

# Mathematics Scope and Sequence- EY3 - Grade 5

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**Mathematics Belief Statement** We believe mathematics is a global language that allows for all attributes of the learner profile to be developed. We believe that in a mathematical learning community, students develop, construct and communicate their understanding of mathematical concepts. Students are given time to explore and develop their understanding in a stimulating and accepting environment. Through being open-minded and using alternative models of thinking they develop efficient strategies for finding solutions. They develop skills and incorporate the appropriate use of technology through a concept-based curriculum driven by inquiry. Planning, teaching and assessing in mathematics should include engaging activities, discussions and problem solving in authentic settings. Making connections within and between strands is important for developing student's mathematical understanding.

**PYP Mathematics Phases** The PYP mathematics scope and sequence is based on the understanding that students construct meaning about mathematics concepts in a more developmental way rather than in fixed age bands.- Each student is a unique individual with different life experiences and no two learning pathways are the same.- Students within the same age group will have different proficiency levels and needs; therefore, teachers should consider a range of phases when planning mathematics learning experiences for a class.- Students are likely to display understanding and skills from more than one of the phases at a time.- A student may move onto the next phase without attaining all the outcomes of a particular phase. A student does not need to be in the same phase for each strand.- VIS will use and adapt the PYP scope and sequences according to our needs. VIS will frame our mathematics scope and sequence document around the conceptual understanding outlined in the PYP document, but develop other aspects (for example, indicators and benchmarks) differently.

Number &dash; Benchmark Summary by Grade

## EY 3

uses language:

counting

sorts items to form sets

matches pairs of sets up to 5 objects

## EY4

use more and less;

as many as

use language:

more, less

counts to 10

matches numerals (1,2,3,4,5) to sets

creates sets with one to 5 objects, not in counting order

puts sets in order to show relationship 'one less than' and 'one more than'

creates a matching set with 1 to 10 objects

can count by 1's to 10 beginning with any number less than 10

knows what is one fewer or more than a number to 5

Counts to 10 counts by 1's to 10 beginning with any number less than 10

matches numerals (1,2,3,4,5) to sets uses fraction name 'half' in real-life situations

## Prep

use more less, first, second

use language: more, less, first, second

counts to 30 matches number words (one, two, three) to sets, not in counting order

creates sets with one to 20 objects, not in counting order

compares sets to find which has more or less

states 'one' for both written one and numeral '1'; similarly up to 10

understands zero means none identifies the number that is one more, two more, one less, two less than a given number to 20

creates a matching set up to 20 objects

rearranges a set and still understand there is the same number of objects

recognizes groups of zero to five objects without counting can count by 1's to 20 beginning with any number less than 20

knows what is one fewer or more than a number to 20

compares sets to find which has more or less creates a matching set up to 20 objects

recognises subsets in a set of up to 10, for example a set of three is made up of a subset of one and a subset of two

count to 30 can count by 1's to 20 beginning with any number less than 20

matches number names (one, two, three) to sets with 1 to 10 objects, not in counting order

able to say 'one' for both written one and numeral '1'; similarly up to 10

uses ordinal numbers to describe the position of things in a sequence to 10

use cardinal numbers to 'fifth'

understands that '10' means one 'tens' and zero 'ones'

create sets of 10 objects estimates the number of objects in a set of 6 -20

counts by 1's to 20 beginning with any number less than 20

matches number names (one, two, three) to sets of 1 to 10 objects, not in counting order

interprets (retell the action and sequence) and solve combining and partitioning of sets problems

creates own 'story' to match a given situation where sets are combined and partitioned

uses fraction name half, quarter in real life situations

uses objects (paper, ribbon) to model half and quarter uses fraction  $\frac{1}{2}$  and  $\frac{1}{4}$  in real life situations

Grade 1

can count by 1's to 100 beginning with any number less than 100

knows 1, 2 and 10 fewer or more than a number to 100

recognises subsets in a set of up to 20, for example a set of three is mad up of a subset of one and a subset of two

can count by 1's to 100 beginning with any number less than 100

use ordinal numbers to describe the position of things in a sequence to 100

use cardinal numbers to 20

understands what each digit in 2 digit number means up to 99

use manipulatives to model numbers up to 105

estimates the number of objects in a set to 50

counts by 1's to 105 beginning with any number less than 100

reads, writes and orders numbers to 105 in real-life situations

counts by 1s, 2s, 5s, 10s, to 100 forward and backwards

demonstrates fluency with addition and subtraction facts to 10

knows and applies strategies to solve addition and subtraction facts to 10

demonstrates fluency in two addend combinations to 10

finds more than one combination for two addends for a number up to 10 (ie - 7 is 4 and 3 and it's 5 and 2)

knows +0's, +1s, -0's, and -1's facts to 18

demonstrates fluency in doubles to 20 (1+1, 2+2, 3+3)

uses language: add, take away, plus, minus

reads, writes and models addition and subtraction sentences to 20

interprets (retell the action and sequence) and solves addition and subtraction story problems

creates own 'story' to tell about given number sentence

solves addition and subtraction story problems with manipulatives, pictures and numbers

combines 2 numbers to 20 by counting on from one quantity

solves multiplication and division story problems with manipulatives and/or pictures

