TABE 11/12 Mathematics Common Planning Tool for the Multi-level Classroom

TABE Level E

TABE Level M

TABE Level D

TABE Level A

DOMAIN: Number & Operations in Base Ten

28%/ 9 ?s/ NBT — **15%/ 5 ?S/ NBT**

Understand Place Value

Medium: 2.NBT.2, 2.NBT.4 / Low: 2.NBT.1b, 2.NBT.3

UNDERSTAND PLACE VALUE

- Identify the values of digits of 2- and 3-digit numbers
- Create and use multiple representations of multi-digit numbers based on place value (e.g., base ten blocks, place value charts, expanded form)

SKIP COUNT

- Skip count by 5s, 10s, and 100s
- Skip count by 5s, 10s, 100s, & by multiples of 10s & 100s

COMPARE TWO- AND THREE-DIGIT NUMBERS

- ✚ Read & write numbers to 1000 using base-ten numerals, number names, and expanded form
- Compare values of digits in multi-digit numbers

Generalize Place Value Understanding for Multi-digit Whole Numbers

Medium: 4.NBT.1 / Low: 4.NBT.3

UNDERSTAND PLACE VALUE

- ✚ Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
- ✚ Use place value understanding to round multi-digit whole numbers to any place.

Use Place Value Understanding & Properties of Operations to Add and Subtract

Medium: 2.NBT.6, 2.NBT.7

USE PLACE VALUE

- Create and use multiple representations of multi-digit decimals based on place value

EXPLAIN PROPERTIES OF OPERATIONS

- Create and use multiple representations of addition and subtraction of two- and three-digit numbers based on place value (e.g., base ten blocks, area models) and
- Create and use multiple representations of addition and subtraction of multi-digit numbers, including those with more than three digits, based on place value and connect these representations to the standard algorithms (especially where regrouping is required)

Use Place Value Understanding & Properties of Operations to Perform Multi-digit Arithmetic

Medium: 3.NBT.1 / Low: 3.NBT.2, 3.NBT.3

UNDERSTAND PLACE VALUE

- Round numbers to tens and hundreds places
- Round numbers to nearest hundreds & thousands place
- Multiply single-digit whole numbers by 10

EXPLAIN PROPERTIES OF OPERATIONS

- ✚ Fluently add & subtract within 1000 using strategies & algorithms based on place value, properties of operations, &/or the relationship between addition & subtraction.
- Explore patterns in multiplying numbers by 10
- Investigate the relationship between skip counting and multiplication and division

Low: 4.NBT.4, 4.NBT.5, 4.NBT.6

PERFORM MULTI-DIGIT ARITHMETIC

- ✚ Create & use multiple representations of addition & subtraction of multi-digit numbers, including those with more than 3 digits, based on place value &connect these representations to the standard algorithms (especially where regrouping is required).
- ✚ Multiply a whole number of up to 4 digits by a one-digit whole number, & multiply 2 two-digit numbers, using strategies based on place value & properties of operations. Illustrate & explain calculation by using equations, rectangular arrays, &/or area models.

FIND QUOTIENTS & REMAINDERS

- Use various strategies to divide two-, three-, and four-digit numbers by one- and two-digit numbers

Understand the Place Value System

Medium: 5.NBT.3a, 5.NBT.3b / Low: 5.NBT.4

UNDERSTAND PLACE VALUE

- Compare the values of digits in multi-digit numbers and observing patterns

Create & use models for decimals & use properties of operations to add & subtract decimals to hundredths place

✚ Create & use multiple representations of multi-digit decimals based on place value

UNDERSTAND DECIMALS

Create & use models for decimals & use properties of operations to multiply & divide decimals to hundredths place

Create models of decimals and use decimal notation

Examine relationships between decimals, fractions, & whole numbers

COMPARE & COMPOSE TENS

Compare decimals to the thousandths place

ROUND

Round multi-digit numbers to the thousands and ten thousands places and examine the values of the digits in each place

Perform Operations with Multi-digit Whole Numbers & with Decimals to Hundredths

Low: 5.NBT.5, 5.NBT.7

ADD WHOLE NUMBERS

✚ Fluently multiply multi-digit whole numbers using the standard algorithm.

Use various strategies for adding numbers with up to four digits

Use various strategies for adding numbers, including decimals, with up to six digits

MULTIPLY WHOLE NUMBERS

Use various strategies to multiply three- and four-digit numbers by one-digit numbers

Use various strategies to multiply two-, three-, and four- digit numbers by one-, two-, and three-digit numbers

DOMAIN: Number & Operations - Fractions

12%/ 5 ?s/ NF | **20%/ 7 ?s/ NF**

Develop an Understanding of Fractions as Numbers

High: 3.NF.3a, 3.NF.3b, 3.NF.3c, 3.NF.3.d / Medium: 3.NF.1, 3.NF.2.a, 3.NF.2.b

EVALUATE FRACTIONS

Identify some representations of fractions

Use unit fractions to compose simple, non-unit fractions

Use unit fractions to compose & decompose non-unit fractions

Use unit fractions and non-unit fractions to compose and decompose non-unit fractions in different ways

✚ 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 endpoint of the part based at 0 locates the number 1/b on the number line.

Create and use multiple representations of fractions (e.g., number lines, area models, set models)

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

Use multiple representations to identify or create an equivalent fraction to a given fraction or whole number

✚ Express whole numbers as fractions, & recognize fractions that are equivalent to whole numbers.

