<table>
<thead>
<tr>
<th>ESSENTIAL QUESTIONS</th>
<th>DOMAINS AND CLUSTERS</th>
<th>GRADE 3 SKILL</th>
<th>VOCABULARY</th>
<th>MATHEMATICAL PRACTICES</th>
<th>ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>How are multiplication and division related?</td>
<td>Operations and Algebraic Thinking 3.0A</td>
<td>Describe whole number products in terms of factors 3.OA.1</td>
<td>products</td>
<td>Make sense of problems and persevere in solving them.</td>
<td>NYS Gr. 3 Assessment</td>
</tr>
<tr>
<td>How do we use multiplication and division to solve problems?</td>
<td>Understand properties of multiplication and the relationship between multiplication and division</td>
<td>Draw a model to represent a given product 3.OA.1</td>
<td>whole numbers</td>
<td>Reason abstractly and quantitatively.</td>
<td>Anecdotal records</td>
</tr>
<tr>
<td>What are the properties of multiplication?</td>
<td>Multiply and divide within 100</td>
<td>Create a manipulative model to represent a multiplication equation 3.OA.1</td>
<td>multiplication</td>
<td>Construct viable arguments and critique the reasoning of others.</td>
<td>Higher Order Questioning</td>
</tr>
<tr>
<td>What strategies can we use to memorize facts?</td>
<td>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</td>
<td>State/list the factors of a given product 3.OA.1</td>
<td>array</td>
<td>Model with mathematics.</td>
<td>Open-ended questioning</td>
</tr>
</tbody>
</table>

VOCABULARY: products, whole numbers, multiplication, array, equal groups, digit, solve, factor(s), equal groups/parts, division, dividend, quotient, divisor, digit, multiplication parts.

MATHEMATICAL PRACTICES: Commutative property, associative property, distributive property, fact family, inverse operation, factor(s).

