

Mathematics 6

Course Syllabus

2009-2010

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Please use e-mail rather than calling. We can arrange by e-mail a time to meet in person or talk on the telephone.

❖ Highlights of this coming year

In 6th grade mathematics, you will

- Understand and work with ratio.
- Discover that although percentage, the speed of a vehicle, filling of a container with a fluid, and the circumference of a circle appear dissimilar, they are in fact quite similar mathematically.
- Use Singapore bars to solve, explain, question, and discuss solutions to problems that involve ratio.
- Recognize and write complete and clear mathematical solutions that consist of a setup, reasoning, and conclusion.
- Acquire the confidence and tendency to begin working a problem even though you do not know how the solution will unfold.
- Develop patience for problems whose solution requires a persistent and protracted effort.
- Enhance your deductive reasoning by solving geometric problems concerning angles, and the perimeter and area of complex figures composed of triangles, quadrilaterals, circles, and segments of circles.

❖ Course Description

Sixth grade mathematics uses the Singapore national curriculum. Working word problems, students apply the arithmetic learned in previous years to the study of ratio, proportion, percentage, and average speed. The challenge and subtlety of these problems gradually increases until students work complex problems involving speed and problems in which the ratio changes. Using the unique device of Singapore bars, students graphically represent these problems and their solutions in a way that ties the concrete work of their earliest mathematics to the symbolic mathematics of years to come. In geometry, students study the triangle, various quadrilaterals, and the circle. They apply basic principles about vertical angles and parallel lines to find unknown angles in figures composed of triangles and quadrilaterals. After learning to compute the area and circumference of a circle, students figure out the areas of regions composed of sectors of circles and other plane figures; they determine the length of curves consisting of parts of several circles. Students learn to find the volume of a cuboid, then work many problems including those in which a fluid is displaced by an irregular solid, and those in which a container is being drained or filled at

a certain rate. This year emphasizes problem solving and critical thinking developed through written work and lively class discussion.

❖ **Textbook**

Primary Mathematics 6A and 6B. Ministry of Education, Singapore. Textbooks belong to MCDS. You must return in good condition the same textbook you were issued. The workbooks are yours to keep.

❖ **Mastery Grade**

Your trimester mastery grade is determined by full period exams, brief quizzes, and any graded assignments. Homework is *not* figured into the mastery grade. Your scores on quizzes and any graded assignments will make up 20% of your trimester grade. Exams will make up 80%.

❖ **Quizzes and Exams**

You can expect

- a quiz nearly every week,
- an exam at the end of a topic or at the end of a group of related topics.

A quiz may be given at any time without prior announcement. Your lowest quiz score will be dropped. Exams will be announced well in advance and will generally require a full class period to complete. If you are absent for a quiz or an exam, *you* are expected to arrange to make it up.

❖ **Effort**

Good effort is shown when

- you do all homework carefully and thoughtfully, even if you do not get the correct answer;
- you ask specific questions rather than saying, “I don’t get it”;
- you are eager to learn at the very start of class, as evidenced by being quietly seated at an uncluttered desk, and equipped with pencil (not pen), eraser, notebook, and homework;
- you thoughtfully, respectfully, and politely contribute to class discussions;
- you ask questions to better understand a topic or to explore it;
- you start without delay on in-class work and stick to it; and
- you take notes during class and keep an organized notebook.

❖ **Behavior**

Good behavior is shown when

- you meet customary social expectations (for example, speaking politely);
- you follow our class guidelines.

We will decide on guidelines that create an environment of joyful and purposeful learning for everyone.

❖ Notebooks

An organized three-ring binder is required. In class, we will discuss how best to organize it.

❖ Class Notes

In mathematics class, every important point is made both audibly in spoken words and visually in words, symbols, and drawings that go on the board. When you take notes on a solution, derivation, or proof, you do the mathematics along with your teacher. It is like climbing a mountain step by step with an experienced guide, rather than merely hearing or seeing some directions. Taking notes raises your thinking to a higher level, because you interpret, judge, evaluate, and organize what you are seeing and hearing in class while it is happening.

❖ Homework

Doing assignments on time is the most important action you can take to succeed in mathematics.

In mathematics, your learning depends on your thoughtfully working the assigned problems and staying caught up. This is the best way to prepare for exams and to understand new material as it is presented in class. **Expect to spend 2 hours per week outside of class working on mathematics.**

❖ Web resource

I will maintain a simple web site at <http://math.mnrt.net/> . I hope that parents and students will make use of this. If you are absent, you can get the day's assignment and any handouts from class at this site. I usually update it by about 5:30 p.m.

Here you will find

- the current assignment and all past assignments,
- copies of everything handed out in class including problem sets, and solutions to selected problems,
- my notes when the day's topic was especially complex,
- links to sites of mathematical interest.

This is not intended as a substitute for keeping an assignment notebook, which you are required to do. If you are absent from class, check here for the day's assignment and any handouts given during class. Parents will find the definitive answer to the question: "Do you have any mathematics homework?"

Please follow the link for *Standards for Success*. These excellent standards will help you to understand how and why what we are doing in class is preparing you for future success.

❖ Help

Please seek my help outside of class. I teach because I love to do mathematics with you. The student who makes the extra effort to get help when needed makes a very good impression on the teacher. Do not expect the impossible, though. If you have not kept up with assignments, meeting with me for an hour as the exam date approaches is not going to do you much good. If that was all it would take for you to do well, I would not be giving all these assignments in the first place.

❖ Knowing and doing mathematics

Mathematics is *not* a grab bag of facts, procedures, techniques, and tricks. Knowing mathematics means using a few basic ideas with skill, insight, and understanding. It means you can often solve a problem seemingly *unlike* any you have already done or seen done.

You improve in mathematics through thoughtful and purposeful practice and discussion. Watching someone else do mathematics and feeling like you get it is no guarantee that *you* can do it on your own. Jump in! Question, discuss, argue, and practice!

❖ Parents

Thank you for reviewing this with your student. Throughout the school year, please contact me when you have questions, comments, or concerns. I check e-mail whenever I return to my desk. E-mail will catch my attention the quickest, then we can arrange to talk by phone or meet in person. I try to check phone messages at the end of the day.

❖ Parent signature

Please review this with your parents and ask a parent to sign it below. Then please keep this in your ring binder. I will not collect this, but I will check in class for a parent's signature.

Parent signature _____