

# **COURSE OUTLINE: GRADE 11**

## **CITY & GUILDS MATHEMATICS**

### **Course Description:**

This course builds on the National Standard Curriculum Mathematics grades 7-9 APSE1 to further develop students' understanding of fundamental mathematical concepts by exploring topics related to number sense and numeration, ratio and proportion and spatial sense, and patterning. Students will learn that not all quantities can be represented by whole numbers. They learn that fractions represent "parts of a whole" and that there can be multiple parts of a whole that can be combined to make more than unity. Students develop an understanding of fractions as numbers, which can be represented on the number line. These numbers can also be represented as decimals--non-whole numbers and they can be added, subtracted, just like whole numbers. Students learn to reason abstractly and quantitatively by representing fractions concretely and pictorially, and move back and forth between representations. Students also represent word problems involving fractions pictorially and then express the answer in the context of the problem. This course will help students understand the concepts of ratio and proportion and their application to problems in a real world context. The activities are designed to engage the students to understand relationships in which two quantities vary together and the variation of one

coincides with the variation of the other. Students will understand the multiplicative nature of proportional parts reasoning. They will also develop a variety of strategies for solving proportions and ratio problems.

Throughout the course, students begin developing the mathematical processes of problem-solving, reasoning and proving, reflecting, selecting tools and computational strategies, connecting, representing, and communicating at a basic level. Through investigation of real-life problems, students develop a strong foundation of mathematical knowledge and skills. Students apply mathematical processes and build transferrable critical thinking skills in varied teaching and consolidation activities that appeal to diverse learning styles.

Students participate in engaging activities along with materials that connect their learning to real-world contexts and build confidence through facilitating a positive attitude towards mathematics. Various opportunities are provided to consolidate students' learning through technology and offline activities, including tactile manipulatives, to reinforce essential mathematical strategies and tools. The course has a strong focus on reinforcing number sense and numeracy skills and provides various activities for practice throughout.

This course prepares students for grade 7 mathematics.

### **Resources Required by the Student**

This course is entirely online and does not require nor rely on any textbook. Students will require the following resources:

- A scanner, smart phone camera, or similar device to digitize handwritten or hand-drawn work.
- A smart phone camera or similar device to take pictures of student work.

- A device to record audio
- A printer
- A physical binder, folder, or notebook for offline activities
- Various household items to complete offline activities

**Resource require by teachers:**

- White board
- A scanner, smart phone camera, or similar device
- Printer
- markers

**Teaching and Learning Strategies**

Through a balance of problem-solving and direct instruction, students develop a strong foundation of mathematical processes, knowledge, and skills to apply in real-world contexts. The Course Outline: Grade 7 Mathematics course utilizes a combination of technology and offline activities, providing opportunities to develop an understanding of skills and concepts in interactive and concrete ways and engage multiple learning styles. The lessons feature a variety of intriguing storylines, materials, videos, storybooks, and interactive games to reinforce students' learning. The activities also build a foundation of mathematical models and strategies that

students will use throughout the grades level. The course relies on the assistance of a learning coach to support young students through the content. The learning coach will be involved in facilitating technical aspects of the course (e.g. printing and scanning printable activities) and participating in discussion-based activities to assist students in developing communication skills.

