



*The Pathways Bridge Materials are designed to help Quantway or Statway students pursue even broader educational opportunities, including those in STEM and Business.*

## What are the Bridge Materials?



The Pathways Bridge Materials are designed to help Quantway or Statway students pursue even broader educational opportunities, including those in STEM and Business.



These materials have been collaboratively designed to bridge the material learned in Statway and/or Quantway to college algebra, business math, and pre-calculus courses.



The collaborative development teams consist of faculty and administrators from six colleges:



## Topics

The materials includes five modules:

1. Linear equations and inequalities, including systems
2. Functions
3. Exponent rules
4. Polynomials expressions including quadratic equations
5. Rational expressions

## Course Development Timeline

Learning objectives, content, and design principles were determined during early Fall 2014. During the 2014-2015 academic year faculty wrote, peer-reviewed, and piloted individual lessons. The design team colleges have piloted the materials during the 2015-2016 school year. The materials were revised in summer 2016 based on the pilots, and updated versions are currently available to network colleges as of Fall 2016.

### Fall 2014

Learning objectives, content, and design principles were determined

### 2014-2015

Faculty wrote, peer-reviewed, and piloted individual lessons

### 2015-2016

Design team colleges have piloted the materials

### Fall 2016

Materials were revised and updated versions are currently available to network colleges

## Modules

The Bridge Materials modules contain the following topics:

- **Quadratic** Equations: Completing the square, squaring binomials, the zero property, complex numbers
  - Properties of **Polynomial** equations including factoring and simplification
  - **Rational** Expressions: Properties of rational functions, simplifying expressions, solving rational equations that reduce to linear equations
  - **Linear** Equations: Slope, equations of lines, intercepts, and inequalities, Including interval notation and absolute values
  - **Functions**: Function notation, evaluating functions, (concepts of) domain and range
  - Rational **exponents** and exponent rules (including negative exponents)
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## Lesson Components

- **Introduction Page** includes the target audience, prerequisite skills, and learning outcomes for the lesson mapped to the common core standards.
  - **Student Worksheet** includes **pre-work** for students to do to prepare for the lesson, detailed instructions for students of what they should be doing in class, and exercises students can do **outside of class** to reinforce the material. This will look like worksheet that students can read and complete individually or in small groups and should stand alone as something that instructors can copy and handout to students. It will also include links to online exercises and videos that students can do to get additional instruction and practice with the key ideas.
  - **Instructor Notes** includes material and technology required for the lesson, any specific pedagogical model(s) recommending for the lesson, lesson timeline, and possible extensions.
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## Design Principles

The Bridge Materials are meant to be the basic concepts that move students to the next level. The lessons are not meant to recreate an intermediate algebra course. Each lesson follows these general design principles:

- Each lesson will be designed to help students make progress toward clearly stated learning goals.
- The material will take a balanced approach between concepts and procedures.
- Students will be provided instruction on essential and/or conventional algebraic algorithms.
- Students will be given sufficient opportunities for practice.
- Lessons will provide learning opportunities for instructors as well as students.
- Instruction in mathematics will make use of authentic contexts and real data.
- Students will have access to appropriate technology equivalent to technology used in college algebra.
- Lessons will include exercises for students to do to prepare for the lesson content (e.g. PNL) and exercises for students to practice content.
- Lessons are not intended to recreate intermediate algebra. Each topic has about 2 hours of class time.
- All curricular materials (in-class, out-of-class, formative and summative assessments) will be cohesive, articulated and consistent in design.