6th - 8th GRADE MATHEMATICS PROGRAM BACKGROUND

About Match Fishtank

Match Fishtank is an open-source curriculum website that shares the instructional materials we have developed, tested, and refined over many years in our classrooms at Match Charter School in Boston. Because our curriculum is online, it affords us the ability to continuously improve it based teacher feedback and new research.

Rigorous, College-Ready Curriculum

Grounded in best practices for teaching and learning, our curriculum is designed to prepare students for postsecondary success. All of our lessons are built around rigorous objectives with target tasks, questions, and anchor problems that push students to think critically and make meaning. Our central goal is to help our students become excellent readers, writers, problem-solvers, creative thinkers, and community members.

Standards-Aligned Materials

Our curriculum is aligned to the Common Core State Standards[1]. Every unit and lesson identifies specific standards that are the focus of instruction. Teachers can search and use our curriculum by standard.

Flexible Content

We believe teachers need the flexibility to adapt lessons to meet the unique needs of their students. Sometimes scripted curricula can curtail teacher autonomy and creativity about how they deliver their lessons. We strive to produce unit plans and lessons that provide a comprehensive road map that ensures teacher and student success, but can still be easily adapted to fit various teaching styles and classroom formats.

Culturally Relevant

We are committed to developing curriculum that resonates with a diversity of students' lived experiences. Our curriculum is reflective of diverse cultures, races, and ethnicities, and is designed to spark students' interest and stimulate deep thinking.

Our Approach to Mathematics

Our math curriculum is rooted in the following core beliefs about quality math instruction.

[1] Our curriculum aligns to the Common Core State Standards as indicated by our EdReports review. The Massachusetts Curriculum Frameworks include some additional standards and our curriculum contains occasional lessons and tasks to cover these standards as well.

Content-Rich Tasks

We believe that students learn best when asked to solve problems that spark their curiosity, require them to make novel connections between concepts, and may offer more than one avenue to the solution. Our instructional materials include tasks that:

- Are accessible to all students, yet still offer opportunities that challenge all students
- Require both concrete problem-solving skills and abstract thinking
- Make explicit connections to mathematical concepts explored within and across grade levels
- Include a variety of procedural, conceptual, and application problems

Practice and Feedback

We believe that practice and feedback are essential to developing students' conceptual understanding and fluency. Our lessons include structured opportunities for individual practice through specially-crafted problems to help students develop automaticity with concepts and fluency with procedures. The goal is to help students see mistakes as opportunities for learning, and provide feedback to ensure that errors are analyzed, understood conceptually, and corrected.

Productive Struggle

We believe that students develop essential strategies for tackling complex problems, and build non-cognitive skills such as grit and resilience, through productive struggle. Through our instructional materials, we help students develop a toolbox of strategies to understand and attack complex problems. Through discussion, evaluation, and revision of problem-solving strategies and processes, students build interest, comfort, and confidence in mathematics.

Procedural Fluency AND Conceptual Understanding

We believe that knowing *how* to solve a problem is not enough; students must also know *why* mathematical procedures and concepts exist. Our curriculum includes a balance between tasks that require procedural skill and fluency and tasks that require conceptual understanding. Our guiding questions, provided for each Anchor Problem, help teachers engage students in thinking through both the *how* and the *why*.

Communicating Mathematical Understanding

We believe that the process of communicating their mathematical thinking helps students solidify their learning and helps teachers assess student understanding. Throughout our lessons students are regularly provided with opportunities to communicate their ideas, strategies, challenges, and results (with correct and precise vocabulary) through oral discussion, sharing of mathematical work, written explanations, annotating diagrams, and modeling with equations and other representations.

What's in the Curriculum?

Our 6th, 7th, and 8th grade math courses are each designed to be taught over the course of a single school year and include instruction for 143 days (based on a 60-minute math class). The curriculum intentionally does not cover all 180 instructional days in order for teachers to fit in additional review or extension, teacher-created assessments, and school-based events.