<table>
<thead>
<tr>
<th>Why is understanding place value important?</th>
<th>Number and Operations in Base Ten 3.NBT</th>
<th>Number and Operations – Fractions 3.NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use place value and properties of operations to perform multi-digit arithmetic</td>
<td>Round whole numbers to the nearest 10 or 100 3.NBT.1</td>
<td>Use a numeric pattern using addition &amp; multiplication 3.OA.8</td>
</tr>
<tr>
<td></td>
<td>Explain the rounding rule and rational (as related to the number line) for a given number to nearest 10 or 100.</td>
<td>Create a numeric pattern using addition &amp; multiplication 3.OA.9</td>
</tr>
<tr>
<td></td>
<td>State the value of a given digit (ex. 297 the value of 9 is 90), up to 10,000 3.NBT.1</td>
<td>Explain a given numeric pattern shown in a table or chart 3.OA.9</td>
</tr>
<tr>
<td></td>
<td>State the place value of a given digit10,000 3.NBT.1</td>
<td>Explain a given numeric pattern shown in a table or chart 3.OA.9</td>
</tr>
<tr>
<td></td>
<td>Write numbers in standard, expanded, and word form 3.NBT.1</td>
<td>Solve for a missing number (term) in a given arithmetic pattern 3.OA.9</td>
</tr>
<tr>
<td></td>
<td>Explain/ define 100 as 10 tens 3.NBT.2</td>
<td>Round whole numbers to the nearest 10 or 100. 3.NBT.1</td>
</tr>
<tr>
<td></td>
<td>Explain/ define 1000 as 10 hundreds 3.NBT.2</td>
<td>Explain the rounding rule and rational (as related to the number line) for a given number to nearest 10 or 100.</td>
</tr>
<tr>
<td></td>
<td>State the value of a given digit up to 10,000 3.NBT.2</td>
<td>State the rounding rule and rational (as related to the number line) for a given number to nearest 10 or 100.</td>
</tr>
<tr>
<td></td>
<td>State the place value of a given digit 10,000 3.NBT.1</td>
<td>State the rounding rule and rational (as related to the number line) for a given number to nearest 10 or 100.</td>
</tr>
<tr>
<td></td>
<td>Explain/ define each property with written examples 3.NBT.2</td>
<td>Explain the rounding rule and rational (as related to the number line) for a given number to nearest 10 or 100.</td>
</tr>
<tr>
<td></td>
<td>Estimate sums/differences 3.NBT.2</td>
<td>Estimate sums/differences 3.NBT.2</td>
</tr>
<tr>
<td></td>
<td>Multiply one-digit whole numbers by multiples of 10 (range of 10-90). 3.NBT.3</td>
<td>Multiply one-digit whole numbers by multiples of 10 (range of 10-90). 3.NBT.3</td>
</tr>
<tr>
<td></td>
<td>Define a fraction as partitioning one whole into equal parts. The number of equal parts is determined by the denominator of the fraction. 3.NF.1</td>
<td>Define a fraction as partitioning one whole into equal parts. The number of equal parts is determined by the denominator of the fraction. 3.NF.1</td>
</tr>
<tr>
<td></td>
<td>Draw/using manipulatives create a model representing the number of partitions of the whole (denominator), and how many you have/shaded in (numerator).3.NF.1</td>
<td>Draw/using manipulatives create a model representing the number of partitions of the whole (denominator), and how many you have/shaded in (numerator).3.NF.1</td>
</tr>
<tr>
<td></td>
<td>Partition the number line between 0 and 1 into equal parts based on the denominator of the fraction. 3.NF.2a</td>
<td>Partition the number line between 0 and 1 into equal parts based on the denominator of the fraction. 3.NF.2a</td>
</tr>
<tr>
<td></td>
<td>Partition the number line between 0 and 1 into equal parts based on the denominator of the fraction. Then mark a point on the number line where the fraction lies based on the numerator. 3.NF.2b</td>
<td>Partition the number line between 0 and 1 into equal parts based on the denominator of the fraction. Then mark a point on the number line where the fraction lies based on the numerator. 3.NF.2b</td>
</tr>
<tr>
<td></td>
<td>Compare and order fractions. 3.NF.3a</td>
<td>Compare and order fractions. 3.NF.3a</td>
</tr>
<tr>
<td></td>
<td>Draw/use models/convert numerically to represent equivalent fractions. 3.NF.3a</td>
<td>Draw/use models/convert numerically to represent equivalent fractions. 3.NF.3a</td>
</tr>
<tr>
<td></td>
<td>Plot two or more equivalent fractions on a number line to prove equivalency. 3.NF.3a</td>
<td>Plot two or more equivalent fractions on a number line to prove equivalency. 3.NF.3a</td>
</tr>
<tr>
<td></td>
<td>Draw/use manipulatives to translate numeric equivalent fractions to visual representations (vice versa). 3.NF.3b</td>
<td>Draw/use manipulatives to translate numeric equivalent fractions to visual representations (vice versa). 3.NF.3b</td>
</tr>
<tr>
<td></td>
<td>Explain why two fractions are equivalent. 3.NF.3b</td>
<td>Explain why two fractions are equivalent. 3.NF.3b</td>
</tr>
<tr>
<td></td>
<td>Compose whole numbers as fractions (vice versa). 3.NF.3c</td>
<td>Compose whole numbers as fractions (vice versa). 3.NF.3c</td>
</tr>
<tr>
<td></td>
<td>Plot a whole number and its fractional equivalent on a number line. 3.NF.3c</td>
<td>Plot a whole number and its fractional equivalent on a number line. 3.NF.3c</td>
</tr>
<tr>
<td></td>
<td>Plot multiple fractional representations of 1. 3.NF.3c</td>
<td>Plot multiple fractional representations of 1. 3.NF.3c</td>
</tr>
</tbody>
</table>
### Measurement and Data 3.MD

<table>
<thead>
<tr>
<th>How do we tell and write time to the nearest minute?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order two fractions (numeric or visual representation) with the same numerator using &lt;, &gt;, =. 3.NF.3d</td>
</tr>
<tr>
<td>Order two fractions (numeric or visual representation) with the same denominator using &lt;, &gt;, =. 3.NF.3d</td>
</tr>
<tr>
<td>Explain the rules for fractions with the same numerator. 3.NF.3d</td>
</tr>
<tr>
<td>Explain the rules for fractions with the same denominator. 3.NF.3d</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How do we choose the appropriate unit of measurement?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write and read time to the nearest minute on an analog and digital clock. 3.MD.1</td>
</tr>
<tr>
<td>Solve elapsed time in minutes. 3.MD.1</td>
</tr>
<tr>
<td>Deconstruct word problem to determine appropriate operation to solve. 3.MD.1</td>
</tr>
<tr>
<td>Solve word problems requiring the addition or subtraction of time intervals in minutes. 3.MD.1</td>
</tr>
<tr>
<td>Estimate the amount of liquid/solid, using appropriate unit of measurement, based on real life applications (standard units/metric units). 3.MD.2</td>
</tr>
<tr>
<td>Measure the amount of liquid/solid, using appropriate unit of measurement, based on real life applications (standard units/metric units). 3.MD.2</td>
</tr>
<tr>
<td>Solve one-step mass or volume word problems using the appropriate operation. 3.MD.2</td>
</tr>
<tr>
<td>Deconstruct word mass or volume word problems using the appropriate operation. 3.MD.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How do we represent information in a picture graph or bar graph?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct a picture graph or bar graph with several categories based on a data set. 3.MD.3</td>
</tr>
<tr>
<td>Construct a scale in which each bar/picture represents more than one object (one fish represents 5 fish/bar graph in increments of 10). 3.MD.3</td>
</tr>
<tr>
<td>Solve one- and two-step word problems where information is represented in a scaled bar graph. (Focus on phrases &quot;how many more&quot; and &quot;how many less&quot;). 3.MD.3</td>
</tr>
<tr>
<td>Measure and record lengths using a ruler. 3.MD.4</td>
</tr>
<tr>
<td>Deconstruct word phrases (&quot;how many more&quot; and &quot;how many less&quot;) to determine appropriate operation. 3.MD.3</td>
</tr>
<tr>
<td>Construct a line plot of gathered data marked with appropriate units (whole numbers, halves or fourths-quarters). 3.MD.4</td>
</tr>
<tr>
<td>Define a square unit as a square with sides equaling one. 3.MD.5a</td>
</tr>
<tr>
<td>Define the area of a square with sides equaling one as one square unit. 3.MD.5a</td>
</tr>
<tr>
<td>Define the area of a plane figure as the number of non-overlapping square units. 3.MD.5b</td>
</tr>
<tr>
<td>Measure the area of a figure by counting the number of unit squares (both customary and standard/metric units). 3.MD.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geometric measurement: understand concepts of area and relate area to multiplication and to addition</th>
</tr>
</thead>
</table>

