# ZEARN Math

**ASSESSMENT ANSWER KEY**

# G5M1: Place Value with Decimal Fractions

## About Zearn Answer Keys

**Zearn Assessments:** Correct answers appear in this guide in red handwritten font. While some questions could have multiple correct responses, this Answer Key shows one or two exemplar answers for each question. As always, please use your judgment when reviewing student work for other correct responses.

## Mid-Mission Assessment
## Standards Addressed in Topics A-C

| Standard | | Problem Number |
|---|---|---|
| **Generalize place value understanding for multi-digit whole numbers.** | | |
| **5.NBT.1** | 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 $\frac{1}{10}$ of what it represents in the place to its left. | **2** |
| **5.NBT.2** | 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. | **2, 4** |
| **5.NBT.3** | Read, write, and compare decimals to thousandths. <br> a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., <br> $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (\frac{1}{10}) + 9 \times (\frac{1}{100}) + 2 \times (\frac{1}{1000})$. <br> b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. | **1, 2, 4** |
| **5.NBT.4** | Use place value understanding to round decimals to any place. | **4** |
| **Convert like measurement units within a given measurement system.** | | |
| **5.MD.1** | Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. | **3, 4** |

# Mid-Mission Assessment - A Progression Towards Understanding

A Progression Towards Understanding is provided to describe steps that illuminate the gradually increasing learnings that students develop on their way to full understanding. In this chart, this progress is presented from left to right. The learning goal for students is to achieve understanding as described on the right.

| INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---|---|---|---|
| Missing or incorrect answer and little evidence of reasoning or application of mathematics to solve the problem. | Missing or incorrect answer but evidence of some reasoning or application of mathematics to solve the problem. | A correct answer with some evidence of reasoning or application of mathematics to solve the problem, OR an incorrect answer with substantial evidence of solid reasoning or application of mathematics to solve the problem. | A correct answer supported by substantial evidence of solid reasoning or application of mathematics to solve the problem. |

| Problem | INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---|---|---|---|---|
| **1a, 1b, 1c, 1d**<br><br>**5.NBT.3b** | The student provides the correct answer for 1 of the 4 inequality statements.<br>OR<br>The student is unable to accurately complete the inequality statements but produces work that serves as evidence that she is initiating understanding of comparing two decimals to thousandths based on meanings of the digits in each place.<br><br>For example, the student reverses the inequality symbol in all 4 inequality statements, demonstrating a clear misunderstanding of the meaning of each symbol.<br><br>**(5 points)** | The student provides the correct answer for 2 of the 4 inequality statements.<br><br>**(6 points)** | The student provides the correct answer for 3 of the 4 inequality statements.<br><br>**(7 points)** | The student provides the correct answer for all 4 inequality statements.<br><br>**(8 points)** |

