Name: _____ Date: _____

Student Exploration: Estimating Sums and Differences

Vocabulary: difference, estimate, sum

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)
An **estimate** is a rough calculation, or best guess. A good estimate is reasonably close to the exact answer, and is also easy to do in your head.

1. Amy's lunch costs $5.03, and her dessert is $2.99. To estimate her total cost, she rounds each price to the nearest dollar and adds. Fill in the blanks below to show her estimate.

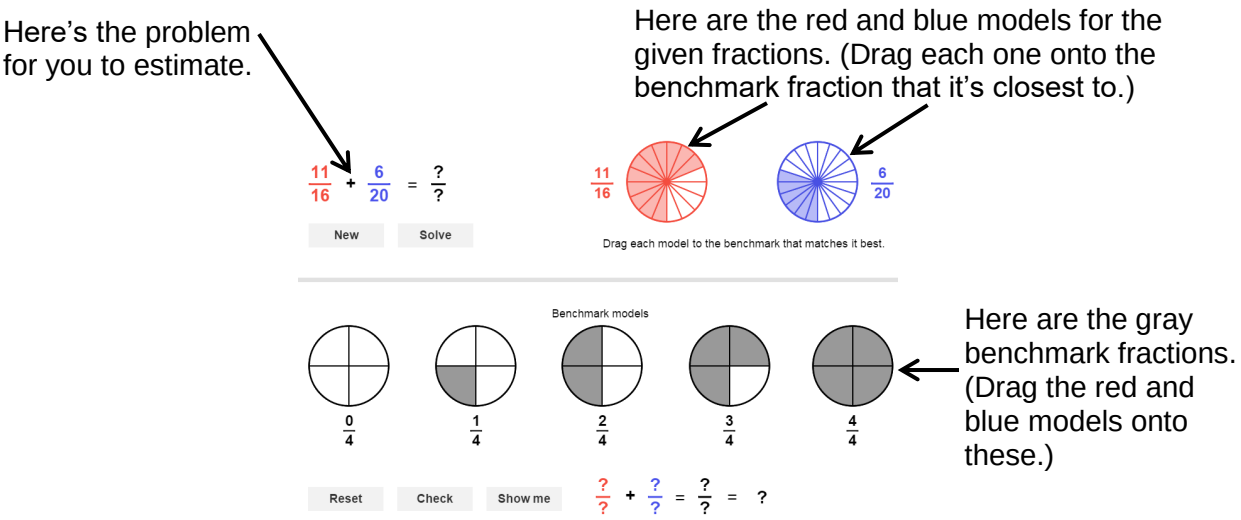
   $5.03 + $2.99 ≈ _____ + _____ = _____

2. Is the estimate above a good estimate? _____ Explain. _____

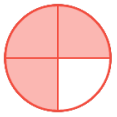
   _____

Gizmo Overview
In the *Estimating Sums and Differences* Gizmo, you will use benchmarks (numbers used to make estimates) to add and subtract fractions.

Here's how the Gizmo looks at first:



Read your feedback in the Gizmo after you click **Check**. If your answer is incorrect, click **Reset** and drag the red and blue models to different benchmark fractions. When you're done, click **New** for a different problem to work on.

Activity: **Choosing benchmarks**	Get the Gizmo ready: • You should see the problem $\frac{11}{16} + \frac{6}{20}$. If not, click **Refresh** in your browser.	 $\frac{3}{4}$

1. When you begin, you should see the problem shown to the right. $\frac{11}{16} + \frac{6}{20} = \frac{?}{?}$

   A. First, compare the red and blue models for $\frac{11}{16}$ and $\frac{6}{20}$ to the gray benchmarks.

   What benchmarks appear to be closest to each? $\frac{11}{16} \approx \frac{\square}{\square}$ $\frac{6}{20} \approx \frac{\square}{\square}$

   B. Drag the models for $\frac{11}{16}$ and $\frac{6}{20}$ and drop them on the benchmarks you chose. Click **Check** and try again if your estimate is incorrect. Then complete the equation below.

   $\frac{11}{16} + \frac{6}{20} \approx \frac{\square}{\square} + \frac{\square}{\square} = \frac{\square}{\square} =$ _____

   C. Click **Solve** to see the exact sum. What do you notice about the exact sum and the estimate? _____

2. Click **New**. You should now see the problem shown to the right. $\frac{23}{24} - \frac{5}{19} = \frac{?}{?}$

   A. Notice that the numerator and denominator of $\frac{23}{24}$ are very close in value. Fill in the equation to show the benchmark you should choose for this fraction. $\frac{\square}{\square} =$ ____

   B. Divide or use a calculator to find the decimal equal to $\frac{5}{19}$. How can the decimal help you find the benchmark for this fraction? _____

   _____

   C. Drag each model to its benchmark. What is the estimated difference? _____

   Check your answer in the Gizmo.

3. Click **New**. Work through more problems in the Gizmo.

(Activity continued on next page)

Activity (continued from previous page)

4. Use the benchmarks $\frac{0}{4}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, and $\frac{4}{4}$ to estimate each answer. Write all your steps in the space below each problem.

A. $\frac{8}{11} + \frac{5}{17}$

B. $\frac{13}{14} - \frac{5}{9}$

C. $\frac{2}{11} + \frac{6}{10}$

D. $\frac{12}{13} - \frac{6}{7}$

E. $\frac{11}{25} + \frac{1}{30}$

F. $\frac{29}{31} - \frac{20}{28}$

G. $\frac{12}{26} + \frac{9}{40}$

H. $\frac{56}{75} - \frac{41}{52}$