

# Formative Instructional and Assessment Tasks

## Value of a Digit 5.NBT.1 - Task 1

<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Understand the place value system.</b>
<b>Standard(s)</b>	<b>5.NBT.1</b> Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
<b>Materials</b>	Paper and pencil
<b>Task</b>	<p><b>Part 1.</b> Wallace and Logan were arguing about the size of 2 numbers. Wallace thought eight-tenths was ten times larger than eight-hundredths. Logan thought eight-hundredths was ten times larger than eight-tenths. Who is correct?</p> <p><b>Part 2.</b> Imagine you are the boys' teacher. Draw a picture to help explain this concept to Wallace and Logan. Make sure you refer to place value in your explanation.</p> <p><b>Part 3.</b> Choose another pair of numbers that you could give to Wallace and Logan to assess whether they understand this concept. Which one is larger? How much larger?</p>

### Rubric

Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student does not identify that Wallace is correct, or determines he is correct based on unsound reasoning.</li> <li>Student is unable to generate a picture to explain the concept.</li> <li>Student does not refer to place value in their explanation.</li> <li>Student does not generate another pair of numbers that fit with the concept.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student identifies that Wallace is correct.</li> <li>Student's explanation and picture show good reasoning but are unclear or lack details.</li> <li>Student refers to place value in their explanation but does not clearly connect it to the task.</li> <li>Student generates another pair of numbers but the numbers don't clearly highlight the concept being explained to Wallace and Logan.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student identifies that Wallace is correct: eight-tenths is ten times larger than eight-hundredths.</li> <li>Student draws a picture and clearly explains why .8 is ten times larger than .08.</li> <li>Student includes references to place value in their explanation.</li> <li>Student generates another pair of numbers with the same digit in a different place. Student identifies that the digit in the place to the left is 10 times the value of the same digit in the other number.</li> </ul>

# Formative Instructional and Assessment Tasks

## Standards for Mathematical Practice

1. Makes sense and perseveres in solving problems.
- 2. Reasons abstractly and quantitatively.**
3. Constructs viable arguments and critiques the reasoning of others.
- 4. Models with mathematics.**
5. Uses appropriate tools strategically.
- 6. Attends to precision.**
- 7. Looks for and makes use of structure.**
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Value of a Digit

**Part 1.** Wallace and Logan were arguing about the size of 2 numbers. Wallace thought eight-tenths was ten times larger than eight-hundredths. Logan thought eight-hundredths was ten times larger than eight-tenths. Who is correct?

**Part 2.** Imagine you are the boys' teacher. Draw a picture to help explain this concept to Wallace and Logan. Make sure you refer to place value in your explanation.

**Part 3.** Choose another pair of numbers that you could give to Wallace and Logan to assess whether they understand this concept. Which one is larger? How much larger?

# Formative Instructional and Assessment Tasks

<b>Danny &amp; Delilah 5.NBT.1-Task 2</b>	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Understand the place value system.</b>
<b>Standard(s)</b>	<b>5.NBT.1</b> Recognize that in a multi-digit number, a digit in ones place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.
<b>Materials</b>	Paper and pencil
<b>Task</b>	<p>Danny and Delilah were playing a game where they drew digits and placed them on a game board. Danny built the number 247. Delilah built the number 724.</p> <p>How much bigger is the 2 in Danny’s number than the 2 in Delilah’s number?            How much smaller is the 4 in Delilah’s number than the 4 in Danny’s number?            Write a sentence explaining how the size of the 7 in Danny’s number compares to the size of the 7 in Delilah’s number.</p>

<b>Rubric</b>		
<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student does not have a clear enough understanding of place value to complete the task without assistance.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student understands that the values of the digits depend on their place in the number.</li> <li>Student is able to explain which digits are greater and which digits are less.</li> <li>Student does not use powers of 10 (10, 100, <math>\frac{1}{10}</math>, <math>\frac{1}{100}</math>) to compare the size of the numbers.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student identifies that the 2 in Danny’s number is 10 times bigger than the 2 in Delilah’s number.</li> <li>Student identifies that the 4 in Delilah’s number is <math>\frac{1}{10}</math> the size of the 4 in Danny’s number.</li> <li>Student compares the size of the 7s in each number. Either of these sentences is correct: The 7 in Danny’s number is <math>\frac{1}{100}</math> the size of the 7 in Delilah’s number. The 7 in Delilah’s number is 100 times the size of the 7 in Danny’s number.</li> </ul>

# Formative Instructional and Assessment Tasks

## Standards for Mathematical Practice

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- 4. Models with mathematics.**
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8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Danny and Delilah

Danny and Delilah were playing a game where they drew digits and placed them on a game board. Danny built the number 247. Delilah built the number 724.

How much bigger is the 2 in Danny's number than the 2 in Delilah's number?

How much smaller is the 4 in Delilah's number than the 4 in Danny's number?

Write a sentence explaining how the size of the 7 in Danny's number compares to the size of the 7 in Delilah's number.

# Formative Instructional and Assessment Tasks

Value of a Digit 5.NBT.1 - Task 3	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Understand the place value system.</b>
<b>Standard(s)</b>	<b>5.NBT.1</b> Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
<b>Materials</b>	Paper and pencil, Activity sheet
<b>Task</b>	<p style="text-align: center;"><b>Value of a Digit</b></p> <p><b>Part 1.</b> Sally and Tyrone were arguing about the size of 2 numbers. Sally thought six-tenths was one-tenth as large as six-hundredths. Tyrone thought six hundredths was one-tenth as large as six tenths. Who is correct?</p> <p><b>Part 2.</b> Imagine you are the students' teacher. Draw a picture and use numbers to help explain this concept to Sally and Tyrone. Make sure you refer to place value in your explanation.</p> <p><b>Part 3.</b> Choose another pair of numbers that you could give to Sally and Tyrone to assess whether they understand this concept. Which one is larger? How much larger?</p>

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student does not identify that Tyrone is correct, or determines he is correct based on unsound reasoning.</li> <li>Student is unable to generate a picture to explain the concept.</li> <li>Student does not refer to place value in their explanation.</li> <li>Student does not generate another pair of numbers that fit with the concept.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student identifies that Tyrone is correct.</li> <li>Student's explanation and picture show good reasoning but are unclear or lack details.</li> <li>Student refers to place value in their explanation but does not clearly connect it to the task.</li> <li>Student generates another pair of numbers but the numbers don't clearly highlight the concept being explained to Wallace and Logan.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student identifies that Tyrone is correct: six hundredths is one-tenth as large as six tenths.</li> <li>Student draws a picture and clearly explains why .06 is one-tenth as large as 0.6.</li> <li>Student includes references to place value in their explanation.</li> <li>Student generates another pair of numbers with the same digit in a different place. Student identifies that the digit in the place to the right is one-tenth times the value of the same digit in the other number.</li> </ul>

# Formative Instructional and Assessment Tasks

## Standards for Mathematical Practice

1. Makes sense and perseveres in solving problems.
- 2. Reasons abstractly and quantitatively.**
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- 4. Models with mathematics.**
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- 7. Looks for and makes use of structure.**
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Value of a Digit

**Part 1.** Sally and Tyrone were arguing about the size of 2 numbers. Sally thought six-tenths was one-tenth as large as six-hundredths. Tyrone thought six hundredths was one-tenth as large as six tenths. Who is correct?