COMPARE FRACTIONS

Identify benchmark fractions (e.g., ½) and reason about their sizes

Compare fractions to benchmark fractions (e.g., ½) and reason about their sizes

Extend Understanding of Fraction Equivalence & Ordering

Low: 4.NF.1

✚ Use multiple representations to create equivalent fractions, especially with denominators other than 1, 2, 3, 4, 6, and 8

Build Fractions from Unit Fractions by Applying & Extending Previous Understanding of Operations on Whole Numbers

Medium: 4.NF.3a, 4.NF.3b, 4.NF.3c, 4.NF.3d, 4.NF.4a, 4.NF.4b, 4.NF.4c

ADD FRACTIONS

✚ Compose and decompose fractions using addition and subtraction

✚ Solve simple, one-step, real-world problems involving addition and subtraction of fractions with the same denominators

MULTIPLY FRACTIONS

✚ Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).

Express repeated addition of unit fractions as multiplication expressions (e.g., 1/5 + 1/5 + 1/5 = 3 x 1/5 = 3/5)

✚ Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).

Understand Decimal Notation for Fractions & Compare Decimal Fractions

Medium: 4.NF.7

Compare fractions with the same numerators or the same denominators by reasoning about their sizes (using benchmark fractions)

UNDERSTAND DECIMALS

Use visual representations to compare decimals to the hundredths place

Use visual representations to create models of decimals and connect these to fractions

Use Equivalent Fractions as Strategy to Add & Subtract Fractions

Low: 5.NF.2

ADD FRACTIONS

Solve simple, one-step, real-world problems involving addition & subtraction of fractions with different denominators

Apply & Extend Previous Understanding of Multiplication & Division to Multiply & Divide Fractions

Medium: 4.NF.4b, 5.NF.7, 5.NF.7a, 5.NF.7b, 7.NF.7c / Low: 5.NF.2, 5.NF.3, 5.NF.5b, 5.NF.6

MULTIPLY FRACTIONS

✚ Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

✚ Explaining why multiplying given number by a fraction >1 results in product >given number (recognizing multiplication by whole numbers >1 as familiar case); explaining why multiplying given number by fraction <1 results in product smaller than given number; & relating principle of fraction equivalence a/b – (n X a)/(n x b) to effect of multiplying a/b by 1.

DIVIDE FRACTIONS

Express the division of two whole numbers as a fraction in a real-world context

Use visual representations to show division of a unit fraction by a whole number

Use visual representations to show division of a whole number by a unit fraction

ADD FRACTIONS - MULTIPLY FRACTIONS - DIVIDE FRACTIONS

Solve simple, one-step, real-world problems involving addition or subtraction of fractions with different denominators or multiplication or division involving a unit fraction

Solve real-world problems involving addition, subtraction, multiplication, or division of fractions with different denominators

EVALUATE FRACTIONS

Reason about the size of a product in relation to one of its factors given information about the other factor (e.g., fraction greater than, equal to, or less than 1)

✚ Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.

✚ Solve real world problems involving division of unit fractions by non-zero whole numbers & division of whole numbers by unit fractions, e.g., by using visual fraction models & equations to represent the problem.

DOMAIN: Operations & Algebraic Thinking

22%/ 7 ?s/ OA **12%/ 4 ?s/ OA**

Represent & Solve Problems Involving Addition & Subtraction

Medium: 2.OA.1

ADD & SUBTRACT WHOLE NUMBERS

✚ Use addition & subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, & comparing, with unknowns in all positions.

Represent & Solve Problems Involving Multiplication & Division

Medium: 3.OA.1 / Low: 3.OA.2, 3.OA.3

MULTIPLY WHOLE NUMBERS

✚ Interpret products of whole numbers.

✚ Interpret whole-number quotients of whole numbers.

Create and use visual representations of multiplication and division of whole numbers (e.g., arrays, equal groups, area models)

Create and use visual representations to partition areas of shapes

APPLY PROPERTIES OF OPERATIONS: MULTIPLICATION & DIVISION

Identify visual representations of multiplication and division of whole numbers (e.g., arrays, equal groups, area models)

Understand Properties of Multiplication & Relationship Between Multiplication & Division

Medium: 3.OA.6, Low: 3.OA.4, 3.OA.5

APPLY PROPERTIES OF OPERATIONS: MULTIPLICATION & DIVISION

✚ Determine unknown whole number in multiplication or division equation relating 3 whole numbers.

Create, compare, and analyze multiple solution strategies & representations to investigate relationship between multiplication and division of whole numbers

Solve basic multiplication problems using math fact strategies.

Solve multiplication and division problems using math fact strategies

✚ Understand division as an unknown-factor problem.

