AQR is a course in mathematics, statistics, and modeling for students who have completed Algebra II or Integrated Math III. This fourth-year course is aligned with the Common Core and meets the needs of the average student.

Students should enroll in a mathematics course every year, continuing beyond the equivalent of a second year of algebra and a year of geometry (NCTM, 2006). Advanced Quantitative Reasoning (AQR) is a fourth year of high school mathematics that prepares students for adult life and further study. Over 35% of U.S. college mathematics enrollments are in remedial courses: 1.4 million out of 3.9 million in fall 2010. AQR intends to reduce such remediation by increasing readiness for collegiate mathematics.

**AQR course goals.** The aims of the AQR course are

- To reinforce, extend, and solidify the student's working knowledge of middle grades mathematics through Algebra I, Geometry, and Algebra II
- To develop the student’s quantitative literacy for effective citizenship, for everyday decision making, and for workplace readiness
- To develop the student’s ability to investigate and solve substantial problems and to communicate with precision
- To prepare the student for postsecondary course work in STEM and non-STEM fields—and
- For students who complete the course in the 11th grade—to prepare them to study AP Statistics, AP Computer Sciences, or Precalculus in their senior year of high school.

**AQR course content.** The Advanced Quantitative Reasoning course is aligned with the Common Core State Standards. AQR is a progression of four units of material that build on one another, that develop mathematical practices, and that use and strengthen students' prior mathematical knowledge.

1. **Number and Quantity.** Students extend their proficiency with number, measurement, data, percentages, and proportional reasoning.
2. **Statistics and Probability.** Students develop understanding of probability, learn the statistical problem-solving process, design and carry out small statistical projects, and become critical consumers of statistical information.
3. **Modeling with Algebra and Functions.** Students investigate recursive relationships. They develop mathematical models and use them to make predictions.
4. **Modeling with Geometry.** Students use spherical, fractal, and three-dimensional geometry to model physical objects and genuine situations (e.g., weather maps).

Advanced Quantitative Reasoning balances depth and breadth. College students often change majors, and adults often change careers. High school juniors and seniors, therefore, need a wide-ranging mathematics course to prepare them for a variety of potential majors and careers; yet they need a course with rigor and coherence. Balancing depth and breadth within a demanding, coherent curriculum is the aim of Advanced Quantitative Reasoning.

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