Mathematics Syllabus
Grade 3

Learning and Teaching Mathematics in Grade Three

By the time a student gets to Grade Three the basics of number, measurement, shape and data handling should have been acquired.. All these areas of mathematics are now extended. Hopefully, the students have enjoyed learning mathematics in Grade One and Grade Two and it is important that this enjoyment continues. They should also have realised that the mathematics they are learning is connected to their daily lives and has importance for their future.

We live in a changing world. Present day life is very different from the lives our parents knew as students. There have been enormous technological and social changes and the pace of change continues. It is difficult for us to predict exactly what knowledge is likely to be useful for our students when they are adults. Because of this, students need the basic skills and competences of mathematics but they also must learn to think for themselves and learn how to solve their own problems.

The following activities encourage this:

- Pair work and group work
- Individual work
- Experimental work including students observing and recording what they see
- Students discussing their own experiences about the mathematics they are learning
- Students asking questions the teacher or each other

All of these are encouraged in Grade Three by giving many problems for students to solve.

The Learning Objectives for Grade Three

In Grade Three life skills continue to be important in the mathematics lessons. Students should be able to:

- think logically
- apply their mathematical knowledge and skills
- listen carefully
- collect, and record information
- investigate
- communicate
- participate
- argue
- solve problem
- co-operate with others.

To achieve the above level of mathematical abilities and skills Grade Three.
Students should be able to:

- read, write and order whole numbers up to 10,000.
- perform the four fundamental operations on whole numbers up to 10,000
- use units of weight, capacity and length.
- use Ethiopian currency for buying and selling
- read time on analogue and digital clocks
- extend knowledge and use fractions of thirds and all unit fraction from ½ to 1/10
- draw intersecting, parallel and perpendicular lines using everyday objects and a ruler.
- identify parallelograms, trapeziums, rectangles, squares in the environment
- sketch and mark common parts of circles
- construct and interpret simple picture graphs and bar graphs

Unit 1: The whole numbers up to 10,000 and their order *(27 periods)*

Unit outcomes: Students will be able to:

- read, write, compare and order whole numbers up to 1000
- perform the four fundamental operations on whole numbers up to 100
- read and write multiples of 100 and of 1000 up to 10,000
- read and write whole numbers up to 10,000.
- compare and order whole numbers up to 10,000.

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
Students will be able to: • read whole numbers up to 1000 • write whole numbers up to 1000 • compare and order whole numbers up to 1000	***1. The whole numbers up to 10,000 and their order*** **1.1 revision of whole numbers up to 1000** *(4 periods)*	• Students read and write whole numbers up to 1000 • Students in pairs make up sets of five whole numbers up to 1000 and ask their neighbour to order them.	• Give exercises on order of whole numbers up to 1000.
• add two 2-digit whole numbers • subtract two 2-digit whole numbers • multiply whole numbers up to 100 by 1-digit numbers • divide whole numbers up to 100 by 1-digit numbers with no remainder	**1.2 Revision of calculations on whole numbers up to 100** *(5 periods)*	• Students add and subtract two 2-digit whole numbers • Students multiply whole numbers up to 100 by 2, 3, 4, 5, 6, 7, 8 and 9 • Students divide whole numbers up to 100 by numbers 1-9 with no remainder	• Ask students to add and subtract two digit whole numbers • Give students word problems on multiplying and dividing up to 100 with no remainder.
• list the multiples of 100 up to 10,000 • list the multiples of 1000 up to 10,000 • write multiples of 100 and 1000 up to 10,000	**1.3 The multiples of 100 and of 1000 up to 10,000** *(4 periods)*	• Students make a table of the multiples of 100 up to 10,000 • Students write multiples of 1000 up to 10,000	Give students • Class and homework exercises on writing multiples of 100 up to 1000. • Ask students to chant aloud multiples of 1000 up to 10,000