Multiply & Divide Within 100

Low: 3.OA.7

APPLY PROPERTIES OF OPERATIONS: MULTIPLICATION & DIVISION

Use equations to connect an unknown product of a multiplication problem to a missing factor in a related division problem

Solve Problems Involving the Four Operations, & Identify & Explain Patterns in Arithmetic

Medium: 3.OA.8, Low: 3.OA.9

APPLY PROPERTIES OF OPERATIONS: MULTIPLICATION & DIVISION

Write and solve expressions and equations to represent real-world situations

Solve real-world problems involving multiplication and division while using visual representations to show the process

Solve multi-step, real-world problems involving addition, subtraction, multiplication, and/or division of whole numbers while using visual representations to show process

Connect visual representations of real-world problems to expressions and equations that also represent the real-world problems

Use number patterns with simple addition rules to investigate how they relate to multiplication & division

UNDERSTAND AND APPLY PATTERN RULES

Identify an addition rule given a pattern and create patterns when given simple addition rules

Use the Four Operations with Whole Numbers to Solve Problems

Medium: 4.OA.1, 4.OA.2 / Low: 4.OA.3

MULTIPLY WHOLE NUMBERS

Use expressions and equations to represent multiplicative relationships expressed in words

EVALUATE EXPRESSIONS

Write and use two-step equations involving addition, subtraction, multiplication, division, and grouping symbols that represent real-world situations

Gain Familiarity with Factors & Multiples

Low: 4.OA.4

UNDERSTAND PRIME & COMPOSITENUMBERS

Identify prime and composite numbers

Generate & Analyze Patterns

Low: 4.OA.5

Create & analyze number patterns with addition rules to investigate how they relate to multiplication & division

Create number patterns with addition rules to investigate how they relate to multiplication & division

Investigate patterns and properties of prime and composite numbers

Write & Interpret Numerical Expressions

Low: 5.OA.1

EVALUATE EXPRESSIONS

Solve multi-step equations involving addition, subtraction, multiplication, division, and grouping symbols without context

Write and solve expressions and equations to represent real-world situations

Write and solve multi-step, real-world problems involving addition, subtraction, multiplication, division, and grouping symbols

Write multi-step equations with rational numbers involving addition, subtraction, multiplication, division, and grouping symbols to represent real-world situations and use them to solve problems

DOMAIN: Geometry

10%/ 4 ?s/ G	10%/ 4 ?s/ G	18%/ 5 ?s/ G	15%/ 5 ?S/ G.CO, G.SRT, G.GMD, G.MG
Reason with Shapes & their Attributes	**Draw & Identify Lines & Angles and Classify Shapes by Properties of their Lines & Angles**		
Medium: 2.G.1, 3.G.1 / Low: 2.G.3, 3.G.2	**Medium: 4.G.1**		
KNOW GEOMETRIC SHAPES, FIGURES & ATTRIBUTES			
Distinguish common and non-common attributes of pairs or groups of shapes			
Explore properties of shapes with more than four sides			
Extend properties of 2-dimensional shapes to 3-dimensional shapes.			
Identify features of given shapes with words & pictures			
Identify simple features (number of sides, number of angles, etc.) of given shapes with pictures			
	Recognize points, lines, line segments, angles, and parallel and perpendicular lines in the coordinate plane		
	Recognize points, lines, line segments, angles, & parallel and perpendicular lines in polygons and in diagrams other than those of polygons		
Identify shapes whose areas have been partitioned into halves and quarters	Recognize points, lines, line segments, and angles and their relationships to each other (e.g., a point lies on a line) when presented in polygons and diagrams		
Analyze polygons with similar properties and some of the same features	**Graph Points on the Coordinate Plane to Dolve Real-world & Mathematical Problems**	**Draw, Construct, & Describe Geometrical Figures & Describe the Relationships Between Them**	
Describe and analyze features of shapes extending beyond numbers of sides and angles (e.g., relationships between pairs of sides or angles)	**Low: 5.G.1**	**Low: 7.G.1**	
✚ Identify and create non-examples of shapes	***KNOW COORDINATE VALUES & GRID QUADRANTS***	***FIND AREA, VOLUME, SURFACE AREA OF FIGURES***	
Identify both properties of given shapes and shapes with given properties	Identify coordinates of points & plot points with whole number coordinates in 1st quadrant of coordinate plane		
Identify features of given shapes with words and pictures together and separately	Name parts of ordered pairs and what they describe (e.g., x-coordinate, y-coordinate)		
Identify properties of shapes with three or four sides	Plot points and draw polygons with integer coordinates in the coordinate plane		
Create and use visual representations to partition areas of shapes	Draw polygons with vertices at whole number coordinates in the coordinate plane		
		Solve Real-life & Mathematical Problems Involving Angle, Measure, Area, Surface Area, & Volume	
		Low: 7.G.4, 7.G.5, 7.G.6	
		FIND AREA, VOLUME, SURFACE AREA OF FIGURES	
		Use the formulas for the area and circumference of circles to solve problems	
		Solve problems involving adding and subtracting areas of rectangles	
		Solve problems involving adding and subtracting areas of rectangles with fractional side lengths	
		IDENTIFY & MEASURE ANGLES	
		Write and solve simple, single-step equations to find unknown angle measures in given diagrams	
	Classify Two-dimensional Figures into Categories Based on their Properties	**Understand Congruence & Similarity Using Physical Models, Transparencies, or Geometry Software**	**Congruence**
	Low: 5.G.3	**Medium: 8.G.2 / Low: 8.G.4**	**Low: G.CO.1**
	KNOW GEOMETRIC SHAPES, FIGURES & ATTRIBUTES	***UNDERSTAND TRANSFORMATIONS BETWEEN FIGURES***	
	Distinguish common and non-common attributes of pairs or groups of shapes		
	Distinguish common and non-common attributes of pairs or groups of shapes using pictures, diagrams, and words		
	Explore the effects of simple transformations (90 or 180 degree rotations, reflections, and translations) on common plane figures		
		Explore the effects of simple series of transformations on common figures on and off the coordinate plane	Explore the effects of simple series of transformations on parts of figures (e.g., lines, points, angles, parallel lines, etc.) on and off the coordinate plane
	Solve Real-world & Mathematical Problems Involving Area, Surface Area, & Volume	**Understand & Apply the Pythagorean Theorem**	**Similarity, Right Triangles, & Trigonometry**
	Low: 6.G.4	**Low: 8.G.7, 8.G.8**	**Medium: G.SRT.5**
	KNOW GEOMETRIC SHAPES, FIGURES & ATTRIBUTES	***APPLY PYTHAGOREAN THEOREM***	***PROVING THEOREMS INVOLVING SIMILARITY***
	Recognize and use right triangles drawn in the coordinate plane to solve problems		Use the Pythagorean theorem to solve problems involving right triangles in two and three dimensions

