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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 accelerating as needed. 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 7 FOCUS OF INSTRUCTION (2020-2021)

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Focus Areas of Instruction	PA Academic Standards
Numbers and Operations • **Ratios, Proportions and Percent:** Compute unit rates associated with ratios of fractions. Recognize and represent proportional relationships between quantities. Use proportional relationships to solve multistep ratio and percent problems. • **Rational Numbers:** Solve real-world and mathematical problems involving the four operations with rational numbers. **Algebraic Concepts** • **Algebraic Expressions and Equations:** Model and solve real world and mathematical problems using multiple representations such as algebraic, graphical and using tables. Solve multi-step equations or inequalities with one variable. Solve and interpret multi-step real life and mathematical problems posed with positive and negative rational numbers. **Geometry** • **Area, Surface Area, Volume, Angle Measure, Circumference:** Use properties of angle types and properties of angles formed when two parallel lines are cut by a transversal line to solve problems. Solve problems involving area and circumference of a circle(s). Solve mathematical problems involving area, volume and surface area of two- and three-dimensional objects. Describe the two-dimensional figures that result from slicing three-dimensional figures. **Measurement, Data and Probability** • **Data, Distributions and Random Sampling:** Draw inferences about two populations based on random sampling concepts. Determine and approximate relative frequencies and probabilities of events, Find the probability of a simple event, including the probability of a simple event not occurring. • **Probability:** Find probabilities of independent compound events. Predict the approximate relative frequency given the probability.	**CC.2.1.7.D.1** *Analyze proportional relationships and use them to model and solve real-world and mathematical problems.* **CC.2.1.7.E.1** *Apply and extend previous understandings of operations with fractions to operations with rational numbers.* **CC.2.2.7.B.3** *Model and solve real world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.* **CC.2.3.7.A.1** *Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.* **CC.2.3.7.A.2** *Visualize and represent geometric figures and describe the relationships between them.* **CC.2.4.7.B.1** *Draw inferences about populations based on random sampling concepts.* **CC.2.4.7.B.3** *Investigate chance processes and develop, use, and evaluate probability models.* **Standards for Mathematics Practices** **MP1**: *Make sense of problems and persevere in solving them.* *Communicate that students' thinking is valued to build trust and rapport by asking questions that elicit students' thinking, such as when students are analyzing proportional relationships.* **MP3**: *Construct viable arguments and critique the reasoning of others.* *Elevate students by valuing different contributions students make when they share representations and make connections between these representations (for example, tables, graphs, equations, and verbal descriptions of proportional relationships).* **MP4**: *Model with mathematics.* *Bring in students' knowledge by ensuring materials and problems have a connection with learners while also providing opportunities to learn about the broader world, such as when solving rich tasks involving geometric measurement that have a significant modeling component.*