**Part 2.** Imagine you are the students' teacher. Draw a picture and use numbers to help explain this concept to Sally and Tyrone. Make sure you refer to place value in your explanation.

**Part 3.** Choose another pair of numbers that you could give to Sally and Tyrone to assess whether they understand this concept. Which one is larger? How much larger?

# Formative Instructional and Assessment Tasks

<b>Comparing Digits 5.NBT.1-Task 4</b>	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Understand the place value system.</b>
<b>Standard(s)</b>	<b>5.NBT.1</b> Recognize that in a multi-digit number, a digit in ones place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
<b>Materials</b>	Paper and pencil, Activity sheet, Base ten blocks (optional)
<b>Task</b>	<b>Comparing Digits</b>  Tammy and Timmy were talking about the numbers 1,253 and 2,135.  <b>Part 1:</b> With base ten blocks show or draw a picture of both numbers.  <b>Part 2:</b> What is the value of the 1 in both of the numbers? How does the value of the 1 in the first number compare to the 1 in the second number?  <b>Part 3:</b> What is the value of the 3 in both of the numbers? How does the value of the 3 in the first number compared to the value of the 3 in the second number?

<b>Rubric</b>		
<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
<b>Limited Performance</b> <ul style="list-style-type: none"> <li>Student does not have a clear enough understanding of place value to complete the task without assistance.</li> </ul>	<b>Not Yet Proficient</b> <ul style="list-style-type: none"> <li>Student is unable to get</li> </ul>	<b>Proficient in Performance</b> <ul style="list-style-type: none"> <li>Part 1: The base ten blocks or picture of base ten blocks is correct.</li> <li>Part 2: Student identifies that the 1 in first number is 10 times bigger than the 1 in the second number.</li> <li>Part 3: Student identifies that the 3 in the first number is 1/10 the size of the 3 in the second number.</li> </ul>

# Formative Instructional and Assessment Tasks

## Standards for Mathematical Practice

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# Formative Instructional and Assessment Tasks

## Comparing Digits

Tammy and Timmy were talking about the numbers 1,253 and 2,135.

### Part 1:

With base ten blocks show or draw a picture of both numbers.

### Part 2:

What is the value of the 1 in both of the numbers? How does the value of the 1 in the first number compare to the 1 in the second number?

### Part 3:

What is the value of the 3 in both of the numbers? How does the value of the 3 in the first number compared to the value of the 3 in the second number?

# Formative Instructional and Assessment Tasks

<b>Veronica's Statement</b> <b>5.NBT.2 - Task 1</b>	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Understand the place value system.</b>
<b>Standard(s)</b>	<b>5.NBT.2</b> Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
<b>Materials</b>	Paper and pencil
<b>Task</b>	<ul style="list-style-type: none"><li>• In class Veronica told her teacher that when you multiply a number by 10, you just always add 0 to the end of the number. Think about her statement (conjecture), then answer the following questions.</li><li>• When does Veronica's statement (conjecture) work?</li><li>• When doesn't Veronica's statement (conjecture) work?</li><li>• Is the opposite true? When you divide a number by 10, can you just remove a 0 from the end of the number? When does that work? When doesn't that work?</li><li>• Rewrite Veronica's statement (conjecture) so that it is true for ALL numbers. Write a statement (conjecture) about what happens when you divide a number by 10.</li><li>• Rewrite your statement (conjecture) again so that it applies to other powers of 10.</li><li>• Explain how these statements (conjectures) are related to place value. (HINT: Think about the decimal point!)</li></ul>

# Formative Instructional and Assessment Tasks

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>• Student is unable to explain why Veronica’s conjecture is incorrect.</li> <li>• Student is unable to generate a conjecture that is correct for all numbers, or adjust the conjecture so that it applies to division and other powers of 10.</li> <li>• Student is unable to explain how the task relates to place value.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>• Student explains that Veronica’s conjecture is not always correct and gives some examples of when it will and won’t work.</li> <li>• Student rewrites Veronica’s conjecture but it may not be true of all numbers.</li> <li>• Student has difficulty generating conjectures for dividing by 10 and for working with other powers of 10. Student exhibits some sound and some faulty reasoning.</li> <li>• Student makes some connection to place value, but explanation does not refer to the movement of the decimal point.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>• Student explains that Veronica’s conjecture is only true for whole numbers and will not work for decimals.</li> <li>• Student explains that the opposite (dividing by 10 and removing a 0) will only work for whole numbers that end in 0.</li> <li>• Student generates a conjecture about multiplying by 10 that is true for all numbers.</li> <li>• Student adjusts their conjecture so that it applies to other powers of 10.</li> <li>• Student’s explanation includes a description of how the decimal point moves when you multiply or divide by a power of 10.</li> </ul>

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# Formative Instructional and Assessment Tasks

## Veronica's Statement

In class Veronica told her teacher that when you multiply a number by 10, you just always add 0 to the end of the number. Think about her statement (conjecture), then answer the following questions.

- When does Veronica's statement (conjecture) work?
- When doesn't Veronica's statement (conjecture) work?
- Is the opposite true? When you divide a number by 10, can you just remove a 0 from the end of the number? When does that work? When doesn't that work?
- Rewrite Veronica's statement (conjecture) so that it is true for ALL numbers.
- Write a statement (conjecture) about what happens when you divide a number by 10.
- Rewrite your statement (conjecture) again so that it applies to other powers of 10.
- Explain how these statements (conjectures) are related to place value. (HINT: Think about the decimal point!)