Identify and create nets for given prisms and pyramids

Use the Pythagorean theorem to find missing side lengths of right triangles both on and off the coordinate plane

Recognize when to use (and use) the Pythagorean theorem to find the lengths of line segments on the coordinate plane

Explore the effects of simple series of transformations on parts of figures (e.g., lines, points, angles, parallel lines, etc.) on and off the coordinate plane

Use Pythagorean theorem to solve problems involving rt. triangles in 2- & 3-dimensions, including those in rt. rectangular prisms, triangular prisms, & pyramids

Prove and apply theorems involving similarity

USE & EVALUATE CONGRUENCE

Explore properties of similar figures and transformations that produce similar figures

Explore and create algebraic proofs of simple geometric theorems using coordinates

Create and use ratios to find missing side lengths and angle measures of similar figures

Measurement & Dimension

High: G.G.MD.3

EXPLAIN VOLUME FORMULAS & USE TO SOLVE PROBLEMS

Solve problems involving surface areas and volumes of right rectangular prisms

CALCULATE & INTERPRET VOLUME

Use the formulas for the area and circumference of circles to solve problems involving volumes of cylinders

Use the formulas for the area and circumference of circles to solve problems involving volumes of cylinders & cones

Investigate and explain volume formulas through informal arguments of circles, cylinders, pyramids, and cones

Modeling with Geometry

Medium: G.MG.2

FIND AREA, VOLUME, SURFACE AREA OF FIGURES

Solve problems involving areas of two-dimensional figures, including modeling problems involving concepts of density based on area

Solve problems involving surface areas and volumes of three-dimensional figures, including modeling problems involving concepts of density based on volume

DOMAIN: Measurement & Data

10%/ 10 ?s/ MD

Measure & Estimate Lengths in Standard Units

Low: 2.MD.2, 2.MD.3, 2.MD.4

MEASURE, ESTIMATE, EXPRESS LENGTHS

Measure objects in different units (with fractional lengths) and compare these measurements

Choose an appropriate unit of measure for a given object

Estimate length of an object before measuring the object

✚ Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate Addition & Subtraction to Length

Low: 2.MD.6

REPRESENT WHOLE NUMBERS ON A NUMBER LINE

✚ Represent whole numbers as lengths from 0 on number line diagram w/ equally spaced points corresponding to numbers 0, 1, 2, ..., & represent whole-number sums & differences w/in 100 on number line diagram.

Solve Problems Involving Measurement & Estimation of Intervals of Time, Liquid, Volumes, & Masses of Objects

Medium: 3.MD.1, 3.MD.2

UNDERSTAND TIME

Find elapsed time when given a start and end time

15%/ 6 ?s/ MD

Solve Problems Involving Measurement & Conversion of Measurements from a Large Unit to a Smaller Unit

Medium: 4.md.3

EVALUATE PERIMETER & AREA

Find the missing side length of a rectangle given one side length and the area or perimeter

Geometric Measurement: Understanding Concepts of Angle & Measure Angles

Medium: 4.MD.6, 4.MD.7 / Low: 4.MD.5

CALCULATE & INTERPRET VOLUME

✚ An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.

IDENTIFY & MEASURE ANGLES

✚ Extend the use of measuring tools to include measuring angles with protractors

Measure angles to the nearest degree using a

Protractor and create angles with given measures

Use the properties of angles to write & solve equations in one variable to find missing angle measures in diagrams

Use properties of complementary and supplementary angles to find missing angle measures in diagrams

Convert Like Measurement Units within a Given Measurement System

Solve problems involving addition & subtraction of time intervals, especially working backward from given end time

Extend arithmetic operations to real-world problems involving volumes and masses of objects

Represent & Interpret Data

Low: 2.MD.10, 3.MD.3, 3.MD.4

SOLVE PROBLEMS USING SCALED BAR GRAPH

Identify bar graphs that match a given data set and explain simple characteristics (e.g., category totals)

Create bar graphs from given data sets and explain simple characteristics (e.g., category totals)

Use bar graphs with different scales to solve problems involving multiple categories

✚ Generate measurement data by measuring lengths using rulers marked with halves & fourths of an inch. Show data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

Geometric Measurement: Understand Concepts of Area & Relate to Area of Multiplication & Addition

High: 3.MD.7, Low: 3.MD.5.b

UNDERSTAND CONCEPTS OF AREA MEASUREMENT

✚ Relate area to operations of multiplication & addition.

✚ A plane figure which can be covered without gaps or overlays by *n* unit squares is said to have an area of *n* square units.