| Problem | INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---|---|---|---|---|
| **2a**<br><br>**5.NBT.3a** | The student is unable to create an accurate model of 8.88 on the place value chart but produces work that serves as evidence that she is initiating understanding of reading and writing decimals.<br><br>For example, the student creates an accurate model of the number 8.<br><br>**(5 points)** | The student is unable The student is unable to create an accurate model of 8.88 on the place value chart but produces work that serves as evidence that she is developing understanding of reading and writing decimals.<br><br>For example, the student neglects to identify each place and uses an incorrect number of disks in one or more places.<br><br>**(6 points)** | The student shows sufficient evidence of understanding how to create a model of 8.88 on the place value chart but makes a single error when creating her model.<br><br>For example, the student neglects to identify each place, either by using labels or by showing a decimal on her place value chart, leading her to create a model of 888.<br><br>**(7 points)** | The student creates an accurate model of 8.88 on the place value chart.<br><br>**(8 points)** |
| **2b**<br><br>**5.NBT.1** | The student is unable to correctly determine if each digit in 8.88 has the same value but produces work and/or reasoning that serves as evidence that she is initiating understanding of recognizing the relationship between adjacent place values in a multi-digit number<br><br>For example, the student writes 8.88 in unit form.<br><br>**(7 points)** | The student is unable to correctly determine if each digit in 8.88 has the same value but produces work and/or reasoning that serves as evidence that she is developing understanding of recognizing the relationship between adjacent place values in a multi-digit number.<br><br>For example, the student cites that, because there are 8 disks in each place of her model, the 8s all have the same value.<br><br>**(8 points)** | The student provides the correct answer but provides an insufficient and/or incomplete explanation to support her answer.<br><br>**(9 points)** | The student correctly answers the problem by stating that each digit has a different value and provides an appropriate explanation to support her answer.<br><br>**(10 points)** |
| **2c**<br><br>**5.NBT.2** | The student is unable to accurately calculate the product but produces work that serves as evidence that she is initiating understanding of explaining patterns when multiplying a number by powers of 10.<br><br>For example, the student rewrites the expression as 8.88 × 10,000.<br><br>**(9 points)** | The student is unable to accurately calculate the product but produces work that serves as evidence that she is developing understanding of explaining patterns when multiplying a number by powers of 10.<br><br>For example, the student misinterprets 104 as a number with four total digits, using 1,000 instead of 10,000.<br><br>**(10 points)** | The student provides the correct answer but provides an insufficient and/or incomplete explanation to support her answer.<br><br>**(11 points)** | The student provides the correct answer of 88,800 and provides an appropriate explanation to support her answer.<br><br>**(12 points)** |

| Problem | INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---|---|---|---|---|
| **2d**<br><br>**5.NBT.2** | The student is unable to accurately calculate the quotient but produces work that serves as evidence that she is initiating understanding of explaining patterns when dividing a number by powers of 10.<br><br>For example, the student rewrites the expression as 8.88 ÷ 100.<br><br>**(9 points)** | The student is unable to accurately calculate the quotient but produces work that serves as evidence that she is developing understanding of explaining patterns when dividing a number by powers of 10.<br><br>For example, the student misinterprets $10^2$ as a number with two total digits, using 10 instead of 100.<br><br>**(10 points)** | The student provides the correct answer but provides an insufficient and/or incomplete explanation to support her answer.<br><br>**(11 points)** | The student provides the correct answer of 0.0888 and provides an appropriate explanation to support her answer.<br><br>**(12 points)** |
| **3**<br><br>**5.MD.1** | The student is unable to accurately complete the conversion but produces work that serves as evidence that she is initiating understanding of converting among different-sized standard measurement units within a given measurement system.<br><br>For example, the student writes the equation 100 cm = 1 m but is unable to use her equation to solve the problem.<br><br>**(7 points)** | The student is unable to accurately complete the conversion but produces work that serves as evidence that she is developing understanding of converting among different-sized standard measurement units within a given measurement system.<br><br>For example, the student reverses her conversion, thinking that 100 m = 1 cm, leading to an answer of 230 m.<br><br>**(8 points)** | The student provides the correct answer but provides insufficient and/or incomplete work to support her answer.<br>OR<br>The student shows sufficient evidence of understanding how to complete the conversion but makes a simple arithmetic mistake, leading to an answer other than 0.023 meters.<br><br>**(9 points)** | The student provides the correct answer of 0.023 meters and provides an accurate equation to support her work.<br><br>**(10 points)** |
| **4a**<br><br>**5.NBT.3b** | The student is unable to accurately list the amounts from least to greatest but produces work that serves as evidence that she is initiating understanding of comparing two decimals to thousandths based on meanings of the digits in each place.<br><br>For example, the student identifies 0.947 as the least measurement and 1.5 as the greatest but does not create a list nor gives any indication as to how the other two measurements compare.<br><br>**(5 points)** | The student is unable to accurately list the amounts from least to greatest but produces work that serves as evidence that she is developing understanding of comparing two decimals to thousandths based on meanings of the digits in each place.<br><br>For example, the student accurately lists the numbers from greatest to least.<br><br>**(6 points)** | The student lists the numbers from least to greatest but reverses the order of two of the numbers.<br><br>For example, the student may think 0.97 is less than 0.947 because it has fewer digits.<br><br>**(7 points)** | The student provides the correct answer of 0.947, 0.97, 1.268, 1.5.<br><br>**(8 points)** |