Each Match Fishtank math course is comprised of **eight units** that include **10 to 20 lessons** each. Courses also include:

- A **standards map** which explains how the grade-level standards are covered across the units
- A **pacing guide** which provides guidance on how to schedule implementation of the different units and lessons across the school year
- A **vocabulary glossary** which provides definitions of all the key vocabulary terms covered in the course

Every Match Fishtank math unit includes:

- A list of the **current and foundational standards** taught in the unit
- A **unit summary** which describes the main focus of the unit
- An **end-of-unit assessment** that teachers can use to measure student learning on the standards in the unit and a detailed **answer key** identifying the standards assessed on each question as well as the correct answer
- A **unit prep** section which includes suggestions for teachers about how to prepare to teach the unit
- A navigable **lesson map** that outlines the main topics of the unit and the flow of the individual lessons

Key components of Match Fishtank lessons are:

- A lesson **objective** which is an appropriately-sized learning goal for students that connects to at least one standard or cluster in the unit
- A list of 2-3 **standards** that are the focus of the lesson as well as any foundational standards from previous units or grades that students need to recall in order to be successful with the content of the lesson
- **Criteria for success,** which are smaller learning goals that students must demonstrate or understand in order to achieve the objective
- **Tips for teachers** which include suggestions to support teachers' understanding and implementation of the lesson, such as suggestions on pacing, guidance on potential misconceptions or struggles students may have with the content, and other important notes
- 2-3 **anchor problems** teachers can use to help students make sense of the mathematics of the lesson as outlined in the criteria for success and objective

- A set of **guiding questions** for each anchor problem, which teachers can use to scaffold the problem, more deeply engage students in the content of the problem, or extend the problem based on student needs
- **Problem sets** aligned to the objective of the lesson, which can be used for independent practice of the lesson content (available either as ready-made handouts, for Fishtank Plus subscribers, or as a list of suggested resources or problem types for teachers to create a problem set of their own)
- A **target task**, which is a problem or set of problems aligned to the objective and designed to cover key concepts from the lesson and can be used as an indicator of student understanding or mastery of the objective
- A **mastery response,** which is an example response to the target task that demonstrates understanding of the objective

Support for Implementation

Match Fishtank's core curriculum is free to all users. For educators looking for more guidance on implementation and additional features, we offer a Fishtank Plus subscription. With a Fishtank Plus subscription math teachers have access to the following additional content and features:

Editable Student Handouts

Teachers can access a set of student handouts for each lesson which include the anchor problems and the target task. These handouts simplify lesson prep by providing student materials that can take time for teachers to create. Teachers can also customize handouts for their class by adding or deleting problems or questions, adding notes or reminders, and even adding their school logo.

Problem Sets

Fishtank Plus offers fully developed problem sets for every Match Fishtank 6th, 7th, and 8th Grade math lesson. Each problem set is a worksheet of carefully selected practice problems related to the objective of the lesson, which teachers can assign to students to complete in class or as homework.

Expanded Assessment Package

This package of assessment tools is designed to help teachers monitor student learning and identify their students' skill and knowledge gaps. Fishtank Plus' expanded assessment package includes:

- **Pre-unit assessments**, which assess students' prior knowledge about concepts and skills that will be covered in the unit

- **Mid-unit assessments**, which assess students on content covered in the first half of the unit and help teachers appropriately plan for the latter half of the unit based on student performance.
- **Post-unit assessment analyses**, which help teachers interpret student performance on the end-of-unit assessment, and include sample student responses, suggestions regarding what to look for in student work, and more.

Unit Launches

Research shows that discipline-specific professional development produces stronger outcomes for teachers and students alike[2]. Our math unit launches are digital multimedia modules that teachers can complete, whenever and wherever is convenient, to boost their content knowledge about the concepts covered in the unit. In these unit launches, teachers gain a deeper understanding of the standards and big ideas covered in each unit, and make connections to past and future learning through a series of short videos, readings, and open response questions.

Note on EdReports' rating for Gateway 3, Usability

In their rating of Match Fishtank's 6th-8th grade math curriculum for Gateway 3, Usability, EdReports did not review any of these Fishtank Plus features because they were not complete at the time of review. We believe that Match Fishtank's math curriculum will meet EdReports criteria for Gateway 3, Usability, once these Fishtank Plus features are reviewed. We plan to resubmit Match Fishtank's math curriculum to EdReports in 2020 so that they may review these additional features.

CONTACT US

For more information on adopting Match Fishtank's 6th to 8th grade mathematics curriculum in your school or district please contact us at info@matchfishtank.org.

[2] Darling-Hammond, L., Hyler, M. E., Gardner, M. (2017). Effective Teacher Professional Development. Palo Alto, CA: Learning Policy Institute.