



## Grade 6 Mathematics Honors Syllabus, 2016-17 School Year

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### Course Description

Sixth grade mathematics uses the Singapore national curriculum. By 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 Singapore bars, students visually 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 and 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 course emphasizes problem solving and critical thinking developed through written work and lively class discussion.

### Expectations

**Take 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 think through the mathematics along with your teacher. Taking notes raises your understanding to a higher level, because you interpret, judge, evaluate, and organize what you are seeing and hearing in class.

**Do homework.** Your success in this course depends on your thoughtfully preparing

assignments in time for the next class, in which we will discuss your comments and answer your questions about the assignment you completed. Since each class builds upon the previous one, missing an assignment will leave you less prepared to follow and understand the material presented in the next class. This cascading effect once begun is hard to stop.

**Participate in class.** You will understand the ideas of mathematics more quickly and more deeply by participating in class discussion. When your teacher or another student asks you to elaborate on an idea you have expressed, you have a wonderful opportunity to explore your own thoughts and practice articulating them clearly. Clarity of expression and clarity of thought develop together. The give and take of classroom discussion, though messy, is an essential and irreplaceable element in building your understanding of mathematics.

If, as described above, you take notes, do homework, and participate, then you may find your understanding so solid and your skill so proficient that you will not need to study for exams.

## **Course Outline**

- Algebraic expressions
- Solid Figures
- Ratio and fraction; ratio and proportion; changing ratios
- Percentage: part of a whole as percentage; one quantity as a percentage of another; solving percentage problems by the unitary method
- Speed and average speed
- Circles: radius, diameter, circumference, and area
- Volume
- Triangles and quadrilaterals
- Word problems: whole numbers and decimals, fractions, ratio, percentage, speed
- Division of a fraction by a fraction
- Multiplication with decimals
- Introduction to prime numbers and prime factorization

## **Grading & Evaluation**

Student progress will be assessed through a variety of methods: short and long quizzes based on homework problems, oral presentations of solutions, teacher-student conferencing, and full-period unit tests. The mastery of essential skills and the development of mathematical thinking take time. Therefore, students' progress will be reported in terms of skills development throughout the year. For example, if a student struggles with a concept in the fall but masters it in the spring, the final report will recognize that fact rather than the difficulties experienced earlier in the year. Skills from first semester, therefore, may be re-assessed in the second semester.

The essential skills for sixth grade mathematics are listed below:

First Semester	Second Semester
Interpret nets of rectangular parallelepipeds and triangular prisms	Perform the four arithmetic operations with fractions
Work with the idea of ratio in a variety of contexts	Know and apply the definition and properties of the circle
Work with the idea of percentage in a variety of contexts	Reason with and apply the ideas of area and volume
Understand the relationship between speed, distance, and time in a variety of contexts	Know properties of three and four sided figures and apply them to a variety of geometric problems
Use the Singapore Bars to reason through the solution of particular problems	Work a variety of word problems
Use the system of Singapore Bars to explain and discuss their solution of particular problems	Develop carefully reasons solutions to a variety of problems that they articulate clearly and concisely
Work a variety of word problems	Use their knowledge of the circle, ration, and percentage to reach conclusions about pie charts
	Know that a letter may represent a number
	Write the product of a repeated factor using exponents

### Grading Scale:

- 1 - Beginning
- 2 - Developing
- 3 - Secure
- 4 - Exceeds

Homework, although not usually graded, is the single most important factor in your progress. Please take the time to complete it carefully and bring questions to class. Then do complete corrections at home, even when you have already corrected the problems in class.

If a student scores below a 3, the best way to master the material is to do additional review and practice, followed by a retake.

### Textbook & Resources

**Textbook.** Primary Mathematics 6A and 6B, textbook/workbook. 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.

**Web.** I maintain an easy to use website. At my web site you will find:

- The current assignment and all past assignments.
- PDF copies of every item handed out in class.
- Copies of exams and quizzes are not included.
- Notes, if the day's topic was especially complex.
- Occasional photograph of chalk board
- Links to sites of mathematical interest.

To reach my web site, please go [www.math.mnrt.net](http://www.math.mnrt.net) or follow the link at Google Classroom. You are *not* required to check my website. You *are* required to check Google Classroom.

## **Required Materials**

You are expected to bring your planner, 3-ring binder, textbook, and workbook to class each day. You will also need a pen or pencil and a red correcting pen. Most daily assignments will be done in the workbook.

## **Google Classroom**

I will be using Google Classroom as my primary source of communication for relaying the daily class agenda and homework assignments. It allows students to ask questions pertaining to the assignment that can be viewed and answered by classmates. Anything posted through GC will be emailed directly to your student email. It is expected that you check this email and GC daily to stay informed on announcements, assignments and feedback. Parents can be added as guardians to their child's account in order to be informed on updates made through Google Classroom.

Google Classroom Class ID: g6621v8

## **NetClassroom**

Grades and comments written at the end of each quarter will be available through the student and parent portals. All other class information will be directed through Google Classroom.

## **Absence Policy**

If you are absent for a quiz or an exam, you are expected to arrange to make it up. If you miss a class meeting, borrow another student's notes to copy. Discussing those notes with the other student will further benefit both you and your kind classmate. If you want to do some homework, you might check my web site. I sometimes post assignments during the day, instead of at the end of the day, in case an absent student feels like doing homework. I definitely do not expect you do homework while you are ill.

## **Late Work Policy**

Homework is considered practice, so when you are “graded” it will be for completion. For late work, you will have 1 day “grace period” to turn the work in without penalty. After that, late work will be penalized 10%, down to 50%, for each day late. For example, if your work would have earned 100%, but it is five or more days late beyond the grace period, it will receive 50%. You are required to complete each and every assignment, regardless of how late it is.

## **Technology Policy**

In accordance with the Student/Family Handbook, the following policies regarding technology usage apply to my classroom:

- Cell Phones - should be turned off and kept in student lockers during the school day. Use of cell phones during the day without adult permission will result in the device being confiscated.
- Internet Use – is limited to school-related work. Students may use the Internet when appropriate and with my permission.
- Chromebooks – are limited to school-related work and may be used in class with my permission. It is the student’s responsibility to come to class with their computer charged each day.

For more specific guidelines regarding technology usage, please refer to the Technology Contract in the *Student/Family Handbook* (Appendix D) and the Chromebook Policy (Appendix E).

## **Getting 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. Remember that asking specific questions rather than saying, "I don't get it" will bring you the most useful help as well as evidence the effort you made in trying to master the material.

Math Elective also provides an excellent opportunity to seek individual help. Please be sure your regular elective teacher knows that you will be attending Math Elective.