| Problem | INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---|---|---|---|---|
| **4b** **5.NBT.4** | The student correctly rounds to the nearest tenth 1 of the 4 measurements. OR The student is unable to correctly round the measurements to the nearest tenth but produces work that serves as evidence that she is initiating understanding of using place value understanding to round decimals to any place. **(7 points)** | The student correctly rounds to the nearest tenth 2 of the 4 measurements. **(8 points)** | The student correctly rounds to the nearest tenth 3 of the 4 measurements. **(9 points)** | The student correctly rounds to the nearest tenth all 4 measurements. **(10 points)** |
| **4c** **5.MD.1** | The student is unable to correctly determine the amount of rainfall in 100 years but produces work that serves as evidence that she is initiating understanding of solving real world problems involving measurement units. For example, the student writes the expression 1.268 × 100 but is unable to use her expression to solve the problem. **(4 points)** | The student is unable to correctly determine the amount of rainfall in 100 years but produces work that serves as evidence that she is developing understanding of solving real world problems involving measurement units. **(6 points)** | The student provides the correct answer but provides insufficient and/ or incomplete work to support her answer. OR The student shows sufficient evidence of understanding that, to complete the problem, she must multiply by 100 but makes a simple arithmetic mistake, leading to an answer other than 126.8 meters. **(8 points)** | The student provides the correct answer of 126.8meters and provides sufficient work to support her answer. **(10 points)** |
| **4d** **5.NBT.4** | The student is unable to accurately create an equation using an exponent to express the 100-year total she calculated in part (c) but produces work and/or reasoning that serves as evidence that she is initiating understanding of explaining patterns when multiplying a number by powers of 10. **(9 points)** | The student creates a correct equation using an exponent to express the 100-year total she calculated in part (c) but provides insufficient and/or incomplete explanation of how and why the digits shifted. **(10 points)** | The student provides an appropriate explanation of how and why the digits shifted but neglects to use an exponent in her equation. For example, she writes the equation 1.268 × 100 = 126.8. **(11 points)** | The student creates a correct equation using an exponent to express the 100-year total she calculated in part (c) and provides an appropriate explanation of how and why the digits shifted. **(12 points)** |

**Total Score = the sum of points earned out of 100 possible points**

# G5M1 Mid-Mission Assessment - Student Score Sheet

| STUDENT | 1a, 1b, 1c, 1d | 2a | 2b | 2c | 2d | 3 | 4a | 4b | 4c | 4d | TOTAL SCORE |
|---------|----------------|----|----|----|----|---|----|----|----|----|-------------|
|         |                |    |    |    |    |   |    |    |    |    |             |
|         |                |    |    |    |    |   |    |    |    |    |             |
|         |                |    |    |    |    |   |    |    |    |    |             |
|         |                |    |    |    |    |   |    |    |    |    |             |
|         |                |    |    |    |    |   |    |    |    |    |             |
|         |                |    |    |    |    |   |    |    |    |    |             |
|         |                |    |    |    |    |   |    |    |    |    |             |
|         |                |    |    |    |    |   |    |    |    |    |             |
|         |                |    |    |    |    |   |    |    |    |    |             |
|         |                |    |    |    |    |   |    |    |    |    |             |

| ZEARN MID-MISSION ANSWER KEY | G5 M1 |
|---|---|

**Name:** _____ Zenin _____ **Date:** _____

**1. Compare using >, <, or =.**

a. 0.4 ( **>** ) 0.127

b. 4 hundredths + 2 thousandths ( **>** ) 0.036

c. 2 tens 3 tenths 1 thousandth ( **<** ) 20.31

d. 24 tenths ( **<** ) 2.5

**2.**

a. Model the number 8.88 on the place value chart.

