Unit 4: Division

Dear Parents/Guardians,

Unit 4 explores division. In Lesson 1, students divide whole numbers in different ways and solve problems in context. Lesson 2 revisits decimal division through rate problems. Lessons 3 and 4 explore multiple methods for dividing fractions. Due to space limitations, the examples on this page are focused on non-traditional methods.

The "Chunking Method" for Division
The "chunking method" is an alternative to the standard algorithm.

Step 1: Make a multiplication bank that may be useful for the problem.
Step 2: Select a fact from the bank that is less than or equal to the dividend and record.
Step 3: Subtract and repeat Steps 2 and 3 until the remainder is less than the divisor.

$$405 \div 15 = 27$$

Multiplication Bank	
$15 \times 1 = 15$	$15 \times 10 = 150$
$15 \times 2 = 30$	$15 \times 20 = 300$
$15 \times 3 = 45$	$15 \times 30 = 450$
$15 \times 4 = 60$	$15 \times 40 = 600$

$$
\begin{array}{r}
15\ \overline{)\ 405} \\
-\ 300 \quad 20 \\
\hline
105 \\
-\ 60 \quad\ 4 \\
\hline
45 \\
-\ 45 \quad\ 3 \\
\hline
0 \quad
\end{array}
$$

27 groups of 15.

Fraction Division
Students divide fractions using pictures, the divide across rule, and the standard algorithm of multiplying by the reciprocal.

Expression	$\dfrac{6}{8} \div \dfrac{3}{8}$	$\dfrac{1}{3} \div \dfrac{4}{9}$
Picture	How many $\dfrac{3}{8}$ are in $\dfrac{6}{8}$? There are 2 of the $\dfrac{3}{8}$ in $\dfrac{6}{8}$.	It is helpful to rename the fractions using a common denominator. $\dfrac{3}{9} \div \dfrac{4}{9}$ There is $\dfrac{3}{9}$ of $\dfrac{4}{9}$ in $\dfrac{3}{9}$.
Divide Across	$\dfrac{6}{8} \div \dfrac{3}{8} = \dfrac{2}{1} = 2$	$\dfrac{3}{9} \div \dfrac{4}{9}$ $\dfrac{3 \div 4}{9 \div 9} = \dfrac{\frac{3}{4}}{1} = \dfrac{3}{4}$
Multiply by the Reciprocal	$\dfrac{6}{8} \times \dfrac{8}{3} = \dfrac{48}{24} = 2$	$\dfrac{1}{3} \times \dfrac{9}{4} = \dfrac{9}{12} = \dfrac{3}{4}$

By the end of the packet, your student should know…
- How to solve whole number division problems by "chunking" [Lesson 4.1]
- How to solve whole number division problems using the standard algorithm [Lesson 4.1]
- How to solve rate problems involving whole numbers, fractions and decimals [Lesson 4.2]
- How to represent division of fractions with a picture [Lesson 4.3]
- How to use the divide across rule for dividing fractions [Lesson 4.3]
- How to use the multiply by the reciprocal rule for dividing fractions [Lesson 4.4]

Additional Resources
- For definitions and additional notes please refer to Student Resources at the end of the packet.
- For dividing whole numbers using the standard algorithm: https://youtu.be/4yp5v64XuRc
- For dividing whole numbers by decimals: https://bit.ly/2UO89e6
- For dividing decimals by decimals: https://bit.ly/3ft69zU
- For dividing fractions by multiplying by the reciprocal: https://bit.ly/3e7UJkJ