

# Math, Grade 2 (IMRA)

Subject: Mathematics

Grade: 02

Expectations: 50

Breakouts: 158

## (a) Introduction.

1. The desire to achieve educational excellence is the driving force behind the Texas essential knowledge and skills for mathematics, guided by the college and career readiness standards. By embedding statistics, probability, and finance, which focus on computational thinking, mathematical fluency, and solid understanding, Texas will lead the way in mathematics education and prepare all Texas students for the challenges they will face in the 21st century.
2. The process standards describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed for each grade and course is intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life. The process standards are integrated at every grade level and course. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace. Students will use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Students will select appropriate tools such as real objects, manipulatives, algorithms, paper and pencil, and technology and techniques such as mental math, estimation, number sense, and generalization and abstraction to solve problems. Students will effectively communicate mathematical ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, computer programs, and language. Students will use mathematical relationships to generate solutions and make connections and predictions. Students will analyze mathematical relationships to connect and

- (1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
- (A) apply mathematics to problems arising in everyday life, society, and the workplace;
    - (i) apply mathematics to problems arising in everyday life
    - (ii) apply mathematics to problems arising in society
    - (iii) apply mathematics to problems arising in the workplace
  - (B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - (i) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process
    - (ii) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the reasonableness of the solution
  - (C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
    - (i) select tools, including real objects as appropriate, to solve problems
    - (ii) select tools, including manipulatives as appropriate, to solve problems
    - (iii) select tools, including paper and pencil as appropriate, to solve problems
    - (iv) select tools, including technology as appropriate, to solve problems
    - (v) select techniques, including mental math as appropriate, to solve problems
    - (vi) select techniques, including estimation as appropriate, to solve problems
    - (vii) select techniques, including number sense as appropriate, to solve problems
  - (D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
    - (i) communicate mathematical ideas using multiple representations, including symbols as appropriate
    - (ii) communicate mathematical ideas using multiple representations, including diagrams as appropriate
    - (iii) communicate mathematical ideas using multiple representations, including graphs as appropriate
    - (iv) communicate mathematical ideas using multiple representations, including language as appropriate
    - (v) communicate mathematical reasoning using multiple representations, including symbols as appropriate
    - (vi) communicate mathematical reasoning using multiple representations, including diagrams as appropriate
    - (vii) communicate mathematical reasoning using multiple representations, including graphs as appropriate
    - (viii) communicate mathematical reasoning using multiple representations, including language as appropriate
    - (ix) communicate [mathematical ideas'] implications using multiple representations, including symbols as appropriate
    - (x) communicate [mathematical ideas'] implications using multiple representations, including diagrams as appropriate

- (xi) communicate [mathematical ideas'] implications using multiple representations, including graphs as appropriate
- (xii) communicate [mathematical ideas'] implications using multiple representations, including language as appropriate
- (xiii) communicate [mathematical reasoning's] implications using multiple representations, including symbols as appropriate
- (xiv) communicate [mathematical reasoning's] implications using multiple representations, including diagrams as appropriate
- (xv) communicate [mathematical reasoning's] implications using multiple representations, including graphs as appropriate
- (xvi) communicate [mathematical reasoning's] implications using multiple representations, including language as appropriate

(E) create and use representations to organize, record, and communicate mathematical ideas;

- (i) create representations to organize mathematical ideas
- (ii) use representations to organize mathematical ideas
- (iii) create representations to record mathematical ideas
- (iv) use representations to record mathematical ideas
- (v) create representations to communicate mathematical ideas
- (vi) use representations to communicate mathematical ideas

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

- (i) analyze mathematical relationships to connect mathematical ideas
- (ii) analyze mathematical relationships to communicate mathematical ideas

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

- (i) display mathematical ideas using precise mathematical language in written or oral communication
- (ii) display mathematical arguments using precise mathematical language in written or oral communication
- (iii) explain mathematical ideas using precise mathematical language in written or oral communication
- (iv) explain mathematical arguments using precise mathematical language in written or oral communication
- (v) justify mathematical ideas using precise mathematical language in written or oral communication
- (vi) justify mathematical arguments using precise mathematical language in written or oral communication

(2) Number and operations. The student applies mathematical process standards to understand how to represent and compare whole numbers, the relative position and magnitude of whole numbers, and relationships within the number system related to place value. The student is expected to:

- (A) use concrete and pictorial models to compose and decompose numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones;
  - (i) use concrete models to compose numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones

- (ii) use concrete models to decompose numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
  - (iii) use pictorial models to compose numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
  - (iv) use pictorial models to decompose numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- ~ • use standard, word, and expanded forms to represent numbers up to 1,200;
- ~ ] • use standard forms to represent numbers up to 1,200
  - ~ ] ] • use word forms to represent numbers up to 1,200
  - ~ ] ] ] • use expanded forms to represent numbers up to 1,200





(i) determine whether a number up to 40 is even or odd using pairings of objects to represent the number

(B)

- (iii) sort polygons with 12 or fewer sides according to attributes, including identifying the number of sides
  - (iv) sort polygons with 12 or fewer sides according to attributes, including identifying the number of vertices
- (D) compose two-dimensional shapes and three-dimensional solids with given properties or attributes; and
- (i) compose two-dimensional shapes with given properties or attributes
  - (ii) compose three-dimensional solids with given properties or attributes
- (E) decompose two-dimensional shapes such as cutting out a square from a rectangle, dividing a shape in half, or partitioning a rectangle into identical triangles and identify the resulting geometric parts.
- (i) decompose two-dimensional shapes
  - (ii) identify the resulting geometric parts
- (9) Geometry and measurement. The student applies mathematical processes to select and use units to describe length, area, and time. The student is expected to:
- (A) find the length of objects using concrete models for standard units of length;
- (i) find the length of objects using concrete models for standard units of length
- (B) describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object;
- (i) describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object
- (C) represent whole numbers as distances from any given location on a number line;
- (i) represent whole numbers as distances from any given location on a number line
- (D) determine the length of an object to the nearest marked unit using rulers, yardsticks, meter sticks, or measuring tapes;
- (i) determine the length of an object to the nearest marked unit using rulers, yardsticks, meter sticks, or measuring tapes
- (E) determine a solution to a problem involving length, including estimating lengths;
- (i) determine a solution to a problem involving length, including estimating lengths
- (F) use concrete models of square units to find the area of a rectangle by covering it with no gaps or overlaps, counting to find the total number of square units, and describing the measurement using a number and the unit; and
- (i) use concrete models of square units to find the area of a rectangle by covering it with no gaps or overlaps, counting to find the total number of square units, and describing the measurement using a number and the unit
- (G) read and write time to the nearest one-minute increment using analog and digital clocks and distinguish between a.m. and p.m.
- (i) read time to the nearest one-minute increment using analog clocks
  - (ii) write time to the nearest one-minute increment using analog clocks
  - (iii) read time to the nearest one-minute increment using digital clocks
  - (iv) write time to the nearest one-minute increment using digital clocks





- (ii) use concepts of benefits to evaluate lending decisions
  - (iii) use concepts of costs to evaluate lending decisions
- (F) differentiate between producers and consumers and calculate the cost to produce a simple item.
- (i) differentiate between producers and consumers
  - (ii) calculate the cost to produce a simple item