

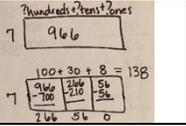
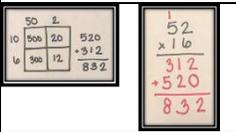
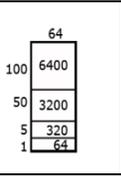
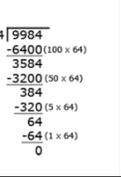
## Multiplication and Division Fluency Guide

Learning Progression	Focus Facts	Strategies/Examples	Resources
<b>Foundational Facts</b> Students should recognize that using the <a href="#">commutative property</a> doubles the number of facts that they know, e.g. "If I know the product of $5 \times 6 = 30$ then I also know $6 \times 5 = 30$ "			
Grade 3 Beginning	$\times 2$ $\times 5$ $\times 10$ $\times 1$ $\times 0$	$3 + 3 = 2 \times 3$ 5, 10, 15, 20, ... $10, 20, 30 \dots (4 \times 10) = (4 \times 5) \times 2$ $1 \times a = a$ (a = any number) $0 \times a = 0$ (a = any number)	<a href="#">Doubles Match-Up</a> , <a href="#">Double Up</a> <a href="#">Points on a Star</a> , <a href="#">x5 Fact Fish (go fish)</a> <a href="#">Top Tens</a> , <a href="#">x10 Corners</a> <a href="#">What's The Problem?</a> , <a href="#">x1 Math Towers</a> <a href="#">My Monster</a> , <a href="#">x1 x0 Math Checkers</a>
<b>Derived facts</b> Students use foundational and other known facts along with the <a href="#">distributive property</a> to derive products, e.g. "I know $5 \times 4 = 20$ so $6 \times 4$ must be 24 because it is 1 more group of 4"			
Grade 3 Beginning	$\times 3$	$3 \times 4 = (2 \times 4) + 4$ "3 groups of 4 is the same as 2 groups of 4 plus one more group."	<a href="#">x3 Fruit Baskets</a> <a href="#">All Lined Up x3</a>
Grade 3 Beginning	$\times 4$	$4 \times 6 = (2 \times 6) + (2 \times 6)$ "2 groups of 6 is 12 so 4 groups of 6 is double 12 ( $12 + 12 = 24$ )." 	<a href="#">Double-Double Patterns</a> <a href="#">x4 Quilt Cover Up</a>
Grade 3 Middle	$\times 6$	$6 \times 7 = (5 \times 7) + 7$ "5 groups of 7 is 35, so 6 groups of 7 is 1 more group of 7, $35 + 7 = 42$ "	<a href="#">x6 All Lined Up</a> <a href="#">x6 Capture</a>
Grade 3 Middle	$\times 9$	$9 \times 8 = (10 \times 8) - 8$ "I know 10 groups of 8 is 80, so if I have 1 less group, $80 - 8 = 72$ "	<a href="#">x9 Another Way</a> <a href="#">x9 Condition</a>
Grade 3 Middle	$\times 8$	$8 \times 3 = (4 \times 3) + (4 \times 3)$ "I know 4 groups of 3 is 12, and since 8 is double 4, 2 groups of 12 = 24" -OR- $8 \times 3 = (5 \times 3) + (3 \times 3)$ "I would rather break up 8 as 5 + 3 since I know $5 \times 3$ and $3 \times 3$ "	<a href="#">x2x4x8 Multiplication Chart</a> <a href="#">x8 Missing Numbers</a> <a href="#">x8 Target 80</a>
Grade 3 Middle	$\times 7$	$7 \times 8 = (5 \times 8) + (2 \times 8)$ "I know $5 \times 8 = 40$ and $2 \times 8 = 26$ , so together the total would be 56"	<a href="#">x7 Another Way</a> <a href="#">x7 Capture</a>
Grade 3 End	Mult. All	Apply strategies to quickly recall multiplication facts	<a href="#">Rio and Knock Out!</a> <a href="#">Connecting Products</a>
Grade 3 End	Division	Recognize Division can be represented with a missing factor "To solve $24 \div 4 = ?$ , I can think, I know $4 \times 6 = 24$ , so $24 \div 4 = 6$ "	<a href="#">Missing Numbers with Multiplication</a> <a href="#">Find the Unknown Number</a> <a href="#">What's Your Number?</a> <a href="#">Using Multiplication to Solve Division</a>
Grade 3 End	Division	Use multiplication to divide Recognize Fact Families	<a href="#">Multiplication and Division Match Cards</a> <a href="#">Homes for Facts</a>
Grade 3 End	Division All	Apply fact families or multiplication to divide	<a href="#">Division Duel</a> <a href="#">Four Quotients</a> <a href="#">Race to the Resort</a>
<b>By the end of Grade 3 students should be able to use various strategies to fluently recall multiplication and division facts within 100</b>			
Grade 3 End	Multiples of 10	Apply work with basic facts to multiply by multiples of 10 "I know that $7 \times 4 = 28$ , 40 is the same as 4 tens, 7 groups of 4 tens is 28 tens, so $7 \times 40 = 280$ "	<a href="#">Base Ten Multiplication</a> <a href="#">Target 300</a> <a href="#">Multiples of Ten</a> <a href="#">Multiplying Multiples of 10</a>

i-Ready [Learning Games](#): “Match” & “Pizza”  
 Ready Toolbox Resource - “Grade 3: Additional Fluency Practice”  
 Ready Toolbox Resource - “Grade 4: Additional Fluency Practice”  
 Ready Toolbox Resource - “Grade 5: Additional Fluency Practice”



