

INSTRUCTOR GUIDE

Shop Math

September 2026



Course Outline

- Module 1: Basic Operations
- Module 2: Fractions
- Module 3: Decimals
- Module 4: Measurements



U.S. Department of Transportation
Federal Transit Administration

A program of the Federal Transit Administration administered by the International Transportation Learning Center

Course: Shop Math

Version Date: September 2026

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Transit Workforce Center

8403 Colesville Road, Suite 825

Silver Spring, MD 20910

Tel: 855-888-NTWC (6892)

Contact us via email at twc@transportcenter.org

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Course Description

This section outlines the course duration, provides an overview of the classroom instruction format, and details the module structure to ensure a clear understanding of the training layout.

Foundational Skills Course: Shop Math

Shop Math is a series of modular courses designed to provide participants with an introduction to and practical experience with basic math operations, fractions, decimals, and measurements. The overall course is approximately **13.25 hours** in length and includes hands-on, participant-led activities to support engagement with the material.

Module 1 – Basic Operations

This module introduces the basic operations of addition, subtraction, multiplication, and division and how to identify and apply the appropriate operation to solve math problems. It also introduces the rules for order of operations and how to follow the correct sequence when solving equations with multiple operations.

Objectives:

- Demonstrate the ability to solve mathematics problems involving whole numbers.
 - Choose the correct operation based on a given problem.
 - Use the order of operations to solve problems accurately.

Module 2 – Fractions

This module introduces the basic skills needed to add, subtract, multiply, and divide fractions. Learners will also practice combining operations and applying the correct order of operations to solve problems involving fractions.

Objectives:

- Demonstrate the ability to solve mathematics problems involving fractions.
 - Solve multiplication and division problems involving fractions.
 - Solve addition and subtraction problems involving fractions.
 - Use the order of operations to solve problems involving fractions accurately.

Module 3 – Decimals

This module introduces learners to the decimal skills commonly used in maintenance work.

Learners will practice converting between decimals and fractions, performing basic operations with decimals, and applying the order of operations to solve real-world problems.

Objectives:

- Demonstrate the ability to solve mathematics problems involving decimals.
 - Convert between decimals and fractions to represent values in different forms.
 - Solve addition and subtraction problems involving decimals.
 - Solve multiplication and division problems involving decimals.
 - Apply order of operations to solve multi-step problems involving decimals.

Module 4 – Measurements

This module introduces learners to the measurement skills used in maintenance work. Learners will practice using appropriate tools, units, and formulas to measure and calculate length, area, circular measurements, and volume while solving real-world problems.

Objectives:

- Demonstrate the ability to solve mathematics problems involving measurement.
 - Measure and calculate length using appropriate units and tools.
 - Calculate the area of surfaces using appropriate formulas and units.
 - Solve mathematics problems involving circular objects by calculating diameter, circumference, and area.
 - Calculate volume using appropriate formulas and units.

Assessments

This course provides a **Pre-Assessment** to be given *before* instruction and a **Post-Assessment** to be given *after* instruction. These assessments align with the learning objectives and can be used to measure learning gains and instructional effectiveness.

Course Preparation

This section outlines the steps instructors should take to prepare for the course, such as gathering required materials and checking that all audio-visual equipment is set up and functioning.

Checklist of Instruction

✓	Confirm the training dates, location, and number of participants.
	Gain access to the courseware through the Transit Workforce Center website. Make sure you can access and download the materials in advance.
	Follow your agency's requirements for class sign-in. If required, print sign-in sheet for each day of class.
	For each module, read and study the Instructor Facilitation Toolkit, PowerPoint presentations, Participant Resource Guide, and any State or local documentation pertaining to your agency's location.
	Test all equipment placed in the training room prior to the start time on the first day of the course.

Supplies, Audio-Visual Equipment, Internet Access

The following is important for the adequate delivery of this course:

✓	LCD projector compatible with a notebook computer and cables for proper connection.
	Computer with software to run Microsoft PowerPoint.
	Projection screen (at least 6' x 6').
	Internet access
	Room audio
	<i>Optional</i> – Wireless remote to advance PowerPoint
	Office supplies such as pencils, note pads, markers, highlighters, flip chart with markers, dry-erase board, etc.

Course Materials (Instructor and Participant)

All materials are available on the Transit Workforce Center website. Check back regularly for updated materials and additional resources.

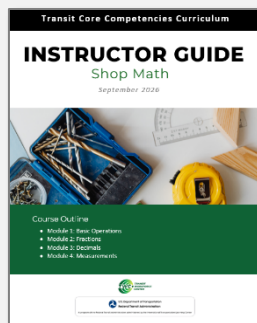
Best Practices for Delivering Training

This section provides strategies for effective training delivery to maintain a clear and organized flow of instruction while fostering an inclusive and supportive learning environment.

