures by properties of their lines and angles.*<br><br>**CC.2.4.4.A.**1 *Solve problems involving measurement and conversions from a larger unit to a smaller unit.*<br><br>**CC.2.4.4.A.2** *Translate information from one type of data display to another.*<br><br>**CC.2.4.4.A.4** *Represent and interpret data involving fractions using information provided in a line plot.*<br><br>**Standards for Mathematics Practices**<br><br>**MP5:** ***Use appropriate tools strategically.***<br>*Utilize student knowledge and past mathematical experiences by providing access to a wide variety of math tools when working on grade-level math.*<br><br>**MP3:** ***Construct viable arguments and critique the reasoning of others.***<br>*Position students as mathematically competent by creating a safe space for students to share their developing reasoning*<br><br>**MP7:** ***Look for and make use of structure.***<br>*Establish clear learning goals that promote mathematical learning. For example, in work with subtraction of multi-digit numbers, begin with one regrouping step using evidence of student learning to determine next steps* |