

Math Strategies for Grades 7-12

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Instructional Strategies

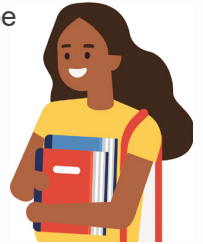
Connecting Algebra to the Real World

Integrating math into career and technical education (CTE) programs enhances the mathematical concepts embedded in career and technical education content. Math T-Charts have been developed to “bridge the gap” between CTE and math and can be used by both math and CTE teachers. T-Charts have three components: a T-Chart, a script, and practice problems. Each T-Chart demonstrates how a CTE teacher teaches the concept covered by the PA Math Core Standard and how a math teacher teaches the same concept. Samples tasks can be found at [Math T-Charts](#).

Assessment Strategies

Venn Diagrams

A [Venn Diagram](#) is a graphic organizer that allows a concept to be more visible. Although Venn diagrams are thought of as a thinking tool, they can also be used for assessment. Using overlapping circles, they compare and contrast relationships of things and can be used to generate discussion and provide teachers with information about students’ understanding of content. When using Venn diagrams as an assessment strategy, students must have already demonstrated that they know how a Venn diagram works to ensure that the assessment is valid.



Standards of Mathematical Practices

Use Appropriate Tools Strategically

Consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Be familiar with tools appropriate for your specific grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained by their use, and the tools’ limitations. Make mathematical models, knowing that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Analyze graphs of functions and solutions generated using a graphing calculator.

[Standards for Mathematical Practice Grade Level Emphasis*](#)

Classroom / Time Management Strategies

Creating a Math Community

A math community is a place where meaningful mathematical discussions occur and students support the mathematical learning of all participants. The teacher is not the holder of all knowledge; instead, the teacher guides and extends student thinking as the class listens and learns to accept other students’ ideas. (KDE 2022) Some key components of an effective math community include attending to students’ preconceptions; beginning instruction with what students think and know; organizing mathematical knowledge around core concepts; focusing on what is to be taught and why it is taught; providing daily opportunities to make students’ thinking and learning visible as a guide for instruction; and encouraging a culture of questioning, respect, and risk-taking. Reference: [Kentucky Department of Education](#)

The resources listed are provided as options and examples.

Pennsylvania does not require, recommend, or endorse any specific program or product. All curricular and instructional decisions are made at the local level.