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
• represent 2-digit numbers as the sum of a multiple of 10 and a 1-digit number • represent a 3-digit number as the sum of a multiple of 100 and a multiple of 10 and a 1-digit number • represent a 3-digit number using a place value table • apply a place value table to a 4-digitwhole number	**1.4 Whole numbers up to 10,000** *(8 periods)*	• Students practice adding one digit numbers to different multiples of 1000 • Students write a 2-digit number as the sum of tens and ones first using pictures of bundles of sticks • Students write 3-digit numbers as a sum of hundreds, tens and ones • Students write 4 digit numbers as a sum of thousands, hundreds, tens and ones, • Students use a table to show place value of 4 digit numbers.	Ask students to draw a 3-digit number as a picture of an abacus • Give students 4-digit numbers to put into a place value table.
• order at most five whole numbers containing 2- and 3- digit whole numbers • order at least five 3-digit whole numbers • determine whole numbers between two given 3-digit whole numbers • order whole numbers up to 10,000 • compare two 4-digit numbers using the symbols • <, >, and =	**1.5 Comparing and ordering whole numbers up to 10,000** *(6 periods)*	• Students in pairs write four or five 3-digit numbers and ask each other to order them • Students determine numbers between two 3-digit numbers • Students use the symbols <, >, and = to compare two 4-digit numbers	• Ask students to order six 3-digit numbers for homework • Ask students to determine numbers between two given 4-digit numbers

Unit 2: Measurement *(14 periods)*

Unit outcomes: Students will be able to:

- use the units mm, cm and m to measure length
- use the units ml and l to measure capacity
- use the units g and kg to measure weight (mass)
- convert units of length, capacity and weight.

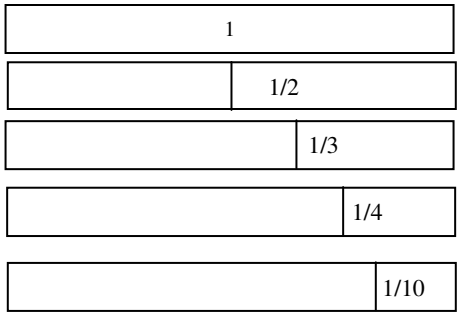
Competencies	***Contents***	***Teaching and learning activities and resources***	***Assessment Techniques***
Students will be able to: • measure length in millimeters using a ruler. • identify the symbol mm • describe the relationship between mm, cm, m and km • Describe the relationship between m and km. • convert larger units of length to a smaller unit • add lengths by converting units of length to smaller units • subtract lengths by converting units of length to smaller units	***2 Measurement*** **2.1 Length in millimeters (mm), centimeters (cm), metres (m) and kilometers (km)** *(6 periods)*	• Students decide which unit of length to use in a certain situation using pictures or stories • Students measure lengths of different small objects using mm • Students use a centimeter ruler and a metre stick to discover the relationship between mm, cm and m • Students convert cm to mm and m to cm using a ruler and a metre rule • Students add and subtract lengths in m and cm by converting first to cm	• Ask students to measure length of their finger nail using mm • Ask students decide which unit to use for different situations • Give students problems to convert units to smaller ones • Give problem of addition and subtraction of length
• measure capacity in ml • describe the relationship between ml and l • identify the symbol ml	**2.2 Capacity in milliliters (ml) and litres (l)** *(4 periods)*	• Show students various containers which give their capacity in l or ml, like a syringe • Let students practice measuring capacity using ml. • Students in pairs compare the capacity of various drink bottles in ml and l • Student convert simple capacities from l to ml and ml to litres like 500ml is ½ a litre	• Ask students in groups to bring to class containers and measure capacities in l or ml

Competencies	***Contents***	***Teaching and learning activities and resources***	***Assessment Techniques***
• identify the symbol g • measure weight in g using a simple scale or balance • describe the relationship between g and kg and quintals • describe the relationship between kg and quintal	**2.3 Weight in grams (g), kilograms (kg) and quintals** *(4 periods)*	• Show students various common pack of cooking materials like coffee, flour which indicate their weight. • Students using a simple scale measure common objects using grams	• Ask students to weigh in g and kg common objects like stones • Ask students to give the relationship between g and kg

Unit 3: Introduction to fractions *(12 periods)*

Unit outcomes: Students will be able to:

- use previous knowledge of thirds
- identify unit fraction from ½ to 1/10
- divide numbers into halves and quarters
- compare simple fractions.