# Formative Instructional and Assessment Tasks

Distance from the Sun 5.NBT.2 - Task 2							
<b>Domain</b>	<b>Number and Operations in Base Ten</b>						
<b>Cluster</b>	<b>Understand the place value system.</b>						
<b>Standard(s)</b>	<b>5.NBT.2</b> Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.						
<b>Materials</b>	Paper and pencil						
<b>Task</b>	<p>The table below gives you the approximate distance of 3 planets from the sun.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Mercury</th> <th>Venus</th> <th>Earth</th> </tr> </thead> <tbody> <tr> <td><math>5.7 \times 10^7</math> km</td> <td><math>1.08 \times 10^8</math> km</td> <td><math>1.5 \times 10^8</math> km</td> </tr> </tbody> </table> <p>How far is each planet from the sun in million kilometers?</p> <p>Susan said, “Venus is more than twice as far from the sun as Mercury is.” Tyrone said, “Mercury is more than twice as far from the sun as Earth is.”</p> <p>Are Susan and Tyrone correct? If yes, use numbers, words or pictures to prove they are correct. If no, rewrite the statements so they are correct.</p> <p>What is the benefit of using powers of ten to represent numbers?</p>	Mercury	Venus	Earth	$5.7 \times 10^7$ km	$1.08 \times 10^8$ km	$1.5 \times 10^8$ km
Mercury	Venus	Earth					
$5.7 \times 10^7$ km	$1.08 \times 10^8$ km	$1.5 \times 10^8$ km					

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student is unable to identify the distance of each planet in million kilometers.</li> <li>Student does not identify that both Susan and Tyrone’s statements are incorrect.</li> <li>Student is unable to give benefits of using powers of ten to represent numbers.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student correctly identifies the distance of planets in millions for 1 or 2, but not all 3 of the planets.</li> <li>Student identifies that Susan’s and Tyrone’s statements are both incorrect, but is unable to rewrite them so that they are true.</li> <li>Student is unable to explain benefits of using powers of 10 to represent numbers, or gives benefits that are unclear or vague.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student correctly identifies the distance of each planet in million kilometers. (Mercury: 57 million; Venus: 108 million; Earth: 150 million)</li> <li>Student identifies that both Susan and Tyrone’s statements are incorrect and rewrites them so that they are true. (Possible corrections: Venus is <i>almost</i> twice as far from the sun as Mercury is. <i>Earth</i> is more than twice as far from the sun as <i>Mercury</i> is.)</li> <li>Student explains benefits of using powers of ten to represent numbers. (Answers will vary, but should include something about this notation being more efficient and/or easier to read.)</li> </ul>

# Formative Instructional and Assessment Tasks

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8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Distance From the Sun

The table below gives you the approximate distance of 3 planets from the sun.

Mercury	Venus	Earth
$5.7 \times 10^7$ km	$1.08 \times 10^8$ km	$1.5 \times 10^8$ km

How far is each planet from the sun in million kilometers?

Susan said, “Venus is more than twice as far from the sun as Mercury is.”

Tyrone said, “Mercury is more than twice as far from the sun as Earth is.”

Are Susan and Tyrone correct? If yes, use numbers, words or pictures to prove they are correct. If no, rewrite the statements so they are correct.

What is the benefit of using powers of ten to represent numbers?

# Formative Instructional and Assessment Tasks

<b>London Olympics 5.NBT.3 - Task 1</b>																			
<b>Domain</b>	<b>Number and Operations in Base Ten</b>																		
<b>Cluster</b>	<b>Understand the place value system.</b>																		
<b>Standard(s)</b>	<p><b>5.NBT.3</b> Read, write, and compare decimals to thousandths.</p> <p>a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., <math>347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)</math></p> <p>b. Compare two decimals to thousandths based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</p>																		
<b>Materials</b>	Paper and pencil																		
<b>Task</b>	<p>The table below shows the results of the Men’s 100 Meter Freestyle Final at the London 2012 Olympics.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Country</th> <th>Time (in seconds)</th> </tr> </thead> <tbody> <tr> <td>Australia</td> <td>45.53</td> </tr> <tr> <td>Brazil</td> <td>47.92</td> </tr> <tr> <td>Canada</td> <td>47.8</td> </tr> <tr> <td>Cuba</td> <td>48.04</td> </tr> <tr> <td>France</td> <td>47.84</td> </tr> <tr> <td>Netherlands</td> <td>47.88</td> </tr> <tr> <td>Russia</td> <td>48.44</td> </tr> <tr> <td>United States</td> <td>47.52</td> </tr> </tbody> </table> <p>Put the countries in order from first to last place.</p> <p>Mackenzie said that if Michael Phelps had swum this race with a time of 48.5 seconds, he would have gotten the gold medal. What misconception does Mackenzie have? Explain.</p> <p>Using the times above, write 5 expressions comparing the various times. Use symbols for greater than or less than in your expressions. Write a sentence to go with each expression.</p>	Country	Time (in seconds)	Australia	45.53	Brazil	47.92	Canada	47.8	Cuba	48.04	France	47.84	Netherlands	47.88	Russia	48.44	United States	47.52
Country	Time (in seconds)																		
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Russia	48.44																		
United States	47.52																		

# Formative Instructional and Assessment Tasks

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>• Student's ordering of the countries has more than 3 mistakes.</li> <li>• Student is unable to identify Mackenzie's misconception.</li> <li>• Student is unable to use the <math>&lt;</math> and <math>&gt;</math> symbols correctly to compare the times.</li> <li>• Student's sentences do not match his expressions.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>• Student's order of the countries is mostly correct (1-3 errors).</li> <li>• Student identifies Mackenzie's misconception but may lack clarity in explaining it.</li> <li>• Student uses <math>&lt;</math> and <math>&gt;</math> symbols to write expressions comparing the times, but expressions have some errors.</li> <li>• Student writes sentences to match his expressions.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>• Student correctly orders the countries (USA, Austratlia, Canada, France, Netherlands, Brazil, Cuba, Russia).</li> <li>• Student explains that with times, the smaller the number, the faster the time. Mackenzie has the misconception that the bigger number is the winner.</li> <li>• Student writes 5 expressions, using the <math>&lt;</math> and <math>&gt;</math> symbols to correctly compare the times.</li> <li>• Student wrote a sentence to go with each expression.</li> </ul>

## Standards for Mathematical Practice

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# Formative Instructional and Assessment Tasks

## London Olympics

The table below shows the results of the Men's 100 Meter Freestyle Final at the London 2012 Olympics.

