Math, Grade 5 (IMRA)

Subject: Mathematics
Grade: 05
Expectations: 46
Breakouts: 136

(a)

(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) selecttools, 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

(i) compare two decimals to thousandths

(ii) order two decimals to thousandths

(iii) represent comparisons using the symbols >, <, or =

(C)

(ii) represent quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using pictorial models, including area models

(G) solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm;

(i) solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies

(ii) solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using algorithms, including the standard algorithm

(H) represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations;

(i) represent addition of fractions with unequal denominators referring to the same whole using objects

(ii) represent addition of fractions with unequal denominators referring to the same whole using pictorial models

(iii) represent addition of fractions with unequal denominators referring to the same whole using properties of operations

(iv) represent subtraction of fractions with unequal denominators referring to the same whole using objects

(v) represent subtraction of fractions with unequal denominators referring to the same whole using pictorial models

(vi) represent subtraction of fractions with unequal denominators referring to the same whole using properties of operations

(vii) solve addition of fractions with unequal denominators referring to the same whole using objects

(viii) solve addition of fractions with unequal denominators referring to the same whole using pictorial models

(ix) solve addition of fractions with unequal denominators referring to the same whole using properties of operations

(x) solve subtraction of fractions with unequal denominators referring to the same whole using objects

(xi) solve subtraction of fractions with unequal denominators referring to the same whole using pictorial models

(xii) solve subtraction of fractions with unequal denominators referring to the same whole using properties of operations

(I) represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models;

(i) represent multiplication of a whole number and a fraction that refers to the same whole using objects

(ii) represent multiplication of a whole number and a fraction that refers to the same whole using pictorial models, including area models

(iii) solve multiplication of a whole number and a fraction that refers to the same whole using objects

(iv) solve multiplication of a whole number and a fraction that refers to the same whole using pictorial models, including area models

(J) represent division of a unit fraction by a whole number and the division of a whole number by a unit fraction such as 1/3 ÷ 7 and 7 ÷ 1/3 using objects and pictorial models, including area models

(ii) use pictorial models to develop the formulas for the volume of a rectangular prism, including the special form for a cube (V = l x w x h, V = s x s x s, and V = Bh)

(H) represent and solve problems related to perimeter and/or area and related to volume.

(i) represent problems related to perimeter and/or area

(ii) represent problems related to volume

(iii) solve problems related to perimeter and/or area

(iv) solve problems related to volume

(5) Geometry and measurement. The student applies mathematical process standards to classify two-dimensional figures by attributes and properties. The student is expected to:

(A) classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based on their attributes and properties

(i) classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based on their attributes

(ii) classify two-dimensional figures in a hierarchy of sets and subsets using graphic organizers based on their properties

(6) Geometry and measurement. The student applies mathematical process standards to understand, recognize, and quantify volume. The student is expected to:

(A) recognize a cube with side length of one unit as a unit cube having one cubic unit of volume and the volume of a three-dimensional figure as the number of unit cubes (n cubic units) needed to fill it with no gaps or overlaps if possible; and

(i) recognize a cube with side length of one unit as a unit cube having one cubic unit of volume

(ii) recognize the volume of a three-dimensional figure as the number of unit cubes (n cubic units) needed to fill it with no gaps or overlaps if possible

(B) determine the volume of a rectangular prism with whole number side lengths in problems related to the number of layers times the number of unit cubes in the area of the base.

(i) determine the volume of a rectangular prism with whole number side lengths in problems related to the number of layers times the number of unit cubes in the area of the base

(7) Geometry and measurement. The student applies mathematical process standards to select appropriate units, strategies, and tools to solve problems involving measurement. The student is expected to:

(A) solve problems by calculating conversions within a measurement system, customary or metric

(i) solve problems by calculating conversions within a measurement system, customary or metric

(8) Geometry and measurement. The student applies mathematical process standards to identify locations on a coordinate plane. The student is expected to:

(A) describe the key attributes of the coordinate plane, including perpendicular number lines (axes) where the intersection (origin) of the two lines coincides with zero on each number line and the given point (0, 0); the x-coordinate, the first number in an ordered pair, indicates movement parallel to the x-axis starting at the origin; and the y-coordinate, the second number, indicates movement parallel to the y-axis starting at the origin

(i) describe the key attributes of the coordinate plane, including perpendicular number lines (axes) where

(ii) describe the key attributes of the coordinate plane, including the x-coordinate, the first number in an ordered pair, indicates movement parallel to the x-axis starting at the origin

(iii) describe the key attributes of the coordinate plane, including the y-coordinate, the second number, indicates movement parallel to the y-axis starting at the origin

(B) describe the process for graphing ordered pairs of numbers in the first quadrant of the coordinate plane; and

(i) describe the process for graphing ordered pairs of numbers in the first quadrant of the coordinate plane

(C) graph in the first quadrant of the coordinate plane ordered pairs of numbers arising from mathematical and real world problems, including those generated by number patterns or found in an input-output table.

(i) graph in the first quadrant of the coordinate plane ordered pairs of numbers arising from mathematical problems, including those generated by number patterns or found in an input-output table

(ii) graph in the first quadrant of the coordinate plane ordered pairs of numbers arising from real-world

(i)