| analog clock |
| digital clock |
| minute |
| hour |
| elapsed time |
| interval |
| AM |
| PM |
| Volume |
| Mass |
| Liquid |
| Solid |
| Grams |
| Kilograms |
| Liters |

| picture graph |
| bar graph |
| scale |
| "how many more" |
| "how many less" |
| Halves |
| fourths/quarters |
| inches |

| square unit |
| square |
| area |
| plane figure |
| area |
| square unit |
| non-overlapping |
| unit square |
| How do we measure perimeter and area of geometric shapes? | - Solve the area of a rectangle by tiling and then counting the number of unit squares. 3.MD.7a  
- Describe the relationship between counting the number of unit squares and multiplying the side lengths in finding the area of a rectangle. 3.MD.7a  
- Solve the area of a rectangle by multiplying its side lengths. 3.MD.7a  
- Solve real-world area problems by either tiling or multiplying the side lengths. 3.MD.7b  
- Solve for the area of a rectangle by multiplying the side lengths. 3.MD.7c  
- Solve for the area of a rectangle by breaking one side into a sum (example if the length is 5 break it apart as 2+3) then multiplying each part/addend by the other side 3.MD.7c  
- Explain why the two strategies above produce the same area (proving distributive property). 3.MD.7c  
- Add square units to find the area of a given shape by counting the squares of the visual. 3.MD.7d  
- Multiply length times (x) width to find the area of a given shape 3.MD.7d  
- Find the area of a rectilinear figure and add the non-overlapping parts/units. 3.MD.7d  
- Recognize multiple, appropriate operations to solve real world problems. 3.MD.7d  
- Solve real world problems finding the perimeter of polygons. 3.MD.8  
- Solve real world problems finding a missing side of a polygon given the perimeter. 3.MD.8  
- Compare/contrast rectangles with the same perimeter and different area 3.MD.8  
- Compare/contrast shapes by their attributes (sides, vertices, angles). 3.G.1  
- Categorize shapes based on their attributes. 3.G.1  
- Name shapes from visual representations 3.G.1  
- Draw quadrilaterals that cannot be classified as a rhombus, rectangle, parallelogram, etc. 3.G.1  
- Categorize quadrilaterals based on their attributes (rectangles share attributes of parallelograms). 3.G.1  
- Partition shapes into equal parts/areas based on the denominator of the fraction. 3.G.2  
- Define each part of the whole as a unit fraction (1/2, 1/3, 1/4, 1/5, 1/6………). 3.G.2 |
| How do we classify geometric shapes? | - Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures  
- Geometry 3.G  
- Reason with shapes and their attributes  
- standard/ metric unit system  
- square units  
- customary unit system  
- Tiling  
- Rectangle  
- Multiply  
- Distributive property  
- Rectilinear  
- Area  
- Multiplication  
- Over-lapping units |
| | - Perimeter  
- Area  
- Polygon  
- Rectangle  
- Quadrilaterals  
- Rhombus  
- Square  
- Parallelogram  
- Trapezoid  
- Rectangle  
- Angles  
- Vertices  
- Sides  
- Compare  
- Contrast  
- Opposite  
- Parallel  
- Polygon |