Country	Time (in seconds)
Australia	45.53
Brazil	47.92
Canada	47.8
Cuba	48.04
France	47.84
Netherlands	47.88
Russia	48.44
United States	47.52

Put the countries in order from first to last place.

Mackenzie said that if Michael Phelps had swum this race with a time of 48.5 seconds, he would have gotten the gold medal. What misconception does Mackenzie have? Explain.

Using the times above, write 5 expressions comparing the various times. Use symbols for greater than or less than in your expressions. Write a sentence to go with each expression.

# Formative Instructional and Assessment Tasks

Mike's Misconception 5.NBT.3-Task 2	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Understand the place value system.</b>
<b>Standard(s)</b>	<p><b>5.NBT.3</b> Read, write, and compare decimals to thousandths.</p> <p>a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., <math>347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)</math></p> <p>b. Compare two decimals to thousandths based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons.</p>
<b>Materials</b>	Paper and pencil
<b>Task</b>	<p>Mike's teacher asked him to write 987.654 in expanded notation. Mike wrote <math>900 + 80 + 7 + .6 + .50 + .400</math></p> <p>What is Mike's misconception? How would you explain expanded notation to help Mike understand expanded notation?</p>

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student is unable to perform the task without assistance.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student explains Mike's misconception but is unable to generate ideas for how to help him fix his misconception.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student explains that Mike doesn't understand place value for the digits behind the decimal.</li> <li>Student generates an explanation of Mike's misconception and clearly explains how they would help Mike fix his misconception.</li> </ul>

Standards for Mathematical Practice
1. Makes sense and perseveres in solving problems.
2. Reasons abstractly and quantitatively.
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
<b>7. Looks for and makes use of structure.</b>
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Mike's Misconception

Mike's teacher asked him to write 987.654 in expanded notation.

Mike wrote  $900 + 80 + 7 + 0.6 + 0.50 + 0.400$

What is Mike's misconception?

How would you explain expanded notation to help Mike understand expanded notation?

# Formative Instructional and Assessment Tasks

Is It Closer? 5.NBT.4 - Task 1	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Understand the place value system.</b>
<b>Standard(s)</b>	<b>5.NBT.4</b> Use place value understanding to round decimals to any place.
<b>Materials</b>	Paper and pencil Optional: Number line
<b>Task</b>	<p>Look at the following number and answer the questions about it: 3.462</p> <p>Is it closer to 3 or to 4? Is it closer to 3.4 or to 3.5? Is it closer to 3.46 or to 3.47? Use a number line to record all of the above numbers. (3.462, 3, 4, 3.4, 3.5, 3.46, 3.47)</p> <p>Is 7.5 closer to 7 or 8? Would you round this number to 7 or 8? Why?</p> <p>Optional extension: Have students write their own “Is it closer” task.</p>

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Students are unable to accurately solve the problems without assistance.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Students correctly solve all but two tasks. <b>OR</b></li> <li>Students correctly solve all tasks BUT cannot give clear and accurate answers.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student correctly identifies which numbers 3.462 is closer to (3, 3.5, and 3.46).</li> <li>Student draws a number line to show all of the numbers in reference to 3.462. Number line is partitioned and spaced appropriately.</li> <li>Student recognizes that 7.5 is exactly between 7 and 8. It is closer to neither.</li> <li>Student explains that 7.5 would be rounded to 8, though explanation of why may be vague or unclear. (Teacher note: when a number is equidistant, the mathematical convention is to round up.)</li> </ul>

Standards for Mathematical Practice
1. Makes sense and perseveres in solving problems.
<b>2. Reasons abstractly and quantitatively.</b>
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Is It Closer?

Look at the following number and answer the questions about it:

3.462

Is it closer to 3 or to 4?

Is it closer to 3.4 or to 3.5?

Is it closer to 3.46 or to 3.47?

Use a number line to record all of the numbers below.

3.462    3    4    3.4    3.5    3.46    3.47

Is 7.5 closer to 7 or 8? Would you round this number to 7 or 8? Why?

# Formative Instructional and Assessment Tasks

Rounding Possibilities 5.NBT.4 - Task 2	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Understand the place value system.</b>
<b>Standard(s)</b>	<b>5.NBT.4</b> Use place value understanding to round decimals to any place.
<b>Materials</b>	Paper and pencil
<b>Task</b>	<p>A number rounded to the nearest hundredth place is 5.64. Make a list of at least 8 possible numbers that can round to 5.64. Explain your thinking.</p> <p><b>Solution:</b> Answers can range from 5.635 to 5.644. The thousandths place will determine how to round to the nearest hundredth place.</p>

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student attempts the task, but there is lacks understanding of the concept of place value and rounding.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student can provide an accurate list of 8 numbers that will round to 5.64.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>Student provides justification for why those numbers round to 5.64 based on place value.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student can provide an accurate list of 8 numbers that will round to 5.64.</li> <li>Student provides justification for why those numbers round to 5.64 based on place value.</li> </ul>

Standards for Mathematical Practice
1. Makes sense and perseveres in solving problems.
2. Reasons abstractly and quantitatively.
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
6. Attends to precision.
<b>7. Looks for and makes use of structure.</b>
<b>8. Looks for and expresses regularity in repeated reasoning.</b>

# Formative Instructional and Assessment Tasks

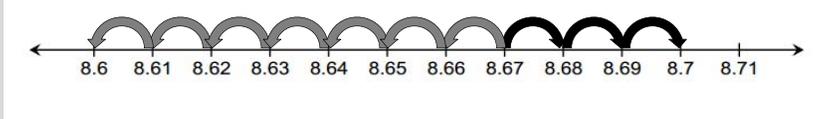
## Rounding Possibilities

A number rounded to the nearest hundredth place is 5.64.

Make a list of at least 8 possible numbers that can round to 5.64. Explain your thinking.

# Formative Instructional and Assessment Tasks

## Is Sam Correct? 5.NBT.4 - Task 3

<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Understand the place value system.</b>
<b>Standard(s)</b>	<b>5.NBT.4</b> Use place value understanding to round decimals to any place.
<b>Materials</b>	Paper and pencil
<b>Task</b>	Sam thinks that the number 8.67 rounded to the nearest tenth is 8.6. Is Sam correct? Using the number line, explain why or why not.  <b>Solution:</b> No, Sam is not correct.  
	If Sam uses the number line, he could see that 8.67 is closer to 8.7 than to 8.6.