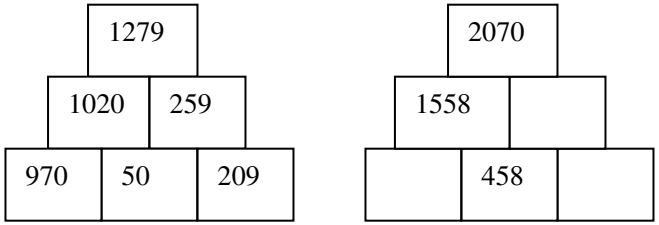
Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
Students will be able to: • show one third and two thirds pictorially • write the symbols for one third and two thirds.	***3. Fractions*** **3.1 Revision of thirds** *(2 periods)*	• Students draw pictures showing one third and two thirds • Assist students to write the symbol of one 1/3 and 2/3	• Ask students to draw and shade in one third of a circle • Ask students how many thirds are in a whole.
• identify unit fractions - 1/2, 1/3, ¼, 1/5, 1/6, 1/7, 1/8, 1/9 and 1/10 using pictures or objects • write the symbols for unit fractions - 1/2, 1/3, ¼, 1/5, 1/6, 1/7, 1/8, 1/9 and 1/10	**3.2 Unit fractions from ½ to 1/10** *(4 periods)*	• Using pictures or objects students show unit fractions • Students identify unit fractions by their symbols • Students make fraction strips of halves to tenths Like 	• In class ask students to come to the board and write the symbols for various unit fractions • Ask students to draw strips and shade in 1/2, 1/3..... 1/10
• identify half of a given multiple of 2. • identify a quarter of a multiple of 4 • solve problems of halves	**3.3 Halves and quarters of whole numbers** *(2 periods)*	• Students a given multiple of 2 • Students divide a given multiple of 4 in to 4 equal parts. • Students solve word problems sharing multiple of 2 number and objects into two four equal parts	• Ask student to find half of multiples of 2 • Ask students to find a quarter of a multiple of 4 • Ask students to find three quarters of a multiple of 4

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
• compare unit fractions using fraction strips	**3.4 Comparison of simple fractions** *(4 periods)*	• Students in pairs make fraction strips using unit fractions from halves to tenths • Students draw pictures of some fractions trips • Students use their fraction strips to compare unit fractions by placing them below each other • Students draw examples of two fractions using their fraction strips to show comparison	• Ask students to show a comparison of two unit fractions using fraction strips

Unit 4: Addition and subtraction of whole numbers up to 10,000 *(28 period)*

Unit outcomes: Students will be able to:

- add whole numbers up to 10,000
- subtract whole numbers up to 10,000.
- solve word problems using addition and subtraction.

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
Students will be able to: • add multiples of 1000 orally up to 10,000 • add 2-digit numbers to 3-digit numbers • add 3-digit numbers to 4-digit numbers (whose sum less than 10,000) • add 4-digit numbers to 4-digit numbers up to 10,000 (whose sum is less than 10,000) • solve word problems using addition up to 10,000	***4. Addition and subtraction of whole numbers up to 10,000*** **4.1 Addition of whole numbers up to 10,000** *(12 periods)*	• Students make an addition table of 1000s up to 10,000 • Students use addition walls to practice adding 3 and 4-digit numbers  • Students add vertically using place values for a 4-digit number, like 2000 + 300 70 6 • Students in pairs solve word problems taken from real life	• Ask students to count in 1000s to 10,000 • Give home work/class work,
• subtract 2-digit numbers from 3 digit numbers • subtract 3 digit numbers from 3 digit numbers • subtract 3-digit numbers from 4 –digit numbers • Subtract 4 dig it number from 4 digit number	**4.2 Subtraction of whole numbers up to 10,000** *(12 periods)*	• Students do exercises on subtraction of 2 digit, and 4 numbers from 4-digit numbers • Note that when they subtract 4 digit number from 4 digit number the result should be a whole number.	• Ask students to determine difference of whole numbers.

Competencies	***Contents***	***Teaching and learning activities and resources***	***Assessment Techniques***
• solve word problems involving addition and subtraction up to 10,000 • justify the result of subtraction problems by means of addition	**4.3. Word problems on addition and subtraction** *(4 periods)*	• Students solve problems like “The "Grade 3 students of a small town in Ethiopia planted 5,900 trees last year. If this year they planted 1304 trees and 210 trees became dry how many trees are growing now?"	• Give students problems of addition/subtraction of 3- digit number to/from a 4- digit numbers as class and home works and check their work. • You can ask some of the students to solve problems of subtraction on the board by means of addition.

Unit 5: Multiplication and division of whole number up to 10,000 *(37 periods)*

Unit outcomes: Students will be able to:

- multiply multiples of 100 by 1-digit
- multiply multiples of 1000 by 1-digit numbers
- multiply whole numbers by 1-digit number product less than 10,000
- divide multiples of 10 and 100 up to 10,000 by 1-digit number and 10 with no remainder
- divide whole numbers by 1-digit up to 10,000 with and without remainder
- solve word problems using relation between multiplication and division.

