

# Career-Technical Education Pathway Guidelines for Algebra 2/Mathematics 3 Replacement

State law ([ORC 3313.603 \(C\) \(3\)](#)) allows students who entered high school on or after July 1, 2015, and who are pursuing a Career-Technical education pathway to replace the Algebra 2/Mathematics 3 requirement with a career-based mathematics course<sup>1</sup>. All students are required to have access to a minimum of 10 Career-Technical education pathways.

## HOW DOES REPLACING THE ALGEBRA 2/MATHEMATICS 3 REQUIREMENT EFFECT GRADUATION?

Students replacing Algebra 2/Mathematics 3 with a career-based mathematics course also must fulfill:

- The curriculum requirements, including four total units of mathematics;
- The assessment requirements; and
- One of the diploma options to receive an Ohio diploma.

Further graduation information may be found [here](#).

## WHO IS ELIGIBLE?

The Algebra 2/Mathematics 3 replacement is available to all students in the graduating classes of 2019 and beyond.

To be eligible, a student must:

- Have entered high school for the first time on or after July 1, 2015; and
- Be enrolled in a Career-Technical education pathway.

Please note: Students enrolled in a Career-Technical education pathway related to science, technology, engineering or math are strongly encouraged to take Algebra 2/Mathematics 3.

## WHAT QUALIFIES AS A CAREER-TECHNICAL EDUCATIONAL PATHWAY?

A Career-Technical education pathway is defined as a coherent sequence of courses that lead to the attainment of the technical knowledge and skills identified by business and industry as necessary for high-skill, high-demand positions. Each pathway contains a minimum of four courses. Students are considered to be participating in the pathway once they begin the second half of their Career-Technical education coursework.

Examples are given in the table.

Coursework Example	Career-Technical Pathway?	Reasoning
Two semesters of Family and Consumer Sciences coursework	No	Family and consumer sciences is not considered a Career-Technical education pathway.
The completion of a minimum of two courses in a single specialized Workforce Development program.	Yes	This is a sequential Career-Technical program.
One year in a Career-Based Intervention Program	No	Career-based intervention is not considered a Career-Technical education pathway. However, Career-Based Intervention Program students are encouraged to transition to CTE pathways by 11 <sup>th</sup> grade.
One semester of a business and management foundation course that is less than 120 hours	No	The two-course minimum has not been met.

## WHAT IS A CAREER-BASED MATHEMATICS COURSE?

The Career-Technical education pathway student may replace the Algebra 2/Mathematics 3 curriculum requirement with a course that addresses high school-level mathematics standards relevant to a specific career pathway. This course should focus on the appropriate mathematical practices, fluencies and/or content related to the career pathway.

## MATHEMATICAL PRACTICES

The Standards for Mathematical Practice are essential in the extension of mathematical thinking. Students develop these habits of mind through orchestrated, intentional experiences of reading, writing, talking, listening, and reasoning that connect mathematics to daily life and career situations. While all of the Standards for Mathematical Practice are important in all courses, the following are predominant in a career pathway course:

- Construct viable arguments and critique the reasoning of others (MP.3);
- Modeling with mathematics (MP.4);
- Attend to precision (MP.6); and
- Look for and make use of structure (MP.7).

## FLUENCY

The following fluencies should be the foundation for extension and application to career and real-world situations. Not all fluencies must be present in all career-based courses.

<b>Algebra/ Functions</b>	Students should use their understanding of the structure of an algebraic expression or equation and its properties to solve problems in a range of situations related to their career pathways. Students should understand the mathematics involved and develop fluency in solving career-based problems.
<b>Geometry</b>	Geometric visualization is a critical tool in analyzing and solving problems. Students should experience the power found in using geometric understanding as a problem-solving tool. Students should create geometric models and use physical and computational construction tools to solve career-related problems.
<b>Modeling</b>	Seeing mathematics as a tool to model real-world situations should be an underlying perspective in everything students do, including writing algebraic expressions, creating functions, creating geometric models, and understanding statistical relationships. This will help students appreciate the importance of mathematics in their career fields and in daily life.
<b>Statistics</b>	Students should be able to create a visual representation of a data set that is useful in understanding or solving a problem.
<b>Number and Quantity</b>	In particular, students should recognize that much of mathematics is concerned with understanding quantities and their relationships. They should pick appropriate units for quantities being modeled, use them as a guide to understanding a situation, and be attentive to the accuracy reported in a solution.

## CONTENT

These career-based mathematics courses should focus on a small number of topics taught in depth, with a balance among skills, understanding, reasoning, and problem-solving. The purpose in these courses is to develop the ability to tie together Number and Quantity, Algebra, Functions, Geometry and Statistics around a common theme, career or reasoning. Courses may be built from any of the content standards that support the mathematical connections within a specific career pathway. The curriculum should engage students in using mathematical models to solve real-world problems through effective and accurate use of mathematical notation, vocabulary and reasoning. This is an opportunity to provide courses that directly connect the learning of school mathematics to the world students will embrace as graduates.