### Rubric

Level I	Level II	Level III
<b>Limited Performance</b> <ul style="list-style-type: none"> <li>Student attempts the task, but there is lacks understanding of the concept of place value and rounding.</li> </ul>	<b>Not Yet Proficient</b> <ul style="list-style-type: none"> <li>Student can provide an accurate number line OR</li> <li>Student provides justification for why Sam is incorrect.</li> </ul>	<b>Proficient in Performance</b> <ul style="list-style-type: none"> <li>Student creates an accurate number line and provides justification for Sam is incorrect.</li> </ul>

### Standards for Mathematical Practice

1. Makes sense and perseveres in solving problems.
2. Reasons abstractly and quantitatively.
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
6. Attends to precision.
<b>7. Looks for and makes use of structure.</b>
<b>8. Looks for and expresses regularity in repeated reasoning.</b>

# **Formative Instructional and Assessment Tasks**

## **Is Sam Correct?**

Sam thinks that the number 8.67 rounded to the nearest tenth is 8.6. Is Sam correct?

Using the number line, explain why or why not.

# Formative Instructional and Assessment Tasks

Running Relay Races 5.NBT.4 - Task 4																					
<b>Domain</b>	<b>Numbers and Operations in Base Ten</b>																				
<b>Cluster</b>	<b>Generalize place value understanding for multi-digit whole numbers.</b>																				
<b>Standard(s)</b>	<b>5.NBT.4</b> Use place value understanding to round decimals to any place.																				
<b>Materials</b>	Pencil, paper, task handout																				
<b>Task</b>	<b>Running Relay Races</b>																				
	In a relay race each runner runs 200 yards each. The individual times are below.																				
	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="2">Team A</th> <th colspan="2">Team B</th> </tr> </thead> <tbody> <tr> <td>Sarah</td> <td>19.54 seconds</td> <td>Heidi</td> <td>19.61 seconds</td> </tr> <tr> <td>Lisette</td> <td>20.07 seconds</td> <td>Lindsay</td> <td>19.92 seconds</td> </tr> <tr> <td>Bridget</td> <td>19.46 seconds</td> <td>Sierra</td> <td>20.09 seconds</td> </tr> <tr> <td>Monica</td> <td>19.44 seconds</td> <td>Nancy</td> <td>19.48 seconds</td> </tr> </tbody> </table>	Team A		Team B		Sarah	19.54 seconds	Heidi	19.61 seconds	Lisette	20.07 seconds	Lindsay	19.92 seconds	Bridget	19.46 seconds	Sierra	20.09 seconds	Monica	19.44 seconds	Nancy	19.48 seconds
Team A		Team B																			
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Lisette	20.07 seconds	Lindsay	19.92 seconds																		
Bridget	19.46 seconds	Sierra	20.09 seconds																		
Monica	19.44 seconds	Nancy	19.48 seconds																		
	<ol style="list-style-type: none"> <li>1) Rounded to the nearest whole second which team was fastest? By how much were they faster?</li> <li>2) Rounded to the nearest tenth of a second which team was faster? By how much were they faster?</li> <li>3) Based on the actual times which team was faster? By how much were they faster?</li> <li>4) Explain why the answers for the 3 questions above are different.</li> </ol>																				

Rubric		
Level I	Level II	Level III
Limited Performance Students cannot provide correct answers on more than two questions.	Not Yet Proficient Students cannot provide correct answers on one or two questions.	Proficient in Performance Students provide correct answers on all questions. Answers: 1) Team A: 78 seconds or 1 minute 18 seconds. Team B: 79 seconds or 1 minute 19 seconds. 2) Team A: 78.5 seconds. Team B: 79.1 seconds. 0.6 seconds. 3) Team A: 78.51 seconds. Team B: 79.10 seconds.

Standards for Mathematical Practice
<b>1. Makes sense and perseveres in solving problems.</b>
<b>2. Reasons abstractly and quantitatively.</b>
3. Constructs viable arguments and critiques the reasoning of others.
4. Models with mathematics.
5. Uses appropriate tools strategically.
6. Attends to precision.
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Running Relay Races

In a relay race each runner runs 200 yards each. The individual times are below.

Team A		Team B	
Sarah	19.54 seconds	Heidi	19.61 seconds
Lisette	20.07 seconds	Lindsay	19.92 seconds
Bridget	19.46 seconds	Sierra	20.09 seconds
Monica	19.44 seconds	Nancy	19.48 seconds

- 1) Rounded to the nearest whole second which team was fastest? By how much were they faster?
- 2) Rounded to the nearest tenth of a second which team was faster? By how much were they faster?
- 3) Based on the actual times which team was faster? By how much were they faster?
- 4) Explain why the answers for the 3 questions above are different.

# Formative Instructional and Assessment Tasks

Number of Pages? 5.NBT.5 - Task 1	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.5</b> Fluently multiply multi-digit whole numbers using the standard algorithm.
<b>Materials</b>	Paper and pencil
<b>Task</b>	There are 328 pages in each book. Miguel reads between 16 and 19 books during a quarter of the school year. What is the most number of pages that Miguel could have read? What is the least amount of pages?  Write a sentence explaining your thinking.

Rubric		
Level I	Level II	Level III
Limited Performance <ul style="list-style-type: none"> <li>Student is unable to perform several of the calculations.</li> <li>Student is unable to give clear and accurate explanation for how to multiply multi-digit whole numbers.</li> </ul>	Not Yet Proficient <ul style="list-style-type: none"> <li>Student correctly computes all but 1 of the calculations. <b>OR</b></li> <li>Student correctly solves all tasks <b>BUT</b> cannot give clear and accurate explanations.</li> </ul>	Proficient in Performance <ul style="list-style-type: none"> <li>Accurate answers (6,232 for most, 5,248 for least) <b>AND</b></li> <li>Clear and accurate explanation about their reasoning.</li> </ul>

Standards for Mathematical Practice
<b>1. Makes sense and perseveres in solving problems.</b>
<b>2. Reasons abstractly and quantitatively.</b>
3. Constructs viable arguments and critiques the reasoning of others.
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Number of Pages?

There are 328 pages in each book. Miguel reads between 16 and 19 books during a quarter of the school year.

What is the most number of pages that Miguel could have read?

What is the least amount of pages?

Write a sentence explaining your thinking.