Grade 4 Beginning	Multiples	Apply basic facts and skip counting to recognize and understand multiples as related to multiplication <i>“I know that 52 is a multiple of 4 because <math>4 \times 10 = 40</math>, and then I can count by 4’s...40, 44, 48, 52”</i>	<a href="#">Discovering Multiples</a> <a href="#">Finding Multiples</a> <a href="#">Identifying Multiples on a Hundred Chart</a>
Grade 4 Beginning	Factors	Relate multiplication to recognize and understand factors <i>“To find the factors of 24, I can think of the different ways to get a product of 24; <math>1 \times 24</math>, <math>2 \times 12</math>, <math>3 \times 8</math>, <math>4 \times 6</math>”</i>	<a href="#">Factors</a> <a href="#">Factors and Multiples Game</a>
Grade 4 Beginning	Multiples of 10, 100, 1000	Apply work with basic facts to multiply by multiples of 10, 100, and 1000 <i>“I know that <math>7 \times 4 = 28</math>, 40 is the same as 4 tens, 7 groups of 4 tens is 28 tens, so <math>7 \times 40 = 280</math>”</i>	<a href="#">Multiplication Pop (modified 10 &amp; 1000)</a> <a href="#">Multiples of 10, 100, and 1000</a>
Grade 4 Beginning	Products of 1-digit factors	Model 1-digit groups of factors <i>“To solve <math>7 \times 352</math>, I can use base-ten blocks to show 7 groups of 352, then group and count the values to find the product”</i> <i>“I can draw a quick picture of base-ten blocks to show that!”</i>	<a href="#">Multiply by 1-Digit Factor</a> <a href="#">Multiplication Show &amp; Tell</a> <a href="#">Modeling Rectangles</a>
Grade 4 Middle	Products of 1-digit factors	Apply the distributive property and work with multiples to multiply with 1-digit factors by up to 4-digit factors <i>“To solve <math>5 \times 64</math>, I can break up 64 into 60 and 4, then multiply <math>5 \times 60</math> and <math>5 \times 4</math> and add them together”</i>	<a href="#">Decompose Factors</a>
Grade 4 Middle	Products of 1-digit factors	Use an “Area Model” to show partial quotients of 1-digit by up to 4-digit factors $368 \times 7 =$ $300 \quad + \quad 60 \quad + \quad 8$ 	<a href="#">Multiply by One Digit Numbers</a> <a href="#">The Great Chase Race</a> <a href="#">Use an Area Model to Multiply a Three-Digit Number by a One-Digit Number</a>
Grade 4 Middle	Products of 2-digit by 2-digit factors	Model 2-digit by 2-digit factors using base-ten blocks or grids 	<a href="#">Multiply with 2-Digit Factors</a> <a href="#">Multiplication Magic - Arrays</a>
Grade 4 Middle	Products of 2-digit by 2-digit factors	Use an “Area Model” to show partial quotients of 2-digit by up to 2-digit factors 	<a href="#">Multiply by Two Digit Numbers</a> <a href="#">Multiplication Magic - Area Models</a> <a href="#">Multiplication Magic - Partial Products</a> <a href="#">Tic-Tac-Times</a>
Grade 4 Middle	Divide 2-digit dividends	Make equal groups using counters, sometimes with remainders 	<a href="#">Interpreting the Remainder Sort</a> <a href="#">Division Sorting Cards</a>
Grade 4 Middle	Divide 2-3-, 4-digit dividends	Use base-ten blocks or quick pictures to make equal groups 	<a href="#">Fair Shares</a> <a href="#">Solve Division Problems Using Picture Models</a> <a href="#">Packaging Cupcakes</a>
Grade 4 Middle	Divide 2-3-, 4-digit dividends	Use models to understand regrouping of place values 	<a href="#">Divide 2-Digits Using Friendly Multiples</a> <a href="#">Share and Share Alike</a>

Grade 4 Middle	Divide 2-3-, 4-digit dividends	Relate area models and multiplication to divide, using partial quotients		<a href="#">Divide by 1-Digit Divisors</a> <a href="#">Division to Find a Missing Length</a> <a href="#">Break Apart the Dividend</a>
Grade 5 Beginning	Multiply Using the Standard Algorithm		Multiply 1-digit by up to 5-digit factors, understand how the standard algorithm works	<a href="#">Bridging to the Standard Algorithm</a> <a href="#">Multiplying with single digit multipliers (steps 1-3 only)</a>
Grade 5 Beginning	Multiply Using the Standard Algorithm		Multiply 2-digit by up to 5-digit factors, understand how the standard algorithm works	<a href="#">Using the Standard Algorithm #3</a> <a href="#">Use the Standard Algorithm for Multiplication</a> <a href="#">Multiplication Mix Up</a>
Grade 5 Beginning	Divide with 2-digit divisors	Relate prior work to divide with an area model		<a href="#">Use an Area Model for Division of 2-Digit Divisors</a> <a href="#">Area Model for Division</a>
Grade 5 Beginning	Divide with 2-digit divisors	Relate prior work to divide by using partial quotients		<a href="#">Tomato, Tomato</a> <a href="#">5.NBT.2.6 Task 3</a> <a href="#">Use an Area Model For Division of 2-Digit Divisors</a>