Standards Correlation

Correlation of the ALEKS course Priority Standards Course Level 3 to the Common Core State Standards for Grade 3 (2010)

• = ALEKS course topic that addresses the standard TD = Teacher Directed

3.OA: Operations & Algebraic Thinking

Represent and solve problems involving multiplication and division.

3.OA.A.1: Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 x 7.*

- Using equal groups to find a total
- Multiplication as repeated addition
- Writing addition and multiplication sentences for equal groups
- Using multiplication to find the number of squares
- Writing a multiplication shown in a picture

3.OA.A.2: Interpret whole-number quotients of whole numbers, e.g., interpret 56 / 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 / 8.*

- Writing a division shown in a picture

3.OA.A.3: Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

- Using multiplication to find the number of squares
- Using addition and multiplication to count the objects on a grid
- Word problem with multiplication of whole numbers
- Word problem with division of whole numbers

3.OA.A.4: Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 x ? = 48, 5 = _ ÷ 3, 6 x 6 = ?.*

- Multiplying one-digit numbers: Problem type 1
- Multiplying one-digit numbers: Problem type 2
- Division facts: Problem type 1
- Division facts: Problem type 2
- Relating multiplication and division facts
- Introduction to solving an equation with multiplication or division

Understand properties of multiplication and the relationship between multiplication and division.

3.OA.B.5: Apply properties of operations as strategies to multiply and divide. *Examples: If 6 x 4 = 24 is known, then 4 x 6 = 24 is also known. (Commutative property of multiplication.) 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30, or by 5 x 2 = 10, then 3 x 10 = 30. (Associative property of multiplication.) Knowing that 8 x 5 = 40 and 8 x 2 = 16, one can find 8 x 7 as 8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 + 16 = 56. (Distributive property.)*

- Using the distributive property to multiply two whole numbers

3.OA.B.6: Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*

- Division facts: Problem type 1
- Division facts: Problem type 2
- Relating multiplication and division facts

Multiply and divide within 100.

3.OA.C.7: Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

- Multiplying one-digit numbers: Problem type 1
- Multiplying one-digit numbers: Problem type 2
- Division facts: Problem type 1

- Division facts: Problem type 2
- Relating multiplication and division facts
- Fact families for multiplication and division

Solve problems involving the four operations, and identify and explain patterns in arithmetic.

3.OA.D.8: Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

- Estimating a sum of whole numbers: Problem type 1
- Estimating a difference of whole numbers: Problem type 1

3.OA.D.9: Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

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3.NBT: Number & Operations in Base Ten

Use place value understanding and properties of operations to perform multi-digit arithmetic.

3.NBT.A.1: Use place value understanding to round whole numbers to the nearest 10 or 100.

- Rounding to tens or hundreds

3.NBT.A.2: Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

- One-digit addition with regrouping
- Addition of 3 or 4 one-digit numbers
- Adding 2-digit numbers without regrouping
- Adding a 2-digit number and a 1-digit number with regrouping
- Finding numbers that add to a multiple of 10
- Adding by making a ten
- Adding 2-digit numbers with regrouping a ten
- Adding multiples of 10 and 100
- Adding 2-digit numbers with regrouping a hundred
- Adding 3 or 4 numbers with two-digits with regrouping
- Adding by making a hundred
- Addition without regrouping using place values
- Adding 3-digit numbers with regrouping
- Subtracting a 1-digit number from a 2-digit number
- Fact families for addition and subtraction
- Subtraction of 2-digit numbers without regrouping
- Subtracting multiples of 10 and 100
- Subtraction involving 3-digit numbers without regrouping
- Addition or subtraction with 10 or 100
- Subtraction of 2-digit numbers with regrouping
- Subtraction with multiple regrouping steps involving 3-digit numbers

3.NBT.A.3: Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 x 80, 5 x 60) using strategies based on place value and properties of operations.

- Introduction to multiplication with a trailing zero

3.NF: Number and Operations - Fractions

Develop understanding of fractions as numbers.

3.NF.A.1: Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction *a/b* as the quantity formed by a parts of size 1/*b*.