| ones | tenths | hundredths |
|---|---|---|
| ● ● ● ● ● ● ● ● | ● ● ● ● ● ● ● ● | ● ● ● ● ● ● ● ● |
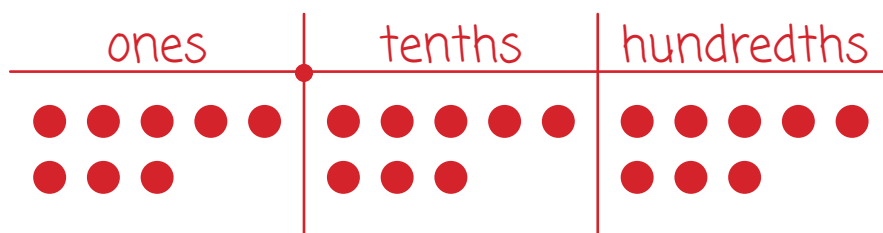
b.  Do all of the digits in 8.88 have the same value? Explain using words, numbers, or the place value chart.

*Even though there are 8 disks in each column, they are different units so they have different values. 8 ones is 10 times as large as 8 tenths. 8 hundredths is $\frac{1}{10}$ times as large as 8 tenths.*

c.  Multiply $8.88 \times 10^4$. Explain the shift of the digits and the change in the value of each digit.

$8.88 \times 10^4 = 88,800$

| | | | | 8 | . | 8 | 8 |
|---|---|---|---|---|---|---|---|
| 8 | 8 | , | 8 | 0 | 0 | | |
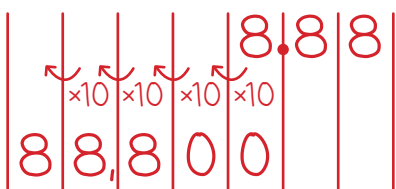
×10 ×10 ×10 ×10

*When multiplying by $10^4$, each digit shifts 4 places to the left. $10^4$ equals $10 \times 10 \times 10 \times 10$, or 10,000, so each digit becomes 10,000 times as large.*

d.  Divide $8.88 \div 10^2$. Explain how you determine the placement of the decimal point in your quotient and how that changed the value of each digit?

$8.88 \div 10^2 = 0.0888$

| 8 | . | 8 | 8 | 0 | 0 |
|---|---|---|---|---|---|
| 0 | . | 0 | 8 | 8 | 8 |

÷100

*When dividing by $10^2$, each digit shifts 2 places to the right. $10^2$ equals $10 \times 10$, or 100, so each digit becomes $\frac{1}{100}$ times as large. The original 8 ones becomes 8 hundredths, so I have to use zeros to represent the number of ones and tenths, keeping the decimal between the ones and tenths.*
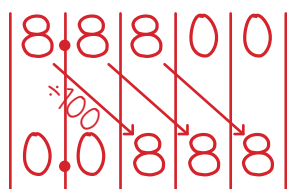
3.  **Rainfall collected in a rain gauge was found to be 2.3 cm. Convert 2.3 cm to meters. Write an equation to show your work.**

$2.3 \div 10^2 = 0.023$

$2.3 \text{ cm} = 0.023 \text{ m}$

4. **Average annual rainfall totals for cities in New York are listed below.**

| City | Rainfall |
|---|---|
| Rochester | 0.97 meter |
| Ithaca | 0.947 meter |
| Saratoga Springs | 1.5 meters |
| New York City | 1.268 meters |

a. Put the rainfall measurements in order from least to greatest.

0.947, 0.97, 1.268, 1.5

b. Round each of the rainfall totals to the nearest tenth.

0.97m ~ 1.0m
0.947m ~ 0.9m
1.5m ~ 1.5m
1.268m ~ 1.3m

c. Imagine New York City's rainfall is the same every year. How much rain would fall in 100 years? Show your work and/or explain your reasoning.

1.268 × 100 = 126.8
126.8m would fall in 100 years.

d. Write an equation using an exponent that would express the 100-year total rainfall. Explain how the digits have shifted position and why.

