Delmar School District
Course Syllabus & Outline

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Course Title: 6th Grade Illustrative Math Grade Level: 6th Grade

Method of Contacting Teacher:
Preparation Period: Block 4
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Course Description

In a problem-based curriculum, students work on carefully crafted and sequenced mathematics problems during most of the instructional time. Teachers help students understand the problems and guide discussions to be sure that the mathematical take-aways are clear to all. Not all mathematical knowledge can be discovered, so direct instruction is sometimes appropriate. On the other hand, some concepts and procedures follow from definitions and prior knowledge and students can, with appropriately constructed problems, see this for themselves. In the process, they explain their ideas and reasoning and learn to communicate mathematical ideas. The goal is to give students just enough background and tools to solve initial problems successfully, and then set them to increasingly sophisticated problems as their expertise increases.

A problem-based approach may require a significant realignment of the way math class is understood by all stakeholders in a student's education. Families, students, teachers, and administrators may need support making this shift. These materials are designed to support professional learning that is undertaken by teachers either in professional learning communities at their schools or in more formal settings. The value of a problem-based approach is that students spend most of their time in math class doing mathematics: making sense of problems, estimating, trying different approaches, selecting and using appropriate tools, evaluating the reasonableness of their answers, interpreting the significance of their answers, noticing patterns and making generalizations, explaining their reasoning verbally and in writing, listening to the reasoning of others, and building their understanding. Mathematics is not a spectator sport.

Course Rationale/Objectives

Grade 6 begins with a unit on reasoning about area and understanding and applying concepts of surface area. It is common to begin the year by reviewing the arithmetic learned in previous grades, but starting

instead with a mathematical idea that students haven't seen before sets up opportunities for students to surprise the teacher and themselves with the connections they make. Instead of front-loading review and practice from prior grades, these materials incorporate opportunities to practice elementary arithmetic concepts and skills through warm-ups, in the context of instructional tasks, and in practice problems as they are reinforcing the concepts they are learning in the unit.

One of the design principles of these materials is that students should encounter plenty of examples of a mathematical or statistical idea in various contexts before that idea is named and studied as an object in its own right. For example, in the first unit, students will generalize arithmetic by writing simple expressions like $12bh$ and $6s^2$ before they study algebraic expressions as a class of objects in the sixth unit. Sometimes this principle is put into play several units before a concept is developed more fully, and sometimes in the first several lessons of a unit, where students have a chance to explore ideas informally and concretely, building toward a more formal and abstract understanding later in the unit.

Major Learning Goals/Standards

Each unit has a culminating lesson where student have an opportunity to show off their problem-solving skills or apply the mathematics they have learned to a real-world problem. The end unit assessments, combined with students' work on the culminating lessons, will show a multi-faceted view of students' learning over the course of the unit.

Learning Outcomes

Students have opportunities to make connections to real-world contexts throughout the materials. Frequently, carefully chosen anchor contexts are used to motivate new mathematical concepts, and students have many opportunities to make connections between contexts and the concepts they are learning. Additionally, most units include a real-world application lesson at the end. In some cases, students spend more time developing mathematical concepts before tackling more complex application problems, and the focus is on mathematical contexts.

Primary Textbook

Illustrative Math

Technology

- Open Up Resources
- Khan Academy
- Prodigy

Course Outline/Curriculum Map: Order of units is subject change.

Unit 2
Introducing Ratios
(19 days)

Unit 3
Unit Rates and
Percentages
(18–19 days)

Unit 4
Dividing Fractions
(20 days)

Unit 5
Arithmetic in Base Ten
(16–18 days)

Unit 6
Expressions and
Equations
(18–20 days)

Unit 7
Rational Numbers
(20 days)

Unit 8
Data Sets and
Distributions
(21 days)

Unit 1
Area and Surface Area
(21–22 days)

Learning Activities:

This story of grade 6 mathematics is told in nine units. Each unit has a narrative that describes the mathematical work that will unfold in that unit. Each lesson in the unit also has a narrative. Lesson Narratives explain:

- A description of the mathematical content of the lesson and its place in the learning sequence.
- The meaning of any new terms introduced in the lesson.
- How the mathematical practices come into play, as appropriate.

Activities within lessons also have a narrative, which explain:

- The mathematical purpose of the activity and its place in the learning sequence.
- What students are doing during the activity.
- What teacher needs to look for while students are working on an activity to orchestrate an effective synthesis.
- Connections to the mathematical practices when appropriate.

Teaching Methods:

Selected activities are structured using Five Practices for Orchestrating Productive Mathematical Discussions (Smith & Stein, 2011), also described in Principles to Actions: Ensuring Mathematical Success for All (NCTM, 2014), and Intentional Talk: How to Structure and Lead Productive Mathematical Discussions (Kazemi & Hintz, 2014). These activities include a presentation of a task or problem (may be print or other media) where student approaches are anticipated ahead of time. Students first engage in independent think-time followed by partner or small-group work on the problem. The teacher circulates as students are working and notes groups using different approaches. Groups or individuals are selected in a specific, recommended sequence to share their approach with the class, and finally the teacher leads a whole-class discussion to make connections and highlight important ideas.

Homework Policy:

Homework will be assigned on a nightly and/or weekly basis.

Assignments, projects, expectations:

Each lesson includes an associated set of practice problems. The set includes a few problems from that day's lesson along with a mix of topics from previous lessons. Distributed practice (revisiting the same content over time) is more effective than massed practice (a large amount of practice on one topic, but all at once). Teachers may decide to assign the practice problems for homework or for extra practice in class; they may decide to collect and score it or to provide students with answers ahead of time for self-assessment. It is also up to teachers whether to assign the entire set or to choose a subset to assign (including assigning none at all).

Grading, Assessment, and Evaluation Procedures:

Each unit begins with a pre-assessment that helps teachers gauge what students know about both prerequisite and upcoming concepts and skills, so that teachers can gauge where students are and make adjustments accordingly. At the end of each unit is the *end-of-unit assessment*. Some units also include a *mid-unit-assessment.* These assessments have a specific length and breadth, with problem types that are intended to gauge students' understanding of the key concepts of the unit while also preparing students for new-generation standardized exams. Problem types include multiple-choice, multiple response, short answer, restricted constructed response, and extended response. Problems vary in difficulty and depth of knowledge.

Delmar Middle & High School Grading Scale

Grade	Percents	Grade	Percents	Grade	Percents	Grade	Percents
A+	98 – 100	B+	89 – 91	C+	80 – 82	D+	71 – 73
A	95 – 97	B	86 – 88	C	77 – 79	D	68 – 70
A -	92 – 94	B-	83 – 85	C-	74 – 76	D-	65 – 67
						F	Below 65

Grading Categories

Tests/Quizzes: 50% Classwork: 25% Homework: 20% Performance Tasks: 5%

Materials provided by Teacher

On-line resources and classroom materials only

Materials provided by Student

Notebook with dividers, paper, pencil