Geometric Measurement: Recognize Perimeter as Attribute of Plane Figures & Distinguish Between Linear & Area Measures

Medium: 3.MD.8

EVALUATE PERIMETER & AREA

Identify and create squares and rectangles with given areas or perimeters

Identify and create squares and rectangles with the same areas and different perimeters

Find areas and perimeters of squares and rectangles

Medium: 5.MD.1

CONVERTING UNITS OF MEASURE

Convert from larger unit of measure to smaller unit of measure

Represent & Interpret Data

Low: 5.MD.2

UNDERSTAND LINE PLOTS

Use line plots to solve simple addition & subtraction problems

Use line plots to solve multi-step addition, subtraction, multiplication, and division problems

✚ Create line plots from given data sets and explain simple characteristics

SOLVE PROBLEMS USING SCALED BAR GRAPH

✚ Use visual representations of arithmetic operations to bridge the concrete to the abstract (e.g., number line diagrams, area models, etc.)

Geometric Measurement: Understand Concepts of Volume & Relate Volume to Multiplication & to Addition

Medium: 5.MD.5a, 5.MD.5b, 5.MD.5c / Low: 5.MD.4

CALCULATE & INTERPRET VOLUME

Extend the idea of using unit squares to find areas of rectangles to using unit cubes to find volumes of rectangular prisms

Find volumes of rectangular prisms by counting unit cubes & multiplying side lengths (using volume formula)

Find the missing dimension of a rectangular prism when given the other dimensions and the volume

Create rectangular prisms with different dimensions and volumes that are the same

✚ Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems

DOMAIN: Expressions & Equations

15%/ 4 ?s/ EE **18%/ 7 ?s/ EE**

Apply & Extend Previous Understandings of Arithmetic to Algebraic Expressions

Low: 6.EE.2a, 6.EE.2b, 6.EE.3, 6.EE.4

INTERPRET LINEAR & QUADRATIC EQUATIONS, EXPRESSIONS, & FUNCTIONS

Solve one- and two-step equations involving addition, subtraction, multiplication, and/or division of whole numbers while using visual representations to show the process

EVALUATE EQUATIONS & INEQUALITIES

Solve 1- and 2-step equations involving addition, subtraction, multiplication, &/or division of whole numbers using visual representations to show process

EVALUATE EXPRESSIONS

Write simple expressions and equations to represent real-world situations

Identify and name parts of expressions and equations (e.g., terms, coefficient, variable, etc.)

APPLY PROPERTIES OF OPERATIONS

✚ Apply the properties of operations to generate equivalent expressions.

✚ Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

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Reason about & Solve One-Variable Equations & Inequalities

Low: 6.EE.5, 6.EE.6, 6.EE.7, 6.EE.8

EVALUATE EQUATIONS & INEQUALITIES

Use properties of addition and multiplication to justify steps in solving an equation

Write & solve multi-step equations involving addition, subtraction, multiplication, division, the distributive property, & exponents (squares & cubes) w rational numbers

EVALUATE EXPRESSIONS

Solve multi-step equations involving addition, subtraction, multiplication, & division of rational numbers

Write & solve expressions & equations to represent verbal descriptions (e.g., product of twice a number, n, and 6) and real-world situations

Write and solve expressions and equations involving the distributive property or combining like terms

EVALUATE EQUATIONS & INEQUALITIES

Use inverse operations to show steps in solving equations

WRITE EQUATIONS & INEQUALITIES

✚ Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Represent & Analyze Quantitative Relationships between Dependent & Independent Variables

Low: 6.EE.9

WRITE EQUATIONS & INEQUALITIES

✚ Use variables to represent 2 quantities in a real-world problem that change in relationship to one another; write an equation to express 1 quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze 1 relationship between dependent & independent variables using graphs & tables, & relate these to the equation.

Use Properties of Operations to Generate Equivalent Expressions

Low: 7.EE.2

EVALUATE EXPRESSIONS

✚ Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

Solve Real-life & Mathematical Problems Using Numerical & Algebraic Expressions & Equations

High: 7.EE.4, 7.EE.4a, 7.EE.4b / Low: 7.EE.3

EVALUATE EXPRESSIONS

Use properties of exponents to simplify expressions with rational number exponents

Use properties of operations and exponents to justify steps in solving an equation

INTERPRET LINEAR & QUADRATIC EQUATIONS, EXPRESSIONS, & FUNCTIONS

Write and solve linear equations and inequalities involving rational numbers in any form (e.g., fractions, decimals) and requiring the use of the distributive property and/or combining like terms

Solve systems of linear equations and inequalities in multiple ways (e.g., graphing, substitution, etc.)

Create multiple representations of real-world situations modeled by linear equations (e.g., graphs, tables, verbal description) and use them to solve problems

Write linear equations to represent real-world situations

Write linear equations involving rational numbers in any form (e.g., fractions, decimals) to represent real-world situations

✚ Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem

Work with Radicals & Integer Exponents

Medium: 8.EE.2 / Low: 8.EE.1, 8.EE.3

INTEGER EXPONENTS

✚ Know and apply the properties of integer exponents to generate equivalent numerical expressions.