# Formative Instructional and Assessment Tasks

Field Trip Funds 5.NBT.5-Task 2	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.5</b> Fluently multiply multi-digit whole numbers using the standard algorithm.
<b>Materials</b>	Paper and pencil
<b>Task</b>	<p>Mrs. White is planning a field trip for the 5<sup>th</sup> grade students at Sunshine Elementary School. There are 95 students in the 5<sup>th</sup> grade. The trip costs \$35 per student. How much money will Mrs. White collect?</p> <p>If 87 third graders and 92 fourth graders also come on the trip, how much money will Mrs. White collect?</p>

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student is unable to calculate the cost of the trip without assistance.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student correctly calculates the cost of the trips, but uses an algorithm that is less efficient than the standard algorithm.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student calculates that the cost of the trip for 95 fifth graders will be 3,325.</li> <li>Student calculates that the cost for all the 3<sup>rd</sup> -5<sup>th</sup> graders will be \$9,950.</li> <li>Student uses the standard algorithm fluently and efficiently to calculate multiplication.</li> </ul>

Standards for Mathematical Practice
<b>1. Makes sense and perseveres in solving problems.</b>
<b>2. Reasons abstractly and quantitatively.</b>
3. Constructs viable arguments and critiques the reasoning of others.
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Field Trip Funds

Mrs. White is planning a field trip for the 5<sup>th</sup> grade students at Sunshine Elementary School. There are 95 students in the 5<sup>th</sup> grade. The trip costs \$35 per student.

How much money will Mrs. White collect?

If 87 third graders and 92 fourth graders also come on the trip, how much money will Mrs. White collect?

# Formative Instructional and Assessment Tasks

<b>George's Division Strategy</b> <b>5.NBT.6 - Task 1</b>	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.6</b> Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
<b>Materials</b>	Paper and pencil
<b>Task</b>	<p>George is having a hard time solving division problems, and he has asked you for his help. Here is George's strategy:</p> $485 \div 4 = ?$ $4 \div 4 = 1$ $8 \div 4 = 2$ $5 \div 4 = 1 \text{ remainder } 1$ $1 + 2 + 1 = 4$ $484 \div 4 = 4 \text{ r } 1$ <p>What is George doing wrong? Explain how George can fix his strategy so that it works. (Don't teach him a new strategy!!! Help him fix this one!) Why does this strategy work?</p> <p>In what contexts would this be a good strategy to use? When would this not be a good strategy to use? Explain your reasoning.</p>

# Formative Instructional and Assessment Tasks

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student is unable to explain why George’s strategy doesn’t work and is unable to give an alternate solution strategy without assistance.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student is able to explain that George’s answer is incorrect and possibly elaborates on why (i.e., the 4 in 485 isn’t really a 4, it’s 400).</li> <li>Student is unable to modify George’s strategy so that it does work, but does give an alternate strategy for dividing.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student explains that George’s strategy is a good one – he’s just not using place value correctly! George’s work should look like this:  <math>400 \div 4 = 100</math>  <math>80 \div 4 = 20</math>  <math>5 \div 4 = 1 \text{ r } 1</math>  <math>100 + 20 + 1 = 121</math>  <math>485 \div 4 = 121 \text{ r } 1</math> </li> <li>Student explains why this strategy works, using place value and/or properties of operations in their explanation.</li> <li>Student gives examples of when this would and wouldn’t be a good strategy to use (i.e. this wouldn’t work as well when you need an exact answer, with a decimal. It works well in contexts where a remainder is okay).</li> </ul>

Standards for Mathematical Practice
1. Makes sense and perseveres in solving problems.
<b>2. Reasons abstractly and quantitatively.</b>
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
6. Attends to precision.
<b>7. Looks for and makes use of structure.</b>
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## George's Division Strategy

George is having a hard time solving division problems, and he has asked you for his help. Here is George's strategy:

$$485 \div 4 = ?$$

$$4 \div 4 = 1$$

$$8 \div 4 = 2$$

$$5 \div 4 = 1 \text{ remainder } 1$$

$$1 + 2 + 1 = 4$$

$$484 \div 4 = 4 \text{ r } 1$$

What is George doing wrong?

Explain how George can fix his strategy so that it works. (Don't teach him a new strategy!!! Help him fix this one!)

Why does this strategy work?

In what contexts would this be a good strategy to use?

When would this not be a good strategy to use? Explain your reasoning.

# Formative Instructional and Assessment Tasks

<b>Lion Hunt</b> <b>5.NBT.6 - Task 2</b>	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.6</b> Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
<b>Materials</b>	Paper and pencil Optional: Base ten blocks
<b>Task</b>	An adult lion can eat a lot of meat in one sitting. If a pride of lions eats a water buffalo that has 1,182 pounds of meat, and each adult lion eats 66 pounds of meat, how many adult lions will the water buffalo feed?  Will there be enough food left over to feed 4 cubs, if each cub needs 13 pounds of meat?  Solve this problem using 2 <b>different</b> strategies. For each strategy, write a sentence to explain why your strategy works.

<b>Rubric</b>		
<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
<b>Limited Performance</b> <ul style="list-style-type: none"> <li>Student is unable to solve the problem without assistance.</li> <li>Student is unable to use and clearly explain any strategy for solving.</li> </ul>	<b>Not Yet Proficient</b> <ul style="list-style-type: none"> <li>Student's calculations may include minor errors.</li> <li>Student uses and clearly explains one strategy for solving.</li> </ul>	<b>Proficient in Performance</b> <ul style="list-style-type: none"> <li>Student correctly calculates answers to the problem. (There will be enough meat to feed 17 adult lions – that will use 1,122 pounds of meat. There will be 60 pounds left over, which is enough to feed the 4 cubs.) <b>AND</b></li> <li>Student uses 2 different strategies (scaffold division, rectangular arrays, etc.) to show how they solved the problem and can clearly explain why each strategy works.</li> </ul>

<b>Standards for Mathematical Practice</b>
<b>1. Makes sense and perseveres in solving problems.</b>
<b>2. Reasons abstractly and quantitatively.</b>
3. Constructs viable arguments and critiques the reasoning of others.
<b>4. Models with mathematics.</b>
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Lion Hunt

An adult lion can eat a lot of meat in one sitting. If a pride of lions eats a water buffalo that has 1,182 pounds of meat, and each adult lion eats 66 pounds of meat, how many adult lions will the water buffalo feed?

Will there be enough food left over to feed 4 cubs, if each cub needs 13 pounds of meat?

Solve this problem using 2 **different** strategies. For each strategy, write a sentence to explain why your strategy works.