$1.268 × 10^2 = 126.8$
Each digit shifts 2 places to the left when multiplying by $10^2$. The value of each digit becomes 100 times as large.

1 × 100 = 100
0.2 × 100 = 20
0.06 × 100 = 6
0.008 × 100 = 0.8

## End-of-Mission Assessment
## Standards Addressed in Topics D-F

| Standard | | Problem Number |
|---|---|---|
| **Generalize place value understanding for multi-digit whole numbers.** | | |
| **5.NBT.3** | Read, write, and compare decimals to thousandths.<br>a.  Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g.,<br>$347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (\frac{1}{10}) + 9 \times (\frac{1}{100}) + 2 \times (\frac{1}{1000})$. | **1, 2, 4, 5** |
| **Perform operations with multi-digit whole numbers and with decimals to hundredths.** | | |
| **5.NBT.7** | 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. | **1, 2, 3, 4, 5** |

# End-of-Mission Assessment - A Progression Towards Understanding

A Progression Towards Understanding is provided to describe steps that illuminate the gradually increasing learnings that students develop on their way to full understanding. In this chart, this progress is presented from left to right. The learning goal for students is to achieve understanding as described on the right.

| **INITIATING UNDERSTANDING** | **DEVELOPING UNDERSTANDING** | **NEARING UNDERSTANDING** | **UNDERSTANDING** |
|---|---|---|---|
| Missing or incorrect answer and little evidence of reasoning or application of mathematics to solve the problem. | Missing or incorrect answer but evidence of some reasoning or application of mathematics to solve the problem. | A correct answer with some evidence of reasoning or application of mathematics to solve the problem, OR an incorrect answer with substantial evidence of solid reasoning or application of mathematics to solve the problem. | A correct answer supported by substantial evidence of solid reasoning or application of mathematics to solve the problem. |

| Problem | INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---|---|---|---|---|
| **1a, 1b, 1c, 1d**<br><br>**5.NBT.3a**<br><br>**5.NBT.7** | The student correctly completes 1 of the 4 problems.<br>OR<br>The student is unable to correctly complete any of the problems but produces work that serves as evidence that she is initiating understanding writing decimals in standard form and using standard form to add and subtract decimals.<br><br>**(7 points)** | The student correctly completes 2 of the 4 problems.<br><br>**(8 points)** | The student correctly completes 3 of the 4 problems.<br><br>**(9 points)** | The student correctly completes all 4 problems.<br><br>**(10 points)** |
| **2a**<br><br>**5.NBT.3a**<br><br>**5.NBT.7** | The student is unable to accurately calculate the sum but produces work that serves as evidence that she is initiating understanding of adding decimals.<br><br>For example, the student accurately represents both addends with chips on the place value chart but is unable to use her model to help her solve the problem.<br><br>**(5 points)** | The student is unable to accurately calculate the sum but produces work that serves as evidence that she is developing understanding of adding decimals.<br><br>For example, the student makes multiple errors when calculating the sum using the place value chart and/or the vertical method, leading to an answer other than 12.2.<br><br>**(6 points)** | The student provides the correct answer but only provides an appropriate model of the place value chart using chips or accurately shows her work using the vertical method, not both.<br>OR<br>The student provides an appropriate model of the place value chart using chips and calculates the same answer using the vertical method but makes a simple calculation error, leading to an answer other than 12.2.<br><br>**(7 points)** | The student provides the correct answer of 12.2, provides an appropriate model of the place value chart using chips, and accurately shows her work using the vertical method.<br><br>**(8 points)** |

