

DESE Model Curriculum

GRADE LEVEL/COURSE TITLE: Carpentry, Introductory Craft Skills –
Module 00102-09 Introduction to Construction Math

Course Code:

COURSE INTRODUCTION:

17003 Carpentry

Carpentry courses provide information related to the building of wooden structures, enabling students to gain an understanding of wood grades and construction methods and to learn skills such as laying sills and joists; erecting sills and rafters; applying sheathing, siding, and shingles; setting door jambs; and hanging doors. Carpentry courses may teach skills for rough construction, finish work, or both. Students learn to read blueprints, draft, use tools and machines properly and safely, erect buildings from construction lumber, perform finish work inside of buildings, and do limited cabinet work. Carpentry courses may also include career exploration, good work habits, and employability skills.

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UNIT (#) TITLE: Carpentry, Introductory Craft Skills (00102-09) – Introduction to Construction Math This module introduces mathematical operations commonly used in construction and explains how the metric system and geometry are used in the trade. Trainees will learn how to add, subtract, multiple, and divide whole numbers, fractions, and decimals as well as how to convert decimals, fractions, and percentages.]			SUGGESTED UNIT TIMELINE: CLASS PERIOD (min.):			
ESSENTIAL QUESTIONS: 1. How is math used within construction situations? 2. When is it appropriate to use the English standard and metric systems of measurement?						
ESSENTIAL MEASURABLE LEARNING OBJECTIVES	CCSS LEARNING GOALS (Anchor Standards/Clusters)	CROSSWALK TO STANDARDS				
		GLEs/CLEs	PS	CCSS	OTHER	DOK
1. Add, subtract, multiply, and divide whole numbers, with and without a calculator.				N-Q 1, N-Q 2, N-Q 3	00102-09	Level 1
2. Use a standard ruler, a metric ruler, and a measuring tape to measure.				N-RN 3, N-Q 1, N-Q 2, N-Q 3, F-IF 4, F-BF 1, F-BF 2, F-LE 1, F-LE 5	00102-09	Level 1
3. Add, subtract, multiply, and divide fractions.				N-RN 3	00102-09	Level 1
4. Add, subtract, multiply, and divide decimals, with and without a calculator.				N-RN 3, N-Q 1, N-Q 2, N-Q 3	00102-09	Level 1
5. Convert decimals to percentages and percentages to decimals.				N-RN 3, N-Q 1, N-Q 2, N-Q 3, F-IF 4, F-BF 1, F-BF 2, F-LE 1	00102-09	Level 1
6. Convert fractions to decimals and decimals to fractions.				N-RN 3, N-Q 1, N-Q 2, N-Q 3, F-IF 4, F-BF 1, F-BF 2, F-LE 1	00102-09	Level 1
7. Explain what the metric system is and how it is important in the construction trade.				N-RN 3, N-Q 1, N-Q 2, N-Q 3, F-IF 4, F-BF 1, F-BF 2, F-LE 1	00102-09	Level 3

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8. Recognize and use metric units of length, weight, volume, and temperature.				N-RN 3, N-Q 1, N-Q 2, N-Q 3, F-IF 4, F-BF 1, F-BF 2, F-LE 1	00102-09	Level 1, Level 2
9. Recognize some of the basic shapes used in the construction industry, and apply basic geometry to measure them.				G-CO 5, G-SRT 2, G-SRT 3, G-SRT 5, G-SRT 8, G-GMD 1, G-GMD 3, G-GMD 4, G-MG 1	00102-09	Level 1, Level 2
ASSESSMENT DESCRIPTIONS*: (Write a brief overview here. Identify Formative/Summative. Actual assessments will be accessed by a link to PDF file or Word doc.)						
*Attach Unit Summative Assessment, including Scoring Guides/Scoring Keys/Alignment Codes and DOK Levels for all items. Label each assessment according to the unit descriptions above (i.e., Grade Level/Course Title/Course Code, Unit #).						
Obj. # 1-9	INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods) <div><input checked="" type="checkbox"/> Direct</div> <div><input type="checkbox"/> Indirect</div> <div><input type="checkbox"/> Experiential</div> <div><input type="checkbox"/> Independent Study</div> <div><input type="checkbox"/> Interactive Instruction</div>					
Obj. # 1-9	INSTRUCTIONAL ACTIVITIES: (What Students Do) <div>1.</div> <div>2.</div> <div>3.</div>					
UNIT RESOURCES: (include Internet addresses for linking) (MCCE Resource) TE Video 80 Discovering Math: Concepts in Geometry Discover School						

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Course Code:

SILVER SPRING, MD, DISCOVERY EDUCATION, 2005.

VIDEO This program shows the role that math plays in the design, technology, and construction of buildings, from ancient Greek architecture to modern skyscrapers. Grades 9-12. 56 minutes.

(MCCE Resource) AE 02.0102 H773

Practical Problems in Mathematics for Carpenters, 8th Edition

Mark Huth and Harry Huth

CLIFTON PARK, NY, DELMAR, 2006.

BOOK Text presents basic mathematical problems relevant to the construction trade, accompanied by illustrations that together give readers the opportunity to apply and practice math principles common to carpentry.

(MCCE Resource) E 10.0401 R553

Problem-Based Learning for Math & Science: Integrating Inquiry and the Internet, Second Edition

Diane L. Ronis

THOUSAND OAKS, CA, CORWIN PRESS, 2008.

BOOK Resource for educators who want to expand their teaching repertoire and shift instruction from a teacher-centered to a learner-centered perspective. The author demonstrates how the problem-based learning (PBL) method gives students the opportunity to actively explore and resolve authentic problem simulations and student-identified problems in the community while strengthening their problem-solving skills. Provides: Problem-based learning activities relating to math and science in each chapter; Projects that correlate to national science, mathematics, and technology standards.

(MCCE Resource) T&I DVD ROM 10.3

Building Trades II Construction Estimating: Industry Standards

Shopware

LAWRENCEVILLE, NJ, FILMS MEDIA, 2004.

DVD ROM In this program, students will learn a number of industry-standard techniques used to calculate the amounts of building materials for many common construction projects. 19 minutes.

(MCCE Resource) TE DVD ROM 4

Measurement: The Long and the Short of It

Shopware

LAWRENCEVILLE, NJ, SHOPWARE, 2007.

DVD ROM

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Emphasizing hands-on practice, this program is an excellent tool for introducing the basics of linear measurement: its history, terminology, systems, and practical applications. Using both customary and metric rulers, Measurement: The Long and the Short of It will guide your students through the process of taking measurements, performing related calculations using whole numbers and fractions, and arriving at answers they can feel confident with. Middle school, high school, and vocational/technical school. 16-minutes

(MCCE Resource) AG DVD ROM 100

Basic Methods of Measuring and Cutting Shopware

HAMILTON, NJ, FILMS MEDIA GROUP, 2004.

DVD ROM

This program reviews the English and metric measurement systems, and demonstrates how to measure and mark lumber and then cut with handsaws and portable power saws. Includes background on the careful and appropriate use of hand and power tools. 13 minutes.