CUBE & SQUARE ROOTS

Solve equations involving square and cube roots of perfect squares and cubes

UNDERSTAND POWER OF 10

Express very large and very small numbers in scientific notation

Solve problems involving addition, subtraction, multiplication, or division of numbers expressed in scientific notation

Understand Connections Between Propoprtional Relationships, Lines, & Linear Equations

Low: 8.E.E.5

INTERPRET LINEAR & QUADRATIC EQUATIONS, EXPRESSIONS, & FUNCTIONS

Identify graphs of linear equations, including those represented by equations and word descriptions of real-world situations

Create graphs of linear equations, including those represented by equations and word descriptions of real-world situations, using appropriate axis labels and scales

Represent equations of lines by graphing them on the coordinate plane

Analyze & Solve Linear Equations & Pairs of Simultaneous Linear Equations

Low: 8.EE.8a, 8.EE.8c

INTERPRET LINEAR & QUADRATIC EQUATIONS, EXPRESSIONS, & FUNCTIONS

Graph systems of linear equations and find the point of intersection to approximate the solution

Write and solve systems of equations to represent real-world situations

DOMAIN: Statistics & Probability

5%/ No ?s Identified / SP | **22%/ 7 ?s Identified / SP** | **16%/ 7 ?s Identified / S.ID**

Develop Understanding of Statistical Variability

Medium: 6.SP.1 / Low: 6.SP.2

✚ Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

✚ Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

Summarize & Describe Distributions

Low: 6.SP.4

✚ Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

Low: 6.SP.5d

USE MEASURES OF CENTER & CENTER VARIABILITLY

Find a measure of center & variability of a given data set

Use Random Sampling to Draw Inferences About a Population

Low: 7.SP.2

INTERPRET DATA PLOTS

✚ Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

Draw Informal Comparative Inferences about Two Populations

Medium: 7.SP.4

USE MEASURES OF CENTER & CENTER VARIABILITLY

Use measures of center and variability of given data sets to draw inferences

Use measures of center & variability of given data sets, represented in multiple ways, to draw comparative inferences

Investigate Chance Processes & Develop, Use, & Evaluate Probability Models

Medium: 7.SP.5, 7.SP.8a, 7.SP.8b / Low: 7.SP.7a, 7.SP.7b

UNDERSTAND PROBABILITY OF CHANCE

Find the probability of a simple event

DEVELOP A UNIFORM OR NON-UNIFORM PROBABILITY MODEL

✚ Use basic probability models to simulate events and

generate random data (e.g., using spinners, rolling dice, flipping coins, etc.)

DRAW INFERENCES FROM RANDOM SAMPLE DATA

Use random data to approximate the probability of a change event

UNDERSTAND PROBABILITY OF COMPOUND EVENTS

Use basic probability models to simulate compound events and generate random data

Create multiple representations of sample spaces of compound events (e.g., lists, diagrams, simulation) and use them to find probabilities

Investigate Patterns of Association in Bivariate Data

Interpreting Categorical & Quantitative Data

Medium: S.ID.1, S.ID.3, S.ID.5, S.ID.7 / Low: S.ID.9

UNDERSTAND DATA DISTRIBUTION

Create multiple representations of data sets and describe key features (e.g., number of observations, patterns, overall shape, etc.)

✚Determine appropriate statistics to compare centers and spreads of data distributions (based on the shapes)

Low: 8.SP.1, 8.SP.2, 8.SP.3, 8.SP.4

INTERPRET DATA PLOTS

Describe patterns of association between two quantities represented in scatter plots of bivariate data (e.g., linear, increasing, outliers, clustering, etc.)

INTERPRET LINEAR & QUADRATIC EQUATIONS, EXPRESSIONS & FUNCTIONS

Create scatter plots for bivariate data sets & draw lines of best fit to model linear relationships between the variables

✚ Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.

✚ Create and use information presented in two-way tables to solve simple problems

✚Interpret differences in the shapes, centers, and spreads of data sets in context

Create multiple representations of data sets and use them to describe comparative inferences about the centers, spreads, and overall shapes

INTERPRET TWO-WAY TABLE BASED ON BIVARIATE DATA

Use information presented in two-way tables to describe associations between variables and to solve problems involving relative frequencies

INTERPRET LINEAR & QUADRATIC EQUATIONS, EXPRESSIONS, & FUNCTIONS

Use scatter plots and equations of linear models to draw basic conclusions about data

Develop equations of linear models and use them to solve problems

✚Develop equations of linear models, interpret the slope and intercepts in context, and analyze the fit of the model to the data.

DISTINGUISH BETWEEN CORRELATION & CAUSATION

Distinguish between correlation and causation

DOMAIN: Ratios & Proportional Relationships

3%/ No ?s Identified / RP **10%/ 4 ?s Identified / RP**

Understand Ratio Concepts & Use Ratio Reasoning to Solve Problems

Medium: 6.RP.2

✚ Understand concept of a unit rate a/b associated with a ratio a:b with b not equal to 0, and use rate language in the context of a ratio relationship.

Medium: 6.RP.3, 6.RP.3a

EQUIVALENT PROPORTIONAL RELATIONSHIPS

Use ratio language to describe a ratio relationship between two quantities

Decide whether two quantities are in a proportional relationship (e.g., in a table or graph)

Create tables, graphs, & equations to represent proportional relationships & use them to solve problems

Plot pairs of values from tables on a coordinate grid

Plot pairs of values from tables on a coordinate grid to represent real-world, proportional relationships

EQUIVALENT RATIOS

Find missing values of tables with equivalent ratios

Find missing values in tables that represent proportional relationships with context

Analyze Proportional Relationships & Use Them to Solve Real-world & Mathematical Problems

High: 7.RP.2a, 7.RP.2b, 7.RP.2c, 7.RP.2d / Low: 7.RP.1, 7.RP.3

COMPUTE RATIOS

✚ Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.