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
Students will be able to: • multiply multiples of 100 by 1-digit numbers	***5. Multiplication and division of whole Number up to 10,000*** **5.1 Multiplication of multiples of 100 by 1-digit number** *(5 periods)*	• Students draw a multiplication table of multiples of 100 by 1-digit numbers	• Ask students to multiply multiples of 100 by 3, 4, 5, and 6 for homework or 1,2,7,8,9 for class work.
• multiply multiples of 1000 by1-digit number	**5.2 Multiplication of multiples of 1000 by 1-digit numbers** *(6 periods)*	• Students draw a multiplication table of multiples of 1000 by 1-digit numbers	• Give students exercises of multiplying multiples of 1000 by 7, 8 and 9 1,2,3,4,5,6,
• multiply 2-digit number by 1-digit numbers • multiply 3-digit numbers by 1-digit numbers • solve simple word problems in multiplication	**5.3 Multiplication of whole numbers by 1-digit number whose product is less than 10,000** *(8 periods)*	• Students practice multiplying 2- and 3- digit numbers by 2, 3, 4 and 5 • Students continue patterns like $4 \times 7 = 28$ $40 \times 7 = 280$ $400 \times 7 = ?$ • Students in pairs solve word problems on multiplication of 2- digit numbers by a 1- digit number like "Mohammed has 3 friends and wants to give each 16 sweets, How many does he need?"	• Give students word problems multiplying 2- and 3- digit numbers by a 1- digit number
• divide multiples of 10 and 100 up to 10,000 by 10 • divide multiples of 10 and 100 up to 10,000 by 1-digit numbers with and without remainders	**5.4 Division of multiples of 10 and 100 up to 10,000 by 1-digit number & 10** *(7 periods)*	• Students practice dividing multiples of 10 and 100 by 10 by crossing off zeros • Students do exercises dividing multiples of 10 and 100 up to 10,000 by 1-digit numbers with and without remainder	• Ask students to show understanding of place value by giving division exercises of multiples of 100 divided by 10

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
			• Give exercises for homework on division of multiples of 10 by 1-digit number
• divide whole numbers up to 10,000 by 1-digit & 10 without remainder • divide whole numbers up to 10,000 by 1-digit & 10 with remainders • solve word problems involving division of whole numbers up to 10,000 by 1-digit numbers with and without remainder	**5.5 Division of whole numbers up to 10,000 by 1-digit numbers 10 with and without remainder** *(11 periods)*	• Students practice exercises of division of numbers up to 10,000 by 10 with and without remainder • Students practice exercises of division of numbers up to 10,000 by any 1-digit number with and without remainder • Students solve word problems using division of numbers up to 10,000 by 1-digit numbers • Students continue patterns like $8 \div 2 = 4$ $80 \div 2 = 40$ $800 \div 2 = ?$ $8000 \div 2 = ?$	• Ask students to divide whole number up 10,000 by 1 - digit number and 10. • Give homework to solve word problems using division

Unit 6: Lines and simple shapes *(16 periods)*

Unit outcomes: Students will be able to:

- identify and sketch intersecting, parallel and perpendicular lines
- construct parallel and perpendicular lines
- identify and draw rectangles, squares, parallelograms and trapeziums
- construct circles.

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
Students will be able to: • define the notions "intersect", "parallel" and "perpendicular" • identify parallel and perpendicular lines in their environment	***6. Lines and simple shapes*** **6.1 Intersecting, parallel and perpendicular lines** *(3 periods)*	• Students in pairs look around themselves and identify parallel and perpendicular lines in their environment • Students explain what is meant by parallel and perpendicular by using words and their arms	• Ask students to identify parallel and perpendicular lines in their environment
• draw intersecting, parallel and perpendicular lines using everyday objects like a book • draw a line which is perpendicular to a given line through a point using a ruler • express the distance between parallel lines as the length of the perpendicular distance between the lines.	**6.2 Construction of intersecting, parallel and perpendicular lines** *(4 periods)*	• Students draw intersecting lines and name the point of intersection with a capital letter • Students draw parallel and perpendicular lines using the edges of books, rulers or other straight edges • Students draw two parallel lines and indicate how they would find the approximate distance between them using a ruler	• Ask students to draw perpendicular and parallel lines using everyday objects to assist them • Ask students to draw perpendicular & parallel lines using the ruler & setsquare.
• recognize rectangles, squares and parallelograms in their environment • explain the simple properties of rectangles, squares and parallelograms	**6.3 Rectangles, squares, parallelograms and trapeziums** *(6 periods)*	• Students find examples of squares, rectangles, parallelograms and trapeziums in their everyday life • Using a piece of string or rope joined at the ends students in pairs holding two corners each show a square, a rectangle, a parallelogram and a trapezium.. • Give students dotted outlines to draw round the shapes • Students draw a parallelogram and a trapezium • Students explain simple properties of rectangles, squares,	• Ask students to describe how rectangles, squares, parallelograms and trapeziums are different from each other • Students should draw these shapes in groups

