

# Math

## GRADE 2

### STANDARD 1

The student understands and applies the concepts and procedures of *number sense and operations*

To meet this standard, the student will:

**Benchmark 2.1.1: Represent whole numbers using concrete materials, drawings, numerals, and number words**

**Indicators:**

- 2.1.1.1 Recognize, read and print number words to hundreds
- 2.1.1.2 Read and write whole numbers in standard, expanded and written form (ex.  $38=30+8$ =thirty-eight)
- 2.1.1.3 Count by 10s and 1s
- 2.1.1.4 Identify place-value patterns (e.g., trading 10 ones for 1 ten) and use zero as a place holder
- 2.1.1.5 Model numbers in different ways
- 2.1.1.6 Count and write to 1000 by 100s, 10s, and 1s
- 2.1.1.7 Use ordinal numbers to twentieth
- 2.1.1.8 Determine between an even and odd number

**Benchmark 2.1.2: Compare and order whole numbers using concrete materials, drawings, numerals, and number words to develop an understanding of place value**

**Indicators:**

- 2.1.2.1 Compare and order whole numbers to 100 using concrete materials, drawings, words and symbols (<, >, =)
- 2.1.2.2 Locate whole numbers to 50 on a number line and partial number line (e.g., from 34 to 41)
- 2.1.2.3 Show counting by 2's, 5's, and 10's to 50 on a number line
- 2.1.2.4 Count by 1's, 2's, 5's, 10's, and 25's with different starting points
- 2.1.2.5 Count backwards by 1's from 20
- 2.1.2.6 Compare and order collections of coins by value
- 2.1.2.7 Compare and order numbers to 1000

**Benchmark 2.1.3: Compare proper fractions using concrete materials**

**Indicators:**

- 2.1.3.1 Represent and explain halves, thirds, and fourths as part of a whole and part of a set using concrete materials and drawings (e.g., color 2 out of 4 circles)
- 2.1.3.2 Compare two proper fractions using concrete materials (e.g., use pattern blocks to show that the relationship of 3 triangles to 6 triangles is the same as that of 1 trapezoid to 2 trapezoids because both represent half of a hexagon)

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

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**Benchmark 2.1.4: Understand and use basic operations (addition, subtraction) of whole numbers by modeling**

**Indicators:**

- 2.1.4.1 Add 2 single-, double- and triple-digit numbers with and without regrouping, with sums less than 1001, using concrete materials and other strategies
- 2.1.4.2 Subtract 2 single-, double- and triple-digit numbers with and without regrouping, with sums less than 1001, using concrete materials and other strategies
- 2.1.4.3 Add 3 numbers with and without regrouping.
- 2.1.4.4 Add and subtract money amounts to 100¢ using concrete materials, drawings, and symbols
- 2.1.4.5 Use arrays to show multiplication

**Benchmark 2.1.5: Use and describe an estimation strategy (e.g., grouping, comparing, and rounding to the nearest ten) and check an answer for reasonableness using a defined procedure**

**Indicators:**

- 2.1.5.1 Round numbers to the nearest tenth
- 2.1.5.2 Use inverse operations to check an answer

**Benchmark 2.1.6: Justify in verbal expression the method chosen for addition and subtraction: estimation, mental computations, concrete materials, algorithms, etc.**

**Indicators:**

- 2.1.6.1 Pose and solve number problems with at least one operation (e.g., if there are 24 students in our class and 8 wore boots, how many students did not wear boots?)
- 2.1.6.2 Select and use appropriate strategies (e.g., pencil and paper, estimation, concrete materials) to solve number problems involving addition and subtraction
- 2.1.6.3 Explain a variety of strategies to find sums and differences of 2 or 3 two-digit numbers

**Benchmark 2.1.7: Be proficient at mental calculations for addition and subtraction**

**Indicators:**

- 2.1.7.1 Recall addition and subtraction facts to 18
- 2.1.7.2 Mentally add and subtract one-digit numbers
- 2.1.7.3 Demonstrate that adding and subtracting 10s changes only 10s digit
- 2.1.7.4 Demonstrate that adding ones changes the 1s digit
- 2.1.7.5 Mentally estimate more or less than given an addition or subtraction sentence
- 2.1.7.6 Mentally add single digit numbers
- 2.1.7.7 Mentally subtract single digit numbers

**Benchmark 2.1.8: Understand the significance of numbers within the surrounding environment**

**Indicators:**

- 2.1.8.1 Use mathematical language to identify and describe numbers to 100 in the world around them
- 2.1.8.2 Discuss the use of number and arrangement in their community (e.g., cans on a grocery store shelf, cost of 5 candies)
- 2.1.8.3 Recognize the relationship between money and numbers
- 2.1.8.4 Recognize that numbers are part of God's stories in the Bible

*Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator*

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# Math

## GRADE 2

### STANDARD 2

The student understands and applies and concepts and procedures of *patterns and algebra*.