Before Instruction

1. Review the **Instructor Guide** (this document) and the **Instructor Facilitation Tool Kit** for each module.

The **Instructor Guide** provides an overview of the full course along with course preparation and best practices for facilitation.

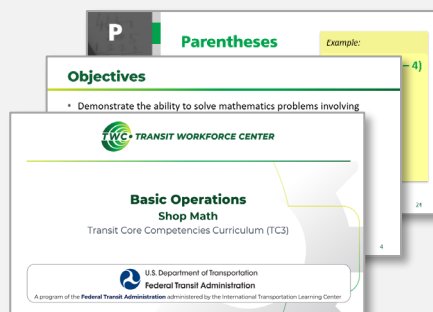


An **Instructor Facilitation Tool Kit** is included with each module and provides module specific information such as materials, lesson progression, and answer keys.

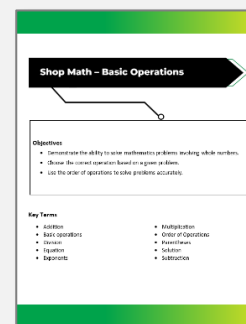


2. Review the **PowerPoint** and tailor the content to your specific agency and training needs.
3. Make sure you have a printed copy of the **Participant Guide Resource** for each learner. *All activity handouts are embedded in the Participant Resource Guide.*

The **PowerPoint** provides content and visuals along with instructor notes to guide facilitation. Familiarize yourself with the animations and transitions within the PowerPoint.



The **Participant Guide Resource** provides copies of the PPT slides, handouts, and space for learners to take notes. Each learner should have their own copy of the Participant Guide Resource.



During Instruction

1. Arrive at least an hour early on class day. Give yourself plenty of time to organize the training *before* the participants arrive.
2. Circulate an attendance sign-in sheet each day and make sure that all participants sign into the class to record their attendance.
3. Review the **learning objectives** at the beginning and end of each module to help learners understand what they are expected to learn and why it matters. It also sets clear expectations and helps learners focus their attention on the most important skills or knowledge in the lesson. The learning objectives are embedded in the PowerPoints.
4. Be available for questions during breaks, lab or hands-on learning activities, and after class.
5. Be mindful of time as you facilitate instruction. Use the “Pacing Guide” slide at the beginning of each PowerPoint to understand overall time requirements. Instructor notes included under each slide also suggest teaching times to help you stay on track. Remember that these are suggested times. It’s important to be responsive to your learners and gauge when they are ready to move on or if they need more time.
6. Circulate among groups during class and lab activities to answer questions, offer guidance, and ensure participants stay on track. Provide constructive feedback during activities and participant presentations.
7. Check for understanding throughout the lesson by asking targeted recall and clarification questions aligned with the learning objectives. Use participant responses to gauge comprehension and adjust instruction or pacing as needed.

After Instruction

8. Reflect after each lesson and take a few moments to note what went well and what could be improved for next time. Use these reflections to refine your facilitation approach and make adjustments for future sessions.

Teaching Methods

A variety of teaching methods will be used throughout this course to support different learning styles and instructional needs. Each method is intentionally selected to help learners understand key concepts, practice skills, and stay engaged. Instructors are encouraged to use these methods flexibly and adjust their approach based on learner needs and course pacing.

Teaching Method	Definition	Best Practices
Lecture	A trainer-led method used to present information, concepts, or procedures efficiently to a group of learners.	Keep lectures short and focused to maintain attention. Use visuals like those provided in the PPT or examples to reinforce key points. Pause periodically to check understanding or invite questions.
Hands-On Learning	An active learning method where learners practice skills or tasks through real-world or simulated activities.	Clearly explain the task before learners begin. Provide demonstrations or models when possible. Allow time for practice and feedback.
Discussion-Based Learning	A learner-centered approach that encourages participants to share ideas, ask questions, and think critically through group dialogue.	Ask open-ended questions which cannot be answered with a simple yes or no to encourage learners to explain their thinking. Encourage participation from all group members. Guide the discussion to stay on topics and aligned with learning objectives.
One-on-One Instruction	An individualized teaching approach that provides personalized guidance and support based on a learner's specific needs.	Identify the learner's goals or challenges early. Adjust pacing and instruction based on learner feedback. Use this time to reinforce confidence and clarify misunderstandings.
Self-Paced Learning <i>*May include eLearning</i>	A method that allows learners to progress through content independently at their own speed, often using written or digital materials.	Provide clear instructions and expectations. Break content into manageable sections. Include opportunities for self-checks or reflection to reinforce learning.