✚ Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

Identify the constant of proportionality (or unit rate) associated with ratios of whole numbers

Identify the constant of proportionality (or unit rate) associated with ratios of whole numbers and fractions

EVALUATE PROPORTIONAL RELATIONSHIPS

✚ Represent proportional relationships by equations.

Interpret the meaning of a point on the graph of a proportional relationship in context

Use proportional relationships to solve simple problems (e.g., gratuities, fees, tax, commissions, etc.)

Use proportional relationships to solve multi-step ratio & percent problems (e.g., simple interest, markups & mark-downs, percent increase & decrease, percent error, etc.)

DOMAIN: The Number System

5%/ No ?s Identified / NS | **21%/ 8 ?s Identified / NS**

Apply & Extend Previous Understandings of Multiplication & Division to Divide Fractions by Fractions

Low: 6.NS.1

DIVIDE FRACTIONS

✚ Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

Compute Fluently with Multli-digit Nubmers & Find Common Factors & Multiples

Medium: 6.NS.2 / Low: 6.NS.4

FIND COMMON FACTORS & MULTIPLES

✚ Fluently divide multi-digit numbers using the standard algorithm

✚ Find greatest common factor of 2 whole numbers ≤ 100 & least common multiple of 2 whole numbers ≤12. Use distributive property to express a sum of 2 whole numbers 1 - 100 with a common factor as a multiple of a sum of 2 whole numbers with no common factor.

Apply & Extend Previous Understandings of Numbers to the System of Rational Numbers

Medium: 6.NS.5, 6.NS.6a, 6.NS.6b, 6.NS.6c, 6.NS.7a, 6.NS.7b, 6.NS.7c, 6.NS.7d / Low: 6.NS.8

UNDERSTAND POSITIVE & NEGATIVE NUMBERS

Represent real-world situations with rational numbers

Represent real-world situations with positive & negative integers

Identify and create multiple representations of positive and negative integers and rational numbers

✚ Understand signs of numbers in ordered pairs as indicating locations in quadrants of coordinate plane; recognize when 2 ordered pairs differ only by signs, locations of points are related by reflections across one or both axes.

Solve one-step problems involving operations w/ positive & neg. integers & represent operations on number line

✚ Identify & represent rational numbers on number line

✚ Identify and represent positive and negative integers on a number line

INTERPRET ABSOLUTE VALUE

✚ Interpret statements of inequality as stmts. about relative position of 2 numbers on a number line diagram.

✚ Write, interpret, and explain statements of order for rational numbers in real-world contexts.

Identify and represent the absolute values and opposites of numbers on a number line

✚ Distinguish comparisons of absolute value from statements about order.

KNOW COORDINATE VALUES & GRID QUADRANTS

Represent polygons with vertices at given coordinates on a coordinate grid

Create polygons on the coordinate grid having specified characteristics (e.g., area, perimeter)

Apply & Extend Previous Understandings of Operations with Fractions to Add, Subtract, Multiply, & Divide Rational Numbers

Medium: 7.NS.2

EVALUATE EQUATIONS & INEQUALITIES

Solve multi-step problems involving positive rational numbers

Solve one-step problems, with and without context, involving operations with positive and negative integers

Know that There Are Numbers That Are Not Rational, & Approximate Them by Rational Numbers

Low: 8.NS.2

EVALUATE RATIONAL & IRRATIONAL NUMBERS

Identify and represent approximations of irrational numbers on a number line

DOMAIN: Numbers & Quantity

13%/ 4 ?s/ NQ.RN, NQ.Q

The Real Number System

Medium: NQ.RN.2

EVALUATE RADICALS & RATIONAL EXPONENTS

Approximate the location of an irrational number on a number line

Explain why the sums or products of rational and irrational numbers are either rational or irrational

Identify whether a number is rational or irrational

Simplify expressions involving integer exponents

Simplify expressions involving operations with rational numbers

Use properties of exponents to rewrite expressions involving radicals and rational exponents

Quantities

High: NQ.Q.1 / Low: NQ.Q.3

INTERPRET DATA PLOTS

Determine appropriate scales and origins in graphs and data displays

APPLY PROPERTIES OF OPERATIONS: + - x ÷

Explore addition of rational and irrational numbers

Explore addition and multiplication of rational and irrational numbers

Convert between measurement units appropriately while solving problems

CREATE EQUATIONS & INEQUALITIES

Define appropriate quantities and parameters when solving problems using descriptive modeling

UNDERSTAND DATA DISTRIBUTION

Choose appropriate levels of accuracy for measurement limitations in given situations

DOMAIN: Functions

11%/ 4 ?s/ F | **28%/ 10 ?s/ F.IF, F.BF, F.LE**

Define, Evaluate, & Compare Functions

Interpret Functions

Low: 8.F.3

High: F.IF.7a / Medium: F.IF.2, F.IF.4, F.IF.6 / Low: F.IF.1, F.IF.8b, F.IF.9

EVALUATE FUNCTIONS & FUNCTIONAL RELATIONSHIPS

Identify graphs of functions that are linear and nonlinear

Identify equations of functions that are linear & nonlinear

Use Functions to Model Relationships Between Quantities

High: 8.F.5 / Medium: 8.F.4

Find the average rate of change of a function over a given interval

Write functions in different but equivalent forms and explain what each form "reveals" (e.g., factoring a quadratic function to reveal the zeros)

Compare properties of two functions (linear, quadratic, piecewise linear, absolute value, exponential) represented in the same way

Compare properties of two functions (linear, quadratic, piecewise linear, absolute value, exponential) represented in different ways

✚Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).