- Introduction to unit fractions
- Introduction to non-unit fractions

3.NF.A.2: Understand a fraction as a number on the number line; represent fractions on a number line diagram.

3.NF.A.2.A: Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.

- Position of fractions on a number line

3.NF.A.2.B: Represent a fraction *a/b* on a number line diagram by marking off *a* lengths 1/*b* from 0. Recognize that the resulting interval has size *a/b* and that its endpoint locates the number *a/b* on the number line.

- Position of fractions on a number line
- Plotting fractions using a number line

3.NF.A.3: Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

3.NF.A.3.A: Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

- Understanding equivalent fractions: Problem type 1
- Modeling and writing equivalent fractions

3.NF.A.3.B: Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.

- Understanding equivalent fractions: Problem type 1
- Modeling and writing equivalent fractions

3.NF.A.3.C: Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*

- Conversions involving division in fractional form and whole numbers

3.NF.A.3.D: Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

- Comparing fractions with the same denominator
- Comparing fractions with the same numerator

3.MD: Measurement and Data

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

3.MD.A.1: Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

- Telling time: Minutes are a multiple of 5
- Telling time: Minutes are not a multiple of 5
- Telling time and determining a.m. or p.m.
- Word problem involving adding or subtracting time within the hour
- Introduction to adding time
- Word problem on elapsed time within the hour
- Word problem on elapsed time less than one hour

3.MD.A.2: Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

- Choosing metric measurement units
- Word problem involving metric mass or volume: Addition or subtraction
- Word problem involving metric mass or volume: Multiplication or division

Represent and interpret data.

3.MD.B.3: Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

- Introduction to interpreting a pictograph

3.MD.B.4: Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units-whole numbers, halves, or quarters.

- Measuring length to the nearest quarter or half inch

- Constructing a line plot with fractional values: Fourths

Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

3.MD.C.5: Recognize area as an attribute of plane figures and understand concepts of area measurement.

3.MD.C.5.A: A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

- Area of a rectangle on a grid
- Finding the area of a composite figure on a grid

3.MD.C.5.B: A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

- Area of a rectangle on a grid
- Finding the area of a composite figure on a grid

3.MD.C.6: Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

- Area of a rectangle on a grid
- Finding the area of a composite figure on a grid

3.MD.C.7: Relate area to the operations of multiplication and addition.

3.MD.C.7.A: Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

- Relating the area of a rectangle to multiplying its side lengths

3.MD.C.7.B: Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

- Area of a rectangle with one-digit side lengths
- Word problem involving the area of a rectangle: Problem type 1

3.MD.C.7.C: Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

- Using an area model to represent the distributive property

3.MD.C.7.D: Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

- Introduction to area of a piecewise rectangular figure
- Area of a piecewise rectangular figure
- Word problem on finding the area of a piecewise rectangular figure

Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

3.MD.D.8: Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

- Perimeter of a polygon
- Perimeter of a rectangle on a grid
- Perimeter of a square or a rectangle
- Finding the missing length in a figure
- Perimeter of a piecewise rectangular figure
- Word problem on finding the perimeter of a rectangle
- Finding an unknown side length of a polygon given the perimeter

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3.G: Geometry

Reason with shapes and their attributes.

3.G.A.1: Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

- Shared attributes among categories of quadrilaterals
- Identifying parallelograms, rectangles, and squares

3.G.A.2: Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*

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Standards for Mathematical Practices

1: Make sense of problems and persevere in solving them.

- Finding numbers that add to a multiple of 10
- Adding by making a ten
- Adding by making a hundred
- Addition without regrouping using place values
- Using equal groups to find a total
- Writing addition and multiplication sentences for equal groups
- Using multiplication to find the number of squares
- Word problem with multiplication of whole numbers
- Introduction to multiplication with a trailing zero
- Word problem with division of whole numbers
- Introduction to adding time
- Word problem on elapsed time within the hour
- Word problem on elapsed time less than one hour
- Word problem involving metric mass or volume: Addition or subtraction
- Word problem involving metric mass or volume: Multiplication or division
- Introduction to interpreting a pictograph
- Constructing a bar graph for non-numerical data
- Interpreting a bar graph
- Perimeter of a square or a rectangle
- Perimeter of a piecewise rectangular figure
- Area of a rectangle with one-digit side lengths
- Relating the area of a rectangle to multiplying its side lengths
- Finding the area of a composite figure on a grid
- Word problem on finding the area of a piecewise rectangular figure

2: Reason abstractly and quantitatively.

