

Multiplicative Reasoning

Fractions



Grade Three	Grade Four	Grade Five
<p>Multiply and divide numbers within 100 <i>(in context and in equations)</i></p>	<p>Multiply and divide any two numbers within 1,000 <i>(in context and in equations)</i></p>	<p>All four operations with fractions <i>(in context and in equations)</i></p> <p>(NO standard algorithms – using modeling and/or decomposition approaches.)</p>
Models for Intervention		
<p>Strong connections between grouping and area models.</p> <p>Use of area models for multiplication facts.</p>	<p>Area models to support decomposition for multiplication.</p> <p>Partitive (sharing) models for division.</p>	<p>Area models to build equivalence for add/sub.</p> <p>Parts/whole models for multiplication, with a focus on whole numbers x fractions.</p> <p>Measurement models for division of fractions.</p>
Models for Instruction		
<p>Grouping models (i.e. circles and stars, loops and groups, beans and cups), jumps on a number line, repeated addition, skip counting; area models for products to 100 (may start by using place value blocks)</p> <p>Experience with both partitive (sharing) models and quotitive (partial quotients) models</p>	<p>Area models for products OR quotients to 1,000</p> <p>The use of area models to develop decomposition strategies for multi-digit computation</p> <p>Experience with both partitive (sharing) models and quotitive (partial quotients) models both in equations and in context.</p>	<p>Area models for part/whole relationships, place value blocks, Cuisenaire rods, fraction bars, fraction pieces, geoboards, pattern blocks</p>
Critical Strategies		
<p>Compose and Decompose using factors (initially 2s, 5s, 10s)</p> <p>Use compensation based on the commutative, identity, associative, and distributive properties</p> <p>Approach division as a missing factor in a multiplication problem. (Understanding how multiplication and division are related operations.)</p>		<p>Model and Identify equivalent fractions</p> <p>Connect and apply previous understanding of whole number operations and properties of addition and multiplication while operating with fractions.</p>