EVALUATE FUNCTIONS & FUNCTIONAL RELATIONSHIPS

✚ Create input-output tables to represent functions

Identify and create the equation of a linear function represented by a table

Identify the intercepts of graphs of functions

Identify rate of change of a linear function represented by a table

Identify and create the equation of a linear function represented by a table

Write the equation of a linear function represented by a table or a graph

✚ Identify & create examples & nonexamples of functions

INTERPRET LINEAR & QUADRATIC EQUATIONS, EXPRESSIONS, & FUNCTIONS

Create and use graphs of linear functions to represent real-world situations

Create equations, tables, and graphs to represent linear functions with given rates of change

Use the equation or graph of a linear function to represent and solve real-world problems

Identify simple characteristics of different intervals of graphs of functions, with and without context

✚ Identify simple characteristics of graphs of functions (e.g., increasing, linear, etc.)

Use function notation and interpret statements that use function notation in context

INTERPRET LINEAR & QUADRATIC EQUATIONS, EXPRESSIONS, & FUNCTIONS

Evaluate a linear function at a given value

Evaluate linear, quadratic, and exponential functions at given values with and without context

Use function notation and interpret statements that use function notation in context

Find the rate of change of a linear function

Find the average rate of change of a function over a given interval

Graph equations of linear functions given in various forms

✚Use properties of exponents to interpret expressions for exponential functions.

INTERPRET GRAPHS

Identify the intercepts of graphs of linear functions

Identify key characteristics of graphs of functions (e.g., intercepts, minimum, maximum, etc.)

Building Functions

Low: F.BF.1, F.BF.1a

CREATE NEW FUNCTIONS

Create new functions from existing functions (e.g., f(x) + k, f(x + k), etc.)?

EVALUATE FUNCTIONS & FUNCTIONAL RELATIONSHIPS

✚Write a function that describes a relationship between two quantities.

Explore arithmetic and geometric sequences and relate them to linear and exponential functions

Write the equation of a linear function represented by a table or a graph

Linear, Quadratic, & Exponential Models

Low: F.LE.1a, F.LE.5

EVALUATE FUNCTIONS & FUNCTIONAL RELATIONSHIPS

Determine whether graphs of functions are linear, quadratic, or exponential

Determine whether a given scenario can be represented by a function with a constant rate of change

INTERPRET LINEAR & QUADRATIC EQUATIONS, EXPRESSIONS, & FUNCTIONS

Describe the meaning of terms of equations of functions in context

Use the equation or graph of a linear function to represent and solve real-world problems

DOMAIN: Algebra

28%/ 10 ?s/ A.SSE, A.APR, A.CED, A.REI

Seeing Structure in Expressions

Low: A.SSE.1a, A.SSE.2, A.SSE.3a

EVALUATE FUNCTIONS & FUNCTIONAL RELATIONSHIPS

✚Identify parts of expressions (e.g., terms, coefficients, variables, etc.)
✚Use the structure of an expression to identify ways to rewrite it. For example, see x4 – y4 as (x2)2 – (y2)2, thus recognizing it as a difference of squares that can be factored as (x2 – y2)(x2 + y2).
Find the minimum or maximum and zeros of a quadratic equation and explain the meaning in context
Arithmetic with Polynomials & Rational Expressions
Medium: A.APR.1
APPLY PROPERTIES OF OPERATIONS: + - x ÷
Add and subtract polynomials of degree 3 or less
Add, subtract, multiply, and divide polynomials of degree 3 or less
Add, subtract, multiply, and divide polynomials of any degree
Creating Equations
Medium: A.CED.3 / Low: A.CED.1, A.CED.2
CREATE EQUATIONS & INEQUALITIES
✚Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
✚Identify an equation that shows a relationship between two variables given in a table or graph
Create equations that show a relationship between two variables given in a table or graph
Create quadratic equations that represent given real-world situations
Create systems of equations that represent given real-world situations
Identify systems of inequalities that represent given real-world situations
Create systems of inequalities that represent given real-world situations
Reasoning with Equations & Inequalities
High: A.REI.10 / Medium: A.REI.6 / Low: A.REI.1, A.REI.3, A.REI.4, A.REI.4b
SOLVE & EVALUATE LINEAR & QUADRATIC EQUATION IN ONE VARIABLE
✚Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
✚Use properties of operations, such as the distributive property and combining like terms, to find solutions of linear equations
✚Solve quadratic equations in one variable.
Factor and solve quadratic equations with lead coefficients greater than 1
Solve quadratic equations by factoring
Solve quadratic equations using various methods (e.g., taking square roots, factoring, completing the square, quadratic formula, etc.)
SOLVE & EVALUATE SYSTEMS OF EQUATIONS
✚Determine whether a point (x, y) is a solution to a given system of equations
✚Solve a system of equations by graphing the equations and finding the point of intersection
Graph systems of inequalities
Determine whether a point (x, y) is in the solution set of a given system of inequalities