- Evaluating an algebraic expression: Whole number addition or subtraction
- Additive property of equality with whole numbers
- Writing a multiplication shown in a picture
- Writing a division shown in a picture
- Evaluating an algebraic expression: Whole number multiplication or division
- Introduction to solving an equation with multiplication or division
- Interpreting a tally table
- Introduction to interpreting a pictograph
- Constructing a bar graph for non-numerical data
- Interpreting a bar graph
- Constructing a line plot

3: Construct viable arguments and critique the reasoning of others.

- Using equal groups to find a total
- Writing addition and multiplication sentences for equal groups
- Understanding equivalent fractions: Problem type 1
- Modeling and writing equivalent fractions
- Interpreting a bar graph
- Using an area model to represent the distributive property
- Shared attributes among categories of quadrilaterals

4: Model with mathematics.

- Word problem with addition or subtraction of whole numbers
- Word problem with multiplication of whole numbers
- Writing a multiplication shown in a picture
- Word problem with division of whole numbers
- Writing a division shown in a picture
- Word problem involving adding or subtracting time within the hour
- Introduction to adding time
- Word problem on elapsed time within the hour

- Word problem on elapsed time less than one hour
- Word problem involving metric mass or volume: Addition or subtraction
- Word problem involving metric mass or volume: Multiplication or division
- Word problem on finding the area of a piecewise rectangular figure

5: Use appropriate tools strategically.

- Estimating a sum of whole numbers: Problem type 1
- Estimating a difference of whole numbers: Problem type 1
- Using equal groups to find a total
- Writing addition and multiplication sentences for equal groups
- Using multiplication to find the number of squares
- Introduction to unit fractions
- Introduction to non-unit fractions
- Understanding equivalent fractions: Problem type 1
- Modeling and writing equivalent fractions
- Telling time: Minutes are a multiple of 5
- Telling time: Minutes are not a multiple of 5
- Telling time and determining a.m. or p.m.
- Measuring length to the nearest inch
- Measuring length to the nearest quarter or half inch
- Perimeter of a rectangle on a grid
- Area of a rectangle on a grid
- Relating the area of a rectangle to multiplying its side lengths

6: Attend to precision.

- Introduction to inequalities
- Estimating a sum of whole numbers: Problem type 1
- Estimating a difference of whole numbers: Problem type 1
- Choosing metric measurement units
- Measuring length to the nearest inch
- Measuring length to the nearest quarter or half inch
- Finding the missing length in a figure
- Perimeter of a piecewise rectangular figure
- Word problem on finding the perimeter of a rectangle
- Area of a rectangle on a grid
- Area of a rectangle with one-digit side lengths
- Relating the area of a rectangle to multiplying its side lengths
- Word problem involving the area of a rectangle: Problem type 1
- Finding the area of a composite figure on a grid
- Introduction to area of a piecewise rectangular figure
- Word problem on finding the area of a piecewise rectangular figure

7: Look for and make use of structure.

- Whole number place value: Problem type 1
- Numeral translation: Problem type 1
- Expanded form: 2 and 3-digit numbers
- Expanded form: 4 and 5-digit numbers
- Rounding to tens or hundreds
- Addition without regrouping using place values
- Fact families for addition and subtraction
- Introduction to multiplication with a trailing zero
- Using the distributive property to multiply two whole numbers
- Multiples: Problem type 1
- Multiples: Problem type 2
- Relating multiplication and division facts
- Fact families for multiplication and division
- Introduction to parentheses
- Using an area model to represent the distributive property

8: Look for and express regularity in repeated reasoning.

- Using equal groups to find a total
- Multiplication as repeated addition
- Writing addition and multiplication sentences for equal groups
- Using the distributive property to multiply two whole numbers
- Multiples: Problem type 1

- Multiples: Problem type 2
- Relating multiplication and division facts