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Core Focus

- Subtraction: Making estimates and standard algorithm
- Subtraction: Compensation strategy
- Common fractions: Comparisons

Subtraction

- Students explore subtracting two- and three-digit numbers using the standard subtraction algorithm.
- In the standard subtraction algorithm, what was called borrowing is now called **regrouping**.



In this example, 92 is regrouped as 80 + 12, so 80 - 30 and 12 - 8 can be subtracted more easily.

 Because students have had many experiences with composing and decomposing to make numbers easier to add or subtract, they should find the standard subtraction algorithm makes sense and easy to work with.

9.5 Subtraction: Using the standard algorithm with three-digit numbers (decomposing hundreds)					
Step In A gardener had 235 seedlings to plant. In the first garden bed, he planted 72 seedlings. How many seedlings does he have left to plant? How could you calculate it using base-10 blocks?					
I would show 235 using 2 hundreds blocks, 3 tens, and 5 ones. Then I would take away the number of seedlings he has planted.	I can take 2 ones from 5 ones but I need to regroup I hundreds block as 10 tens blocks so that I have 13 tens.				

In this lesson, students use the standard subtraction algorithm to subtract three-digit numbers.

STEPPING STONES 20

Ideas for Home

- Ask your child to regroup the same quantity of money in different ways. E.g. \$1 and 38¢ is 1 hundred (dollar), 3 tens (dimes), and 8 ones (pennies), which can be regrouped as 13 tens and 8 ones, or 12 tens and 18 ones, or 11 tens and 28 ones.
- When practicing the algorithm, ask your child to use place-value language while subtracting. E.g. for 457 – 228, 457 can be regrouped as 44 hundreds, 4 tens and 17 ones.

Glossary

- The standard subtraction algorithm is the familiar paper-and-pencil procedure most adults learned for subtracting multi-digit numbers.
- Regrouping is when numbers are regrouped as new place values to combine the quantities.

Helpful videos

View these short one-minute videos to see these ideas in action.

www.bit.ly/O1_17 www.bit.ly/O1_19



STEPPING STONES 20

Fractions

• Students explore **equivalent fractions** and compare fractions to determine which is greater. The fraction chart (see below) helps to identify and compare fractions of different sizes.



These length models in a fraction chart show that $\frac{1}{l_4}$ is equivalent to $\frac{2}{8}$; and $\frac{2}{6}$ is greater than $\frac{2}{8}$.

• Students use number lines to compare fractions with the same denominator, which shows how many equal-sized parts divide the distance from 0 to 1.

9.10 Com	mon fractio e denomino	ons: Makin Itor (numl	ng com per line)	parison	s with t	he		
Step In What do the	On these nu marks betwee	mber lines, t n 0 and 1 or	the distan 1 this num	ce from 0 ber line s	to I is or how? Hov	ie whole. v do you	know?	
- O How can you	figure out whi	ch mark sho	us six-fou	rths?			2	

• Students use a number line to compare and order **unit fractions** from least to greatest. Comparing unit fractions is an effective way to get a sense for the size of a fraction.

Step In Order these fractions from greatest to least.	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
	-
How did you decide the order?	
I looked at the denominator. The greater the denominator the smaller the size of the unit fro	ction.

- When students can visualize where $\frac{1}{4}$ and $\frac{1}{8}$ are on a number line, it is obvious that $\frac{1}{8}$ is less than $\frac{1}{4}$, even though 8 is greater than 4 in whole numbers.
- To compare fractions with different denominators, the number line can be divided to represent both denominators. E.g. thirds (above the line) and sixths (below it).



Ideas for Home

• Notice how a ruler is like a number line. One inch is divided into $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$ and $\frac{1}{16}$. Practice counting by unit fractions. Notice the equivalent fractions. E.g. $\frac{14}{16}$ is equivalent to $\frac{1}{16}$.

Glossary

- Equivalent fractions are fractions described in different ways, but are the same distance on the number line.
 ³/₆ is equivalent to ¹/₂.
- A unit fraction is a common fraction that has a numerator of 1.