| Problem | INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---|---|---|---|---|
| **2b**<br><br>**5.NBT.3a**<br><br>**5.NBT.7** | The student is unable to accurately calculate the difference but produces work that serves as evidence that she is initiating understanding of subtracting decimals.<br><br>For example, the student accurately models 7 on the place value chart and subtracts everywhere she can but is unable to finish the subtraction or determine the difference.<br><br>**(5 points)** | The student is unable to accurately calculate the difference but produces work that serves as evidence that she is developing understanding of subtracting decimals.<br><br>For example, the student makes multiple errors when calculating the difference using the place value chart and/or the vertical method, leading to an answer other than 5.58.<br><br>**(6 points)** | The student provides the correct answer but only provides an appropriate model of the place value chart using chips or accurately shows her work using the vertical method, not both.<br>OR<br>The student provides an appropriate model of the place value chart using chips and calculates the same answer using the vertical method but makes a simple calculation error, leading to an answer other than 5.58.<br><br>**(7 points)** | The student provides the correct answer of 5.58, provides an appropriate model of the place value chart using chips, and accurately shows her work using the vertical method.<br><br>**(8 points)** |
| **2c**<br><br>**5.NBT.3a**<br><br>**5.NBT.7** | The student is unable to accurately calculate the sum but produces work that serves as evidence that she is initiating understanding of adding decimals.<br><br>For example, the student accurately represents both addends with chips on the place value chart but is unable to use her model to help her solve the problem.<br><br>**(5 points)** | The student is unable to accurately calculate the sum but produces work that serves as evidence that she is developing understanding of adding decimals.<br><br>For example, the student makes multiple errors when calculating the sum using the place value chart and/or the vertical method, leading to an answer other than 31.0.<br><br>**(6 points)** | The student provides the correct answer but only provides an appropriate model of the place value chart using chips or accurately shows her work using the vertical method, not both.<br>OR<br>The student provides an appropriate model of the place value chart using chips and calculates the same answer using the vertical method but makes a simple calculation error, leading to an answer other than 31.0.<br><br>**(7 points)** | The student provides the correct answer of 31.0, provides an appropriate model of the place value chart using chips, and accurately shows her work using the vertical method.<br><br>**(8 points)** |
| **2d**<br><br>**5.NBT.3a**<br><br>**5.NBT.7** | The student is unable to accurately calculate the difference but produces work that serves as evidence that she is initiating understanding of subtracting decimals.<br><br>For example, the student accurately models 63.54 on the place value chart and subtracts everywhere she can but is unable to finish the subtraction or determine the difference.<br><br>**(5 points)** | The student is unable to accurately calculate the difference but produces work that serves as evidence that she is developing understanding of subtracting decimals.<br><br>For example, the student makes multiple errors when calculating the difference using the place value chart and/or the vertical method, leading to an answer other than 9.07.<br><br>**(6 points)** | The student provides the correct answer but only provides an appropriate model of the place value chart using chips or accurately shows her work using the vertical method, not both.<br>OR<br>The student provides an appropriate model of the place value chart using chips and calculates the same answer using the vertical method but makes a simple calculation error, leading to an answer other than 9.07.<br><br>**(7 points)** | The student provides the correct answer of 9.07, provides an appropriate model of the place value chart using chips, and accurately shows her work using the vertical method.<br><br>**(8 points)** |

