Rigor

Task Handout, Grade 4
There are two snakes at the zoo, Jewel and Clyde. Jewel was six feet and Clyde was eight feet. A year later Jewel was eight feet and Clyde was 10 feet. When asked which one grew more, students gave varying answers.

Mia said, “Since the two snakes both grew two feet (8 − 6 = 2 and 10 − 8 = 2) then I would say that they grew the same amount.”

Raul said, “They both grew 2 feet, but Jewel was only 6 feet to start with while Clyde was 8 feet to start with. That means Jewel grew more compared to her original length (2 is a larger part of six than it is of eight).”

Compare the two arguments. Describe the difference in the way the two students are thinking about the problem. Suppose a one-foot snake grew two feet and a 20-foot snake grew two feet. Could the two students still make the same type of argument?
Conceptual Understanding Task #2

Sometimes when we subtract one number from another number we "regroup," and sometimes we don’t. For example, if we subtract 38 from 375, we can "regroup" by converting a ten to 10 ones:

\[
\begin{array}{c}
615 \\
-375 \\
\hline
\end{array}
\]

\[
\begin{array}{c}
\ \ \ \ \ 337 \\
\end{array}
\]

Find a 3-digit number to subtract from 375 so that:

a. You don’t have to use regrouping.

b. You would naturally use regrouping from the tens to the ones place.

c. You would naturally use regrouping from the hundreds place to the tens place.

d. You would naturally use regrouping in all places.

In each case, explain how you chose your numbers and complete the problem.

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Conceptual Understanding Task #3

a. The number 8,263 lies between 8,260 and 8,270 on the number line. Label all the other tick marks between 8,260 and 8,270. Is 8,263 closer to 8,260 or 8,270 on the number line?

![Number line with tick marks labeled 8,260 and 8,270]

b. Which hundred is 8,263 nearest to on the number line? Plot 8,200 and 8,300 on the two outermost spots on the number line below. Then plot 8,263 to prove your answer.

![Number line with tick marks labeled 8,200 and 8,300]

c. Which thousand is 8,263 nearest to on the number line? Plot 8,000 and 9,000 on the two outermost spots on the number line below. Then plot 8,263 to prove your answer.

![Number line with tick marks labeled 8,000 and 9,000]

Procedural Skills and Fluency Task #1

1. Solve using each method.

<table>
<thead>
<tr>
<th>Partial Products</th>
<th>Standard Algorithm</th>
<th>Partial Products</th>
<th>Standard Algorithm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>a. 3 4</td>
<td>3 4</td>
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<td>x 4</td>
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</tbody>
</table>

2. Solve. Use the standard algorithm.

<table>
<thead>
<tr>
<th>a. 2 5 1</th>
<th>b. 1 3 5</th>
<th>c. 3 0 4</th>
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<tbody>
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<td></td>
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<tr>
<td>x 3</td>
<td>x 6</td>
<td>x 9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>d. 4 0 5</th>
<th>e. 3 1 6</th>
<th>f. 3 9 2</th>
</tr>
</thead>
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</tr>
<tr>
<td>x 4</td>
<td>x 5</td>
<td>x 6</td>
</tr>
</tbody>
</table>

Procedural Skills and Fluency Task #2

a. Arrange these numbers in increasing order, beginning with the least.

2400   4002   2040   420   2004

b. Arrange these numbers in decreasing order, beginning with the greatest.

1470   847   710   1047   147

Procedural Skills and Fluency Task #3

Which of the following sums are equal to $\frac{22}{17}$?

a. $\frac{5}{17} + \frac{4}{17} + \frac{3}{17} + \frac{10}{17}$

b. $\frac{3}{17} + \frac{8}{17} + \frac{3}{17} + \frac{10}{17}$

c. $\frac{6}{17} + \frac{4}{17} + \frac{3}{17} + \frac{5}{17} + \frac{2}{17} + \frac{2}{17}$

d. $\frac{12}{17} + \frac{10}{17}$

e. $\frac{1}{17} + \frac{1}{17} + \frac{9}{17} + \frac{3}{17}$

Find another way to write $\frac{22}{17}$ as a sum of fractions.
Application Task #1

Karl's rectangular vegetable garden is 20 feet by 45 feet, and Makenna's is 25 feet by 40 feet. Whose garden is larger in area?
Application Task #2

Cynthia is making her famous "Perfect Punch" for a party. After looking through the recipe, Cynthia knows that she needs to mix $4 \frac{5}{8}$ gallons of fruit juice concentrate with $3 \frac{7}{8}$ gallons of sparkling water.

a. Just as she is about to get started she realizes that she only has one 10-gallon container to use for mixing. Will this container be big enough to hold all the ingredients?

b. How much punch will this recipe make?
Application Task #3

Margie bought 3 apples that cost 50 cents each. She paid with a five-dollar bill. How much change did Margie receive?