# Formative Instructional and Assessment Tasks

<b>Clay Boxes 5.NBT.7-Task 1</b>	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.7</b> Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
<b>Materials</b>	Paper and pen
<b>Task</b>	<p><b>Part 1:</b> Mrs. Potter bought 6 boxes of clay for an art project. If each box of clay weighs 17.4 ounces, how many ounces of clay did the teacher buy? Explain your answer using pictures, numbers, and/or words.</p> <p><b>Part 2:</b> If the clay is shared equally among the 18 students in the class, how many ounces of clay will each student get? Explain your answer using pictures, numbers, and/or words.</p> <p><b>Part 3:</b> After her students begin the project, Mrs. Potter realizes that each student needs 8.7 ounces of clay. How many more boxes of clay does Mrs. Potter need to buy? Explain your answer using pictures, numbers, and/or words.</p> <p><b>Part 4:</b> Explain your strategy to all 3 parts in writing. Make sure to use pictures and/or numbers to justify your reasoning.</p> <p><b>Optional Extension:</b> Find someone who solved the problem in a different way. Justify your reasoning and critique the reasoning of others.</p>

<b>Rubric</b>		
<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>• Student generates incorrect answers (or no answers) for 2 or 3 tasks.</li> <li>• Student's work does not exhibit clear reasoning about the mathematics in the task.</li> <li>• Student's written explanation is unclear, difficult to understand, and/or does not exhibit sound mathematical reasoning about the task.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>• Student calculates correct answers for 1 or 2 parts of the task but not all 3.</li> <li>• Student's work shows sound reasoning for at least 2 of the tasks, but work is not always clear or consistent.</li> <li>• Student's written explanation lacks detail and is unclear in parts.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>• Student calculates correct answers for Parts A-C. Part A: 104.4 ounces Part B: 5.8 ounces Part C: 3 more boxes of clay.</li> <li>• Student uses pictures, words, and/or numbers to justify his reasoning for each part of the task.</li> <li>• Student generates a written explanation for all 3 parts of the task.</li> </ul>

# Formative Instructional and Assessment Tasks

Standards for Mathematical Practice
<b>1. Makes sense and perseveres in solving problems.</b>
<b>2. Reasons abstractly and quantitatively.</b>
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Clay Boxes

### Part 1:

Mrs. Potter bought 6 boxes of clay for an art project. If each box of clay weighs 17.4 ounces, how many ounces of clay did the teacher buy? Explain your answer using pictures, numbers, and/or words.

### Part 2:

If the clay is shared equally among the 18 students in the class, how many ounces of clay will each student get? Explain your answer using pictures, numbers, and/or words.

### Part 3:

After her students begin the project, Mrs. Potter realizes that each student needs 8.7 ounces of clay. How many more boxes of clay does Mrs. Potter need to buy? Explain your answer using pictures, numbers, and/or words.

### Part 4:

Explain your strategy to all 3 parts in writing. Make sure to use pictures and/or numbers to justify your reasoning.

# Formative Instructional and Assessment Tasks

John's Canvas 5.NBT.7-Task 2	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.7</b> Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
<b>Materials</b>	paper and pencil
<b>Task</b>	<p>John is purchasing a piece of canvas on which to paint a self-portrait. The canvas is 4.4 feet wide and 2.05 feet long. In order to determine how much paint he needs for his background color, John wants to know the area of his canvas. What is the area of the canvas?</p> <p>In order to frame the canvas, John needs to know the perimeter of the canvas. What is its perimeter?</p> <p>John decides the canvas is too big, so he cuts it in half. What are the new area and perimeter of his canvas?</p>

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student is unable to calculate with decimals.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Students are able to correctly calculate some of the measurements but not all of them.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student calculates that the area of the canvas is <math>9.02 \text{ ft}^2</math>.</li> <li>Student calculates that the perimeter of the canvas is 12.9 ft.</li> <li>Student calculates that the new canvas with dimensions of 2.2 ft. by 2.05 ft. or 4.4 by 1.025. The new area will be <math>4.51 \text{ ft}^2</math>. The new perimeter will be 8.5 ft. or 10.85 ft.</li> </ul>

Standards for Mathematical Practice
<b>1. Makes sense and perseveres in solving problems.</b>
2. Reasons abstractly and quantitatively.
3. Constructs viable arguments and critiques the reasoning of others.
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## John's Canvas

John is purchasing a piece of canvas on which to paint a self-portrait. The canvas is 4.4 feet wide and 2.05 feet long. In order to determine how much paint he needs for his background color, John wants to know the area of his canvas.

What is the area of the canvas?

In order to frame the canvas, John needs to know the perimeter of the canvas. What is its perimeter?

John decides the canvas is too big, so he cuts it in half. What are the new area and perimeter of his canvas?

# Formative Instructional and Assessment Tasks

Making Sandwiches 5.NBT.7-Task 3	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.7</b> Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
<b>Materials</b>	Paper and pen
<b>Task</b>	<p><b>Making Sandwiches</b></p> <p><b>Part 1</b> There are 16.64 ounces of roast beef and 8.72 ounces of cheese on the counter. If the roast beef and cheese is shared equally among 4 people how much roast beef and cheese will each person get?</p> <p><b>Part 2</b> Selena eats half of her sandwich. How much roast beef and cheese did she eat?</p> <p><b>Part 3</b> If Mrs. Martinez is buying sandwiches that have the same amount of roast beef and cheese as Part 1, how much roast beef and cheese will she need for 20 people? Give your answer in ounces, and also as a combination of pounds and ounces.</p>

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student generates incorrect answers (or no answers) for 2 or 3 tasks.</li> <li>Student's work does not exhibit clear reasoning about the mathematics in the task.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student calculates correct answers for 1 or 2 parts of the task but not all 3.</li> <li>Student's work shows sound reasoning for at least 2 of the tasks, but work is not always clear or consistent.</li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student calculates correct answers for Parts A-C.</li> <li>Part 1: 4.16 ounces of roast beef and 2.18 ounces of cheese.</li> <li>Part 2: 2.08 ounces of roast beef and 1.09 ounces of cheese.</li> <li>Part 3: 83.2 ounces or 5 pounds and 3.2 ounces of roast beef. 43.6 ounces or 2 pounds and 11.6 ounces of cheese.</li> </ul>

Standards for Mathematical Practice
<b>1. Makes sense and perseveres in solving problems.</b>
<b>2. Reasons abstractly and quantitatively.</b>
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Making Sandwiches

### Part 1

There are 16.64 ounces of roast beef and 8.72 ounces of cheese on the counter. If the roast beef and cheese is shared equally among 4 people how much roast beef and cheese will each person get?

