

Mathematics Essentials 12

General Curriculum Outcomes

Students will be expected to

1. demonstrate a basic understanding of the mathematics required to complete measurement problems found in various trades
2. demonstrate a basic understanding of the mathematics required for three different career choices such as carpentry, welding, forestry, electrical, plumbing, power engineering, pipe fitting, steam fitting, interior decorating, metal working, machine technology, marine technology, auto mechanics, electronic technology, refrigeration, and masonry through a guided mini-project
3. demonstrate an understanding of ratio, rate, and proportion as they apply to specific career choices such as carpentry, welding, forestry, electrical, plumbing, power engineering, pipe fitting, steam fitting, interior decorating, metal working, machine technology, marine technology, auto mechanics, electronic technology, refrigeration, and masonry
4. demonstrate a strong understanding of the mathematics required for one career choice such as carpentry, welding, forestry, electrical, plumbing, power engineering, pipe fitting, steam fitting, interior decorating, metal working, machine technology, marine technology, auto mechanics, electronic technology, refrigeration, and masonry through a major project

Specific Curriculum Outcomes

Students will be expected to

Module 1: Measurement

- 1.1 demonstrate an understanding of the meaning and uses of accuracy and precision
- 1.2 use a measuring tape to measure tactile items in both imperial and SI units
- 1.3 identify the difference between length, area, and volume
- 1.4 demonstrate an understanding of the meaning and uses of significant figures
- 1.5 demonstrate an understanding of and be able to solve problems using dimensional analysis
- 1.6 identify, use, and convert among and between SI units and imperial units to measure and solve measurement problems
- 1.7 estimate distances by using a personal benchmark such as walking pace
- 1.8 demonstrate an understanding of and be able to solve problems using the Pythagorean Theorem

Module 2: Mathematics in the Workplace Investigation

- 2.1 investigate a range of career opportunities to determine the best possible fit for their interests within the trades
- 2.2 demonstrate to others what type of mathematical knowledge is required to be successful at various career choices
- 2.3 demonstrate entry-level competence in the mathematics associated with the specific career choice a student has made
- 2.4 sketch and construct a model that will enable a student to show others some mathematics involved in a career interest

Module 3: Ratio, Rate, and Proportion

- 3.1 calculate the dimensions of actual objects using blueprints with various scales
- 3.2 sketch and build representations of three-dimensional objects using a variety of materials and information about the objects
- 3.3 illustrate, explain, and express ratios, fractions, decimals, and percentages in alternative forms
- 3.4 find and calculate rates in practical applications such as pulse rate
- 3.5 estimate and calculate deductions taken from a pay stub as percent of gross earnings
- 3.6 sketch enlargements and reductions of objects using various scales
- 3.7 use the slope formula to solve trigonometric problems commonly found in industry

Module 4: Major Project: Math Preparation for the Workplace

- 4.1 demonstrate to others what type of mathematical knowledge is required to be successful at their career choice
- 4.2 demonstrate competence in the mathematics associated with the specific career choice a student has made
- 4.3 prepare a detailed blueprint for, and construct a model that will enable a student to show others some mathematics involved in a specific career interest
- 4.4 visit a post-secondary institution that teaches the trade of interest for each student
- 4.5 visit a job-site situation that will provide an example of the career that each student has chosen to pursue