To meet this standard, the student will:

**Benchmark 2.2.1: Identify, extend, and create number, geometric, and measurement patterns, and patterns in their environment**

**Indicators:**

- 2.2.1.1 Recognize that patterning results from repeating an operation (e.g., addition)
- 2.2.1.2 Predict and extend repeating patterns (numerical and geometric)
- 2.2.1.3 Describe and make models of patterns encountered in any context (e.g., wallpaper borders, calendars), and read charts that display the patterns
- 2.2.1.4 Identify patterns (e.g., in shapes, sounds, and 100s chart)
- 2.2.1.5 Combine two attributes in creating a pattern (e.g., size and position)
- 2.2.1.6 Use one fact to find another (e.g., use fact families or adding on)
- 2.2.1.7 Find the missing part to an addition or subtraction sentence

**Benchmark 2.2.2: Explore patterns and pattern rules**

**Indicators:**

- 2.2.2.1 Explore patterns in a hundreds chart
- 2.2.2.2 Relate growing and shrinking patterns to addition and subtraction
- 2.2.2.3 Explain a pattern rule
- 2.2.2.4 Given a rule, extend a pattern in a table (functions)
- 2.2.2.5 Transfer patterns from one medium to another (e.g., actions, words, symbols, pictures, objects, calculator)

**Benchmark 2.2.3: Identify relationships between and among patterns**

**Indicators:**

- 2.2.3.1 Identify patterns in addition and subtraction sentences
- 2.2.3.2 Identify patterns in order to find a missing value
- 2.2.3.3 Investigate the properties of whole numbers (e.g., addition fact families,  $3 + 2 = 2 + 3$ )
- 2.2.3.4 Recognize equivalent expressions (such as  $5+1=6$  and  $4+2=6$ )

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

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# Math

## GRADE 2

### STANDARD 3

The student understands and applies the concepts and procedures of *geometry*.

To meet this standard, the student will:

**Benchmark 2.3.1: Identify, describe, compare, and classify polygons using concrete materials and drawings**

**Indicators:**

- 2.3.1.1 Explore and identify two-dimensional shapes using concrete materials and drawings (e.g., circle, triangle, square, trapezoid, parallelogram, hexagon, etc. )
- 2.3.1.2 Compare and sort two-dimensional shapes according to number of sides and vertices (congruency)
- 2.3.1.3 Compare and contrast two-dimensional shapes

**Benchmark 2.3.2: Understand key concepts in transformational geometry using concrete materials and drawings**

**Indicators:**

- 2.3.2.1 Demonstrate congruency of figures using concrete materials
- 2.3.2.2 Demonstrate an understanding of a line of symmetry in a two-dimensional shape by using paper folding and reflections (e.g., using paint-blot pictures, Mira)
- 2.3.2.3 Demonstrate transformations, such as flips, slides, and turns (reflections, translations, and rotations), using concrete materials
- 2.3.2.4 Make a pattern using two-dimensional shapes (e.g., pattern blocks, tangram)
- 2.3.2.5 Identify and perform translations of simple figures using concrete materials (e.g., to the left, to the right, up and down)

**Benchmark 2.3.3: Investigate the attributes of and build three-dimensional objects and models**

**Indicators:**

- 2.3.3.1 Explore and identify three-dimensional figures using concrete materials and drawings (e.g., sphere, cylinder, cone, cube, rectangular prism, pyramid)
- 2.3.3.2 Compare and sort three-dimensional figures according to one geometric attribute (e.g., side, angle)
- 2.3.3.3 Explore the three-dimensional model from an illustration and skeleton, using concrete materials (e.g., make a house from clay or Plasticine)
- 2.3.3.4 Explore faces and plane figures from solid figures
- 2.3.3.5 Explore the three-dimensional figures and concrete materials in building a structure or model

**Benchmark 2.3.4: Describe location and movements on a grid**

**Indicator:**

- 2.3.4.1 Describe the specific location of objects on a grid or map (e.g., right 2, up 3)

Key: 1, Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

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**Benchmark 2.3.5: Use mathematical language effectively to describe geometric concepts, reasoning, and investigations**

**Indicator:**

2.3.5.1 Describe the attributes of regular polygons using geometric language (e.g., sides, vertices)

*Key: 1, Grade 1, Standard 1.1, Benchmark 1.1.1, Indicator*

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# Math

## GRADE 2

### STANDARD 4

The student understands and applies the concepts and procedures of *measurement*

To meet this standard, the student will:

**Benchmark 2.4.1:** Demonstrate an understanding of and ability to apply measurement terms: centimeter, meter, second, minute, hour, day, week, month, year, coins to \$1 value, liters, grams, kilograms,