### Part 2

Selena eats half of her sandwich. How much roast beef and cheese did she eat?

### Part 3

If Mrs. Martinez is buying sandwiches that have the same amount of roast beef and cheese as Part 1, how much roast beef and cheese will she need for 20 people? Give your answer in ounces, and also as a combination of pounds and ounces.

# Formative Instructional and Assessment Tasks

Running Times 5.NBT.7-Task 4	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.7</b> Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
<b>Materials</b>	Paper and pen
<b>Task</b>	<p><b>Running Times</b> The following times were recorded for the 50 yard dash. Deon- 5.97 seconds, Tyrone- 5.79 seconds, Darnell- 5.99 seconds, Blake- 5.87 seconds</p> <p>What was the difference between the fastest and slowest runners? What was the total time it took for all four runners to race?</p> <p>Write a sentence to explain how you found the answers to the questions above.</p>

Rubric		
Level I	Level II	Level III
<p>Limited Performance</p> <ul style="list-style-type: none"> <li>Student generates incorrect answers (or no answers) for all tasks.</li> </ul>	<p>Not Yet Proficient</p> <ul style="list-style-type: none"> <li>Student calculates correct answers for 1 part of the task.</li> <li></li> </ul>	<p>Proficient in Performance</p> <ul style="list-style-type: none"> <li>Student calculates correct answers for all parts.</li> <li>Question 1: <math>5.97 - 5.79 = 0.18</math> seconds</li> <li>Question 2: <math>5.97 + 5.79 + 5.99 + 5.87 = 23.62</math> seconds</li> <li>The sentence includes clear and accurate explanations.</li> </ul>

Standards for Mathematical Practice
<b>1. Makes sense and perseveres in solving problems.</b>
<b>2. Reasons abstractly and quantitatively.</b>
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Running Times

The following times were recorded for the 50 yard dash.

Deon- 5.97 seconds, Tyrone- 5.79 seconds, Darnell- 5.99 seconds, Blake- 5.87 seconds

What was the difference between the fastest and slowest runners?

What was the total time it took for all four runners to race?

Write a sentence to explain how you found the answers to the questions above.

# Formative Instructional and Assessment Tasks

<b>Making Bracelets</b> <b>5.NBT.7-Task 5</b>	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.7</b> Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
<b>Materials</b>	Paper and pen
<b>Task</b>	<p><b>Making Bracelets</b> Beads are sold in packs by color. White beads are \$0.57 per bag. Blue, red, and green beads are \$0.73 per bag. Pink beads are \$0.77 per bag.</p> <p>If a student buys 3 bags of each color how much do they spend on each color of white beads? Red beads? Pink beads? How much money do they spend total?</p> <p>If you paid for the beads with a \$20 bill how much change do you get back?</p>

<b>Rubric</b>		
<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
Limited Performance <ul style="list-style-type: none"> <li>Student generates incorrect answers (or no answers) for all tasks.</li> </ul>	Not Yet Proficient <ul style="list-style-type: none"> <li>Student calculates correct answers for 1 part of the task.</li> <li></li> </ul>	Proficient in Performance <ul style="list-style-type: none"> <li>Student calculates correct answers for all parts.</li> <li>Question 1: White- \$1.71, Blue, red, green- \$2.19, Pink- \$2.31. Total- \$10.59.</li> <li>Change- \$9.41.</li> </ul>

<b>Standards for Mathematical Practice</b>
<b>1. Makes sense and perseveres in solving problems.</b>
<b>2. Reasons abstractly and quantitatively.</b>
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Making Bracelets

Beads are sold in packs by color. White beads are \$0.57 per bag. Blue, red, and green beads are \$0.73 per bag. Pink beads are \$0.77 per bag.

If a student buys 3 bags of each color how much do they spend on each color of white beads? Red beads? Pink beads? How much money do they spend total?

If you paid for the beads with a \$20 bill how much change do you get back?

# Formative Instructional and Assessment Tasks

<b>Lifeguarding 5.NBT.7-Task 6</b>	
<b>Domain</b>	<b>Number and Operations in Base Ten</b>
<b>Cluster</b>	<b>Perform operations with multi-digit whole numbers and with decimals to hundredths.</b>
<b>Standard(s)</b>	<b>5.NBT.7</b> Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
<b>Materials</b>	Paper and pen
<b>Task</b>	<p style="text-align: center;"><b>Lifeguarding</b></p> <p>Mikey makes \$9.75 per hour lifeguarding. Sally has been a lifeguard longer and makes \$10.25 per hour. Their pay checks get rounded to the nearest penny.</p> <p>The first week of summer each of them work 42.7 hours. How much money does each make? How much more money does Sally earn than Mikey?</p> <p>The second week of summer Mikey works 42.9 hours and Sally works 40.8 hours. Who makes more money? How much more money does that person make compared to the other person?</p>

<b>Rubric</b>		
<b>Level I</b>	<b>Level II</b>	<b>Level III</b>
Limited Performance <ul style="list-style-type: none"> <li>Student generates incorrect answers (or no answers) for all tasks.</li> </ul>	Not Yet Proficient <ul style="list-style-type: none"> <li>Student calculates correct answers for 1 part of the task.</li> </ul>	Proficient in Performance <ul style="list-style-type: none"> <li>Student calculates correct answers for all parts.</li> <li>Question 1: Mikey- \$416.33 Sally- \$437.68. Sally made \$21.35 more than Mikey.</li> <li>Question 2: Mikey made more money the second week of summer. Mikey made \$418.28 and Sally made \$418.20. Mikey made 8 cents more.</li> </ul>

<b>Standards for Mathematical Practice</b>
<b>1. Makes sense and perseveres in solving problems.</b>
<b>2. Reasons abstractly and quantitatively.</b>
<b>3. Constructs viable arguments and critiques the reasoning of others.</b>
4. Models with mathematics.
5. Uses appropriate tools strategically.
<b>6. Attends to precision.</b>
7. Looks for and makes use of structure.
8. Looks for and expresses regularity in repeated reasoning.

# Formative Instructional and Assessment Tasks

## Lifeguarding

Mikey makes \$9.75 per hour lifeguarding. Sally has been a lifeguard longer and makes \$10.25 per hour. Their pay checks get rounded to the nearest penny.

The first week of summer each of them work 42.7 hours. How much money does each make? How much more money does Sally earn than Mikey?

The second week of summer Mikey works 42.9 hours and Sally works 40.8 hours. Who makes more money? How much more money does that person make compared to the other person?