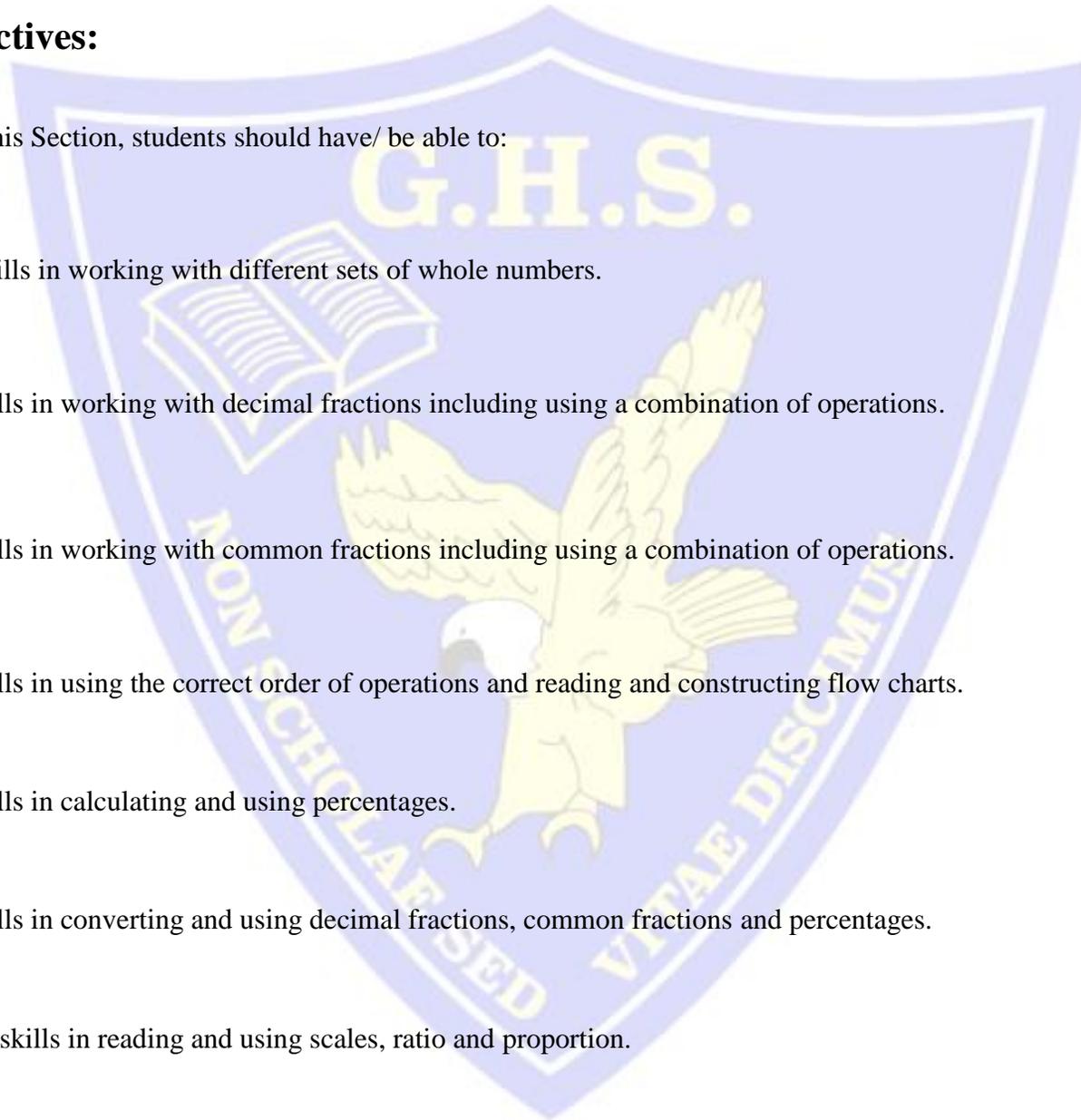
### **Reporting (Courses with Qualified Teacher)**

Student achievement will be communicated formally to students via progress reports and official report cards. A progress report is provided after completion of the first unit in the course. The progress report is not an evaluation of the student's achievement. Rather, the purpose is to give students and parents early and specific feedback regarding the student's general progress during the first unit of study. Report cards are issued at the midterm point in the course as well as upon completion of the course. Each report card will focus on two distinct but related aspects of student achievement. First, the achievement of curriculum expectations is reported as a letter grade. Additionally, the course median is reported as a letter grade. The teacher will also provide written comments concerning the student's strengths, areas for improvement, and next steps. Second, the learning skills are reported as letter grades representing four levels of accomplishment. Upon completion of a course, GHS will send a copy of the report card to the student's home school where the course will be added to the ongoing list of courses on the Student Record (SR). The report card will also be sent to the student's parents.

## General Objectives:

On completion of this Section, students should have/ be able to:

1. Develop skills in working with different sets of whole numbers.
2. Develop skills in working with decimal fractions including using a combination of operations.
3. Develop skills in working with common fractions including using a combination of operations.
4. Develop skills in using the correct order of operations and reading and constructing flow charts.
5. Develop skills in calculating and using percentages.
6. Develop skills in converting and using decimal fractions, common fractions and percentages.
7. Developing skills in reading and using scales, ratio and proportion.