Competencies	***Contents***	***Teaching and learning activities and resources***	***Assessment Techniques***
• draw a parallelogram • draw a trapezium • identify the simple properties of a trapezium		parallelograms and trapeziums.	
• define radius, centre, diameter and chord of a circle • compare the lengths of different chords of a circle	**6.4 The circle** *(3 periods)*	• Students draw a circle using a round object and show the centre and the diameter • Students inpairs draw circle and measure some of its chords.	• Ask students to draw a circle and show a radius, diameter and a chord. • Ask the students to compare the length of different chords and to identity the longest chord.

Unit 7: Money *(5 Periods)*

Unit outcomes: Students will be able to:

- convert Ethiopian coins and notes
- solve word problems concerning money

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
Students will be able to: • convert from bigger unit of Ethiopian currency to smaller • find the number of coins or notes that are equivalent to a given amount of money.	***7. Money*** **7.1 Conversion of units of money** *(3 periods)*	• Students discuss the relationship between different coins and notes in Ethiopian currency • Students convert from one unit of money to another • Students show the equivalence of various notes and coins • like: How many 25 cents are their in 5 Birr notes?	• Give students homework /class work. in converting different coins and notes
• solve word problems involving money • find the total cost of two or three different items	**7.2 Word problems using Ethiopian currency** *(2 periods)*	• Students make up a shopping list of three items and, the amount of money for each and the total needed. • Let students calculate changes during shopping.	• Give students homework on buying three items

Unit 8: Time *(6 periods)*

Unit outcomes: Students will be able to:

- describe the relationship between hour and minutes
- read an analogue and a digital clock in hours, minutes
- relate days, weeks, months and years
- read a simple calendar.

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
Students will be able to: • read an analogue clock • read a digital clock • match times on analogue and digital clocks	***8. Time*** **8.1 Reading clock** *(1 period)*	• Students draw clock faces showing different times of the day • Students impairs match pictures of times shown on digital and analogue clocks	• Ask students to read the time on both an analogue and a digital clock
• describe the relation between hours and minutes • add the same units of time given in whole numbers • subtract the same units of time given in whole numbers	**8.2 Hours and minutes** *(2 periods)*	• Using an analogue or a digital clock students discover the relationship between minutes and hours • Students make a table of hours & minutes showing the relationships between them • Students add and subtract units of time given in whole numbers.	• Ask students to add and subtract times in the same unit • Ask students to tell you how many minutes are in 2 hours
• relate the days, weeks, months and the years • solve word problems involving days, weeks, months and years	**8.3 Days, weeks, months and years** *(2 periods)*	• Students use table of days, weeks, months and a year showing the relationships between them like 7 days in 1 week 4 weeks in 1 month 12 months in 1 year	• Ask students questions on the number of days in a week a month in a year.
• read a simple calendar • find today's date on a calendar • describe dates by using the short way of writing date.	**8.4 A simple calendar** *(1 period)*	• Bring a calendar to class for students to read • Students find their own birthday on the class calendar • Let the students write the date like October 22, 1990 as 22/10/90	• Ask students to show a certain date on the calendar • Ask students question likes: "How many days are in a week?" "How many weeks are on a year?" "How many months are in a year by" showing calendar.

Unit 9: Data handling *(5 periods)*

Unit outcomes: Students will be able to:

- construct simple picture graphs from data collected
- read data from simple picture graphs

Competencies	*Contents*	*Teaching and learning activities and resources*	*Assessment Techniques*
Students will be able to: • collect and organize data • construct a simple picture graph from collected data	***9. Data handling*** **9.1 Simple picture graphs** *(3 periods)*	• Students collect data like the favorite drink of their peers and record it on a picture graph • Students in pairs perform a simple experiment like tossing a coin 50 times and record the data on a picture graph • Students draw picture graphs like: Banana -  Orange - 	• Ask students to collect data from their home like how many are male and how many female
• read data from a picture graph	**9.2 Interpretation of simple picture graphs** *(2 periods)*	• Acquire a picture graph from the newspaper or a Government department like Health and ask the students in groups to interpret it	• Ask students to interpret a picture graph you have made like showing the number of heads and tails from tossing a coin