Quantway

Quantway Course Solutions Catalog

CARNEGIE MATH PATHWAYS

WestEd

TABLE OF CONTENTS

Overview of Quantway

Quantway course solutions meet a range of high school, developmental, and college-level math learning goals. All courses can be taught in person, online, or in a hybrid context. With innovative, contextualized curricula and a unique pedagogy that blends collaborative learning and social-emotional support, each Quantway course solution is thoughtfully designed to help students develop a firm conceptual mathematical understanding along with the mindset to confidently apply quantitative reasoning to their personal and professional lives.

Quantway Course Solutions at a Glance	
Solution	Description & Implementation
Quantway Core	Helps students build critical thinking and introductory quantitative skills in a one-term course, with lessons grounded in quantitative literacy, numeracy skills, proportional reasoning, algebraic reasoning, mathematical modeling, and statistical thinking. *Typical college implementation: 3 or 4 credit hours in one term, replaces entire developmental math sequence.* *Example high school implementation: One academic year*
Quantway College	Supports students to develop deep quantitative reasoning and critical thinking skills and to complete their transfer-level math requirement in a one-term, college-level course option. *Typical college implementation: 3 or 4 credit hours in one term.*
Quantway College with Corequisite	A college course option with targeted, just-in-time supports to help students gain the necessary skills and confidence to achieve success in college-level math in one term. *Typical college implementation: 3 credit hours in one term with materials to support 1-3 corequisite support contact hours.*

Overview of Quantway, Continued

Carnegie Math Pathways offers two sets of supplemental resources that prepare students for success in and beyond Quantway. These include Fundamentals lessons, which are focused on arithmetic, beginning algebra, and basic numeracy skills designed to bolster students' proficiency in the prerequisite mathematical skills and understanding needed for success in Quantway Core. Additionally, Carnegie Math Pathways Bridge Materials are supplemental lessons that develop the skills and knowledge to successfully bridge students' path from Quantway to college algebra, business math, or pre-calculus courses.

Supplemental Materials at a Glance	
Resource	Implementation
Fundamentals	Fundamentals is a series of lessons that can be used as a 1-term prerequisite or corequisite to Quantway, or as specific lessons printed on-demand, as needed, to support Quantway students.
Bridge Materials	Typically implemented as a 1 credit hour add-on to a college-level course, or as lessons printed on-demand during the college-level course as needed.

Quantway Course Solutions

Quantway Core

Goal
Replaces Developmental Sequence or Meets Program Requirements

The goal of the stand-alone Quantway Core solution is to provide a one-term quantitative reasoning course that fulfills students' requirements by integrating algebraic and quantitative skills and reasoning.

Learning Outcomes
The learning outcomes are grounded in quantitative literacy, numeracy skills, proportional reasoning, algebraic reasoning, mathematical modeling, and statistical thinking. These skills and areas of reasoning are promoted, integrated, revisited, and explicitly connected throughout four modules, with a total of 35 lessons.

Implementation
This offering is designed as a 3-credit course but can be taught as a 4-credit course.

Quantway College

Goal
College-Level Credit

The goal of the Quantway College (stand-alone) offering is to provide a one-term, college-level quantitative reasoning course.

Learning Outcomes
The course covers all major topics typically contained in a college-level quantitative reasoning course. It consists of three modules (for a total of 26 lessons):

- Numeracy, which includes topics such as percentages, ratios, estimation, magnitude, interest and loans, rates, probability, proportional reasoning, relative growth, and conditional probability
- Modeling, which includes topics such as variables, equations, graphs, tables, linear models, piecewise models, exponential models, log operations, and multivariate models.
- Statistics, which includes topics such as data visualization and interpretation, statistical analysis process, experimental designs and conclusions, parameters, interval estimates, distributions, statistical inference including Z-scores and P-values.

Implementation
This offering is designed as a 3-credit course but can be taught as a 4-credit course.

Quantway Course Solutions, Continued

Quantway College with Corequisite

Goal
College-Level Credit and Supports

The goal of Quantway College with Corequisite is to provide a one-term, college-level quantitative reasoning course for all students, with corequisite lessons to provide effective scaffolding for students who need additional support.

Learning Outcomes
The course covers all major topics typically contained in a college-level quantitative reasoning course. It consists of three modules:

- Numeracy, which includes topics such as percentages, ratios, estimation, magnitude, interest and loans, rates, probability, proportional reasoning, relative growth, and conditional probability.
- Modeling, which includes topics such as variables, equations, graphs, tables, linear models, piecewise models, exponential models, log operations, and multivariate models.
- Statistics, which includes topics such as data visualization and interpretation, statistical analysis process, experimental designs and conclusions, parameters, interval estimates, distributions, statistical inference including Z-scores and P-values.

The corequisite materials address learning outcomes and skills typically seen in a developmental math sequence, such as algebraic reasoning and thinking.

Implementation
The college-level component is designed as a 3 or 4 transfer-level credit course. The corequisite materials are designed to support a 1, 2, or 3 contact hour corequisite course depending on what is appropriate for student and program needs.

Supplemental Materials

Fundamentals

Goal
Preparation for Quantway

The goal of Fundamentals is to bolster students' proficiency in the prerequisite mathematical skills and understanding, such as basic arithmetic, needed for success in Quantway Core.

Learning Outcomes
The learning outcomes cover fundamental mathematics and pre-algebra, including all major topics from arithmetic, algebra, and numeracy.

Implementation
This offering is designed to be flexible. For example, it could be administered as:

- a stand-alone, prerequisite course to Quantway Core, with 1-3 contact hours,
- a corequisite taught in conjunction with Quantway Core, with 1-3 contact hours, or
- materials can be printed on-demand to be adapted for any Quantway course.

Bridge Materials

Goal
Transition to College Algebra

The Bridge Materials are a set of lessons that colleges can use to provide Quantway or Statway students a transition to college algebra, business math, or pre-calculus courses. These materials have been collaboratively designed by network faculty using the instructional design principles of the Pathways curricula.

Learning Outcomes
We have created 8 lessons around the following topics:

- Linear equations and inequalities, including systems
- Functions
- Exponent rules
- Polynomials expressions, including quadratic equations and factoring
- Rational expressions

Implementation
These lessons are designed to be implemented in any way that they are needed to support Quantway students. For example, they can be administered at the end of a Quantway term or integrated within Quantway.

CARNEGIE MATH PATHWAYS

WestEd

This program of work is supported by the William and Flora Hewlett Foundation, the Bill & Melinda Gates Foundation, the Lumina Foundation, the Kresge Foundation, the Carnegie Corporation of New York, Ascendium Education Group, the ECMC Foundation, and the National Science Foundation's grant DUE-1322844 and grant DUE-1820830 in cooperation with the Carnegie Foundation for the Advancement of Teaching and WestEd.

www.carnegiemathpathways.org