**Indicators:**

- 2.4.1.1 Demonstrate an understanding that a standard unit of measure is used to describe the measure of an object (e.g., a foot length is used repeatedly to describe the length of a room)
- 2.4.1.2 Measure lengths to the nearest inch, foot, yard, centimeter and meter
- 2.4.1.3 Select an appropriate non-standard unit and an appropriate standard unit to measure length
- 2.4.1.4 Demonstrate an understanding of the relationship between days and weeks, months and years, minutes and hours, hours and days
- 2.4.1.5 Name the months of the year in order and read the date on a calendar
- 2.4.1.6 Read digital and analog clocks, and tell and write time to the quarter-hour and 5 minutes
- 2.4.1.7 Identify the difference between AM and PM for time
- 2.4.1.8 Use a thermometer to determine whether temperature is rising or falling in Fahrenheit and Celsius
- 2.4.1.9 Name and state the value of all coins and demonstrate an understanding of their value
- 2.4.1.10 Estimate and count money amounts to \$1 and record money amounts using the cent symbol
- 2.4.1.11 Create equivalent sets of coins up to \$1 in value
- 2.4.1.12 Show same amounts of money on a tally table

**Benchmark 2.4.2:** Identify relationships among measurement

**Indicators:**

- 2.4.2.1 Demonstrate an understanding that the measure of one object can be used to describe a similar attribute of another object (e.g., the mass of a box can be used to measure the mass of a larger box)
- 2.4.2.2 Use mathematical language to describe relative times, sizes, temperatures, amounts of money, areas, masses, and capacities (e.g., higher tower, fewer cups)
- 2.4.2.3 Demonstrate an understanding of some standard units of measure: for length and distance (inch, foot, yard, centimeter, and meter)
- 2.4.2.4 Demonstrate an understanding of some standard units of measure for capacity (liter, cup, quart, gallon)

**Benchmark 2.4.3:** Solve problems related to their day-to-day environment using concrete experiences of measurement and estimation

**Indicators:**

- 2.4.3.1 Estimate and measure the passage of time using minutes and hours
- 2.4.3.2 Relate changes in temperature to their own experiences (e.g., how changes in temperature during the day affect their activities);
- 2.4.3.3 Use non-standard and standard units to solve measurement problems relating to themselves and their environment

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

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**Benchmark 2.4.4: Estimate, measure, and record the perimeter and the area of two-dimensional shapes and compare the perimeters and areas**

**Indicators:**

- 2.4.4.1 Estimate, measure, and record the linear dimensions of objects using non-standard and standard units (centimeter, meter), and compare and order objects by their linear dimensions
- 2.4.4.2 Measure and record the distance around objects using non-standard units, and compare the distances
- 2.4.4.3 Estimate and measure specified areas using uniform non-standard units, and record the measures (e.g., the area of the page is four pencil cases);

**Benchmark 2.4.5: Estimate, measure, and record the capacity of containers and the mass of familiar objects using non-standard units, and compare the measures**

**Indicators:**

- 2.4.5.1 Be familiar with the results of measurement activities in a variety of ways (e.g., in graphs, stories, venn diagrams, pictographs, bar graphs and line plots)
- 2.4.5.2 Estimate, measure, and record the capacity of containers using non-standard units, compare the measures, and order a collection of containers by capacity
- 2.4.5.3 Estimate, measure, and record the mass of objects using non-standard units, compare the measures, and order a collection of objects by mass.

# Math

## GRADE 2

### STANDARD 5

The student understands and applies the concepts and procedures of *data analysis and probability*.

To meet this standard, the student will:

#### **Benchmark 2.5.1: Sort and classify objects and data**

##### **Indicators:**

- 2.5.1.1 Sort and classify concrete objects, pictures, and symbols according to two specific attributes (e.g., shape and texture)
- 2.5.1.2 Identify attributes and rules in presorted sets
- 2.5.1.3 Recognize that an object can have more than one attribute

#### **Benchmark 2.5.2: Collect and organize data**

##### **Indicators:**

- 2.5.2.1 Generate questions that have a finite number of responses for a given topic (e.g., how many different items of clothing are you wearing?)
- 2.5.2.2 Collect first-hand data from their environment (e.g., the number of days of sun, rain, snow during the month of November)
- 2.5.2.3 Record results of a survey in a frequency table and bar graph
- 2.5.2.4 Organize data using graphic organizers (e.g., diagrams, charts, graphs, webs) and various recording methods (e.g., placing stickers, drawing graphs)

#### **Benchmark 2.5.3: Interpret displays of data, and present and discuss the information**

##### **Indicators:**

- 2.5.3.1 Identify the basic parts of a graph: labels, scales, title, data
- 2.5.3.2 Explore simple concrete graphs, bar graphs, and pictographs using one-to-one correspondence
- 2.5.3.3 Interpret data from a graph (e.g. frequency table, bar graph, pictograph)
- 2.5.3.4 Find the range and mode for a set of data
- 2.5.3.5 Pose questions about meanings derived from the data on graphs (e.g., which was the rainiest month?)

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

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**Benchmark 2.5.4: Demonstrate an understanding of probability and demonstrate the ability to apply probability in familiar day-to-day situations**

**Indicators:**

- 2.5.4.1 Explore through simple games and experiments the likelihood that an event may occur
- 2.5.4.2 Investigate simple probability situations (e.g., flipping a coin, tossing dice) and record results
- 2.5.4.3 Use mathematical language (e.g., certain, impossible, likely, unlikely, probably) in informal discussion to describe probability
- 2.5.4.4 Predict possible outcomes

*Key: 1, Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator*

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