### **Assessment Weighting:**

**Classwork: 25%**

**Tests: 15%**

**Exam: 45%**

**Attendance: 5% (absent for 50% of classes = 0%)**

**Punctuality: 5% (late for more than 50% of classes = 0%)**

**Participation: 5% (participate in less than 50% of classes = 0%)**

### **Learning Outcomes:**

Upon completion of this section students should be able to:

1. Work with different sets of whole numbers including squares, square roots, prime numbers, multiples and factors.
2. Work with decimal fractions including using a combination of operations.
3. Work with common fractions including using a combination of operations
4. Use the correct order of operations for calculations and read and construct flow charts.
5. Calculate and use percentages.
6. Convert and use decimal fractions, common fractions and percentages.
7. Read and use scales, ratio and direct and inverse proportion.

## Course Details

Date	Topics	Specific Objectives	Assignments	Resources
Week One-three of October  ( 3 weeks)	Operation on integers	<ul style="list-style-type: none"> <li>• Recognise the different sets of numbers and apply the four operations of addition, subtraction, multiplication and division to positive integers in problems relating to everyday life and work, without a calculator.</li> <li>• Calculate the squares and cubes of positive integers without the use of calculator and know the positive square roots of perfect squares up to 144</li> <li>• Express large integers in standard form and express standard form as integers.</li> <li>• Use directed numbers in problems related to everyday life and work</li> <li>• Compare numbers written in the decimal system with other number system.</li> </ul>		
Week four of October ( 1 week)	Operation on decimal fractions	<ul style="list-style-type: none"> <li>• Apply the operations of addition and subtraction to decimal numbers without a calculator.</li> <li>• Apply the operations of multiplication and division to numbers where multiplication will increase and the division decrease, without a calculator.</li> <li>• Apply the operations of multiplication and division to numbers where the multiplication will decrease and division increase, without calculator.</li> <li>• Use a combination of operations from addition, subtraction, multiplication and division to solve problems without a calculator.</li> </ul>		

Week one- two of November ( 2 weeks)	Operations on common fraction	<ul style="list-style-type: none"> <li>• Apply the operations of addition and subtraction not involving ‘borrowing’ to common fractions</li> <li>• Apply operations of additions subtractions involving ‘borrowing’ to common fractions.</li> <li>• Applying the operations of multiplication and division to common fractions where the multiplication will increase and division decrease.</li> <li>• Apply the operations of multiplication and division to common fractions where the multiplication will decrease and the division will increase.</li> <li>• Use a combination of operations from addition from addition, subtraction and division to solve problems.</li> </ul>		
Week three of November ( 1 week)	Order of operations and use of Calculator	<ul style="list-style-type: none"> <li>• Use correct order of operations with and without brackets, for calculations</li> <li>• Read and construct simple flowcharts</li> </ul>		
Week four of number to week to of December ( 3 weeks)	Percentage	<ul style="list-style-type: none"> <li>• Calculate percentages</li> <li>• Use percentage in a wide range of everyday contexts</li> <li>• Calculate simple and compound interest for two years</li> <li>• Calculate depreciation for two years.</li> </ul>		
Week one of January (1 weeks)	Conversion between decimal fractions, common	<ul style="list-style-type: none"> <li>• Convert between decimal fractions, common fractions and percentages and to apply as appropriate.</li> <li>• Recognise and use certain commonly used conversions including recurring decimals</li> <li>• Use common fractions, decimals fractions or percentages as appropriate.</li> </ul>		

	fractions and percentage			
Week two to three of January ( 2 weeks)	Ratio and proportion	<ul style="list-style-type: none"> <li>• Read and use scales on maps and plans.</li> <li>• Use direct proportion.</li> <li>• Use inverse proportion.</li> <li>• Write as a ratio the relationship between two quantities.</li> </ul>		

### **The Final Grade (Courses with Qualified Teacher)**

Student evaluation in this course is based on the student's achievement of curriculum expectations. The final letter grade represents the quality of the student's overall fulfilment of the expectations for the course and reflects the corresponding level of achievement as described in the achievement chart for the discipline. The final grade reflects the student's most consistent level of achievement across all units in the course, although special consideration is given to more recent evidence of achievement. There are assessment, such homework assignments, quizzes, including computer activities that deepen the level of understanding, writing assignments designed to develop communication of mathematical concepts, student projects, and final examinations, in this course, in this course.

### **Recommended Text:**

A complete Mathematics Course for Secondary Schools Book 1-3. Author: Raymond Toolsie