uses language: half, equal, fourth, quarter

uses objects, manipulatives or pictures to model simple fractions

uses fractions  $\frac{1}{2}$ ,  $\frac{1}{3}$ ,  $\frac{2}{3}$ ,  $\frac{1}{4}$ ,  $\frac{2}{4}$ ,  $\frac{3}{4}$  in real life situations

understands that fraction must have equal parts

## Grade 2

understands the value of each digit in a 3 digit number up to 999

uses manipulatives or diagrams to model numbers up 999

estimates the number of objects in a set to 100 and beyond

counts to 100 by 10's starting at any point from 1 to 9

reads, writes, orders and compares numbers to 1000 in real life situations

counts by 2s, 3s, 4s, 5s, 10s to 100, forwards and backwards

demonstrates fluency with addition and subtraction facts to 20

knows and applies strategies to solve addition and subtraction facts to 20

demonstrates fluency in 2s, 5s, and 10 multiplication table

adds columns of single digit numbers using one efficient strategy

uses language: add, take away, plus, minus, sum difference

reads, writes and models addition and subtraction problems to 100, without and with regrouping

interprets and solves addition and subtraction story problems with number sentences

creates many different 'stories' to match a given addition and subtraction sentence

demonstrates at least one efficient paper/pencil method for adding any two double-digit numbers (more efficient than counting on by 1s)

writes an equation to represent an addition or subtraction situation

determines the difference between 2 numbers up to 99

explains the order in which numbers are added does not affect the sum but may affect the difference

solves multiplication and division story problems with manipulatives, pictures and/or numbers

creates many different 'stories' to match a given addition, subtraction and multiplication sentence

models division situations using 'share equally into groups' models multiplication situations using 'groups of'

selects and explains an appropriate method of solving a problem

uses language, equal, numerator, denominator

understand, model, read, write, order, compare wholes, halves, quarters, fifths

finds  $\frac{1}{2}$  of a set of objects

models equivalence to one whole

adds and subtracts fractions with same denominator using models and pictures

### Grade 3

understands the value of each digit in a number up to 99,999

models numbers to 99,999 using base 10 value system

estimates the number of objects in set to 1000 and beyond

counts by 20s to 1000 starting at any multiple of 20

reads, writes, orders and compares numbers to 99,999 in real life situations

counts by 20s to 1000 starting at any multiple of 20

reads and models decimal fractions to tenths

demonstrates fluency with multiplication facts 1, 2, 3, 4, 5, 9, 10

knows and applies strategies to solve multiplication and division facts to 20

adds columns of single digit numbers using a variety of strategies

uses language add, addition, plus, minus, difference, subtraction, multiplication, product, division

reads, writes and models addition and subtraction problems to 1000

demonstrates more than one efficient paper and pencil strategies to add and subtract numbers

models multiplication and division facts to 10 using pictures, manipulatives, arrays and sentences

creates many different 'stories' to match a number sentence or array  
models division situations using 'shared equally' and arrays  
models multiplication using 'groups of' and 'arrays'  
uses the commutative property ( $3 \times 5 = 5 \times 3$ ) and associative property  $2 \times (5 \times 4) = 2 \times (5 \times 4)$  to simplify calculations  
demonstrates and explains an efficient method of solving a problem  
solves addition, subtraction and multiplication problems with number sentences  
identifies the operation needed for solving a problem  
use language: numerator, denominator, equivalent, mixed number  
understands, models, reads, writes, orders, compares fractions to hundredths  
orders fractions with like denominators  
models equivalency of fractions  $\frac{2}{4} = \frac{1}{2}$   
reads, writes and models mixed numbers  
adds and subtracts fractions with same denominator

#### Grade 4

understands the value of each digit in a number up to 1 million  
models numbers to 1 million using base 10 value system  
reads, writes, orders, compares numbers to 1,000,000, particularly with Lao money  
reads, writes, compares, orders decimal fractions to tenths  
use diagrams to model integers in real-life situations (lifts/elevators, thermometers)  
model percentages using fractions, manipulatives and pictures  
demonstrates fluency with multiplication and division facts to 10  
demonstrates strategies to multiply and divide 3 digit numbers by 1 digit numbers  
creates and solves double digit multiplication problem  
demonstrates and explains the commutative property ( $3 \times 5 = 5 \times 3$ ) and associative property  $2 \times (5 \times 4) = 2 \times (5 \times 4)$  to simplify calculations  
demonstrates and explains many methods of solving a problem, choosing the most efficient  
solves addition, subtraction, multiplication, division problems efficiently choosing from a variety of strategies  
identifies and demonstrates the operation needed for solving a problem  
identifies fractional parts of a group/set  
orders fractions with like and unlike denominators  
finds lowest common denominator to model equivalency using fraction pieces  
reads, writes, models and compares mixed numbers and improper fractions  
reads, writes and models addition and subtraction of fractions with related denominators

acts out division of fractions using story situations

compares, simplifies and orders fractions

simplifies fractions to find equivalency

converts mixed numbers to improper fractions and vice versa

models addition, subtraction, multiplication and division of fractions

creates own stories to act out division and multiplication of fractions

Grade 5

explains the value of any digit beyond a million

reads, writes, orders, compares numbers beyond a million

reads, writes, compares, orders decimal fractions to hundredths

use number lines to find integers

interchanges fractions, decimals, percents

use number line to model and name integers demonstrates fluency in all basic facts (x, +, -, division) uses language: factor, multiple, product, quotient, prime number, composite number