

Proficient Level Procedures and Algorithms for Division

	Third Grade	Fourth Grade	Fifth Grade
Number Strategies	<p>adding equal groups $24 \div 6$</p> <p>$6 + 6 = 12$ $12 + 12 = 24$ So $24 \div 6 = 4$</p> <p>inverse operation solve $36 \div 9 = \underline{\quad}$ as $9 \times \underline{\quad} = 36$ Using a known fact</p>	<p>adding equal groups $48 \div 6$</p> <p>$6 + 6 = 12$ $12 + 12 = 24$ $24 + 24 = 48$ $8 \times 6 = 48$ $48 \div 6 = 8$</p> <p>inverse operation solve $63 \div 9 = \underline{\quad}$ as $9 \times \underline{\quad} = 63$ Using a known multiplication fact</p>	
Partitioning (Distributive Property of Multiplication over Addition)		<p>building up groups of the divisor</p> <p>$92 \div 7$ $7 \times \underline{\quad} = 92$ $7 \times 10 = 70$ $7 \times 3 = 21$ $70 + 21 = 91$ So $7 \times 13 = 91$ $92 \div 7 = 13 \text{ r. } 1$ Or $92 \div 7 = 13 \frac{1}{7}$</p> <p>taking away groups of the divisor</p> <p>$192 \div 7$ $\begin{array}{r} 27 \text{ r } 3 \\ 7 \overline{) 192} \\ \underline{70} \\ 122 \\ \underline{70} \\ 52 \\ \underline{49} \\ 3 \end{array}$</p> <p style="text-align: center;">breaking dividend into parts</p> <p>$94 \div 4$ $94 \div 4 = (80 + 14) \div 4$ $80 \div 4 = 20$ $14 \div 4 = 3 \text{ r. } 2$ $20 \text{ and } 3 \text{ r. } 2 \rightarrow 23 \text{ r. } 2$</p>	<p>taking away groups of the divisor</p> <p>$54 \overline{) 2500}$ $\begin{array}{r} 20 \\ \underline{1080} \\ 1420 \\ \underline{1080} \\ 340 \\ \underline{324} \\ 16 \end{array}$ $46 \text{ r. } 16$ or $46 \frac{16}{54}$</p> <p>building up groups of the divisor</p> <p>$1392 \div 23$ $23 \times 50 = 1150$ $\underline{23 \times 10 = 230}$ $23 \times 60 = 1380$ $60 \text{ r } 12$ or $60 \frac{12}{23}$</p> <p style="text-align: center;">breaking dividend into parts</p> <p>$240 \div 14$ $140 \div 14 = 10$ $70 \div 14 = 5$ $\underline{30 \div 14 = 2 \text{ r. } 2}$ $240 \div 14 = 17 \text{ r. } 2$</p>

Teachers may want to write the blue number sentences to help make the mathematics explicit for everyone. Students are not expected to write or state the blue expressions. This chart highlights the mathematics used in procedures and algorithms likely to be mastered by the end of each grade level. Students may use a variety of notation structures or models to demonstrate these strategies. Direct modeling and most counting strategies are not listed on this chart. Much of the work shown is completed mentally by students. Students do not need to write each step when solving every problem.