| Problem | INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---------|--------------------------|--------------------------|------------------------|----------------|
| **3a**<br><br>**5.NBT.7** | The student is unable to accurately calculate the product but produces work that serves as evidence that she is initiating understanding of multiplying decimals.<br><br>For example, the student accurately sets up an area model but is unclear of how to use it to calculate the product.<br><br>**(5 points)** | The student is unable to accurately calculate the product but produces work that serves as evidence that she is developing understanding of multiplying decimals.<br><br>For example, the student makes multiple arithmetic errors when calculating the product, leading to an answer other than 0.68.<br><br>**(6 points)** | The student provides the correct answer but provides insufficient and/or incomplete work to support her answer.<br>OR<br>The student shows sufficient evidence of understanding of decimal multiplication but makes a simple calculation error, leading to an answer other than 0.68.<br><br>**(7 points)** | The student provides the correct answer of 0.68 and provides sufficient work to support her answer.<br><br>**(8 points)** |
| **3b**<br><br>**5.NBT.7** | The student is unable to provide the correct answer. The student produces some work that demonstrates understanding of multiplication of decimals.<br><br>For example, the student accurately sets up an area model but is unclear of how to use it to calculate the product.<br><br>**(5 points)** | The student is unable to accurately calculate the product but produces work that serves as evidence that she is developing understanding of multiplying decimals.<br><br>For example, the student makes multiple arithmetic errors when calculating the product, leading to an answer other than 12.78.<br><br>**(6 points)** | The student provides the correct answer but provides insufficient and/or incomplete work to support her answer.<br>OR<br>The student shows sufficient evidence of understanding of decimal multiplication but makes a simple calculation error, leading to an answer other than 12.78.<br><br>**(7 points)** | The student provides the correct answer of 12.78 and provides sufficient work to support her answer.<br><br>**(8 points)** |
| **3c**<br><br>**5.NBT.7** | The student is unable to accurately calculate the product but produces work that serves as evidence that she is initiating understanding of multiplying decimals.<br><br>For example, the student accurately sets up an area model but is unclear of how to use it to calculate the product.<br><br>**(5 points)** | The student is unable to accurately calculate the product but produces work that serves as evidence that she is developing understanding of multiplying decimals.<br><br>For example, the student makes multiple arithmetic errors when calculating the product, leading to an answer other than 18.24.<br><br>**(6 points)** | The student provides the correct answer but provides insufficient and/or incomplete work to support her answer.<br>OR<br>The student shows sufficient evidence of understanding of decimal multiplication but makes a simple calculation error, leading to an answer other than 18.24.<br><br>**(7 points)** | The student provides the correct answer of 18.24 and provides sufficient work to support her answer.<br><br>**(8 points)** |

| Problem | INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---|---|---|---|---|
| **3d**<br><br>**5.NBT.7** | The student is unable to accurately calculate the product but produces work that serves as evidence that she is initiating understanding of multiplying decimals.<br><br>For example, the student accurately sets up an area model but is unclear of how to use it to calculate the product.<br><br>**(5 points)** | The student is unable to accurately calculate the product but produces work that serves as evidence that she is developing understanding of multiplying decimals.<br><br>For example, the student makes multiple arithmetic errors when calculating the product, leading to an answer other than 19.14.<br><br>**(6 points)** | The student provides the correct answer but provides insufficient and/or incomplete work to support her answer.<br>OR<br>The student shows sufficient evidence of understanding of decimal multiplication but makes a simple calculation error, leading to an answer other than 19.14.<br><br>**(7 points)** | The student provides the correct answer of 19.14 and provides sufficient work to support her answer.<br><br>**(8 points)** |
| **4a**<br><br>**5.NBT.3a**<br><br>**5.NBT.7** | The student is unable to accurately calculate the quotient but produces work that serves as evidence that she is initiating understanding of dividing decimals.<br><br>For example, the student correctly renames the dividend as 81 tenths but does not attempt to complete the rest of the problem.<br><br>**(2 points)** | The student makes more than one mistake when renaming the dividend, calculating the quotient, or writing the quotient in standard form.<br><br>For example, the student correctly renames the dividend as 81 tenths but thinks the quotient is 0.9 tenths and incorrectly writes that in standard form as 0.9.<br><br>**(3 points)** | The student makes a single mistake when renaming the dividend, calculating the quotient, or writing the quotient in standard form.<br><br>For example, the student correctly renames the dividend as 81 tenths and provides the correct quotient of 9 tenths, but writes 9 tenths as 90 instead of 0.9.<br><br>**(4 points)** | The student correctly renames the dividend as 81 tenths, provides the correct quotient of 9 tenths, and correctly writes 9 tenths in standard form as 0.9.<br><br>**(5 points)** |
| **4b**<br><br>**5.NBT.3a**<br><br>**5.NBT.7** | The student is unable to accurately calculate the quotient but produces work that serves as evidence that she is initiating understanding of dividing decimals.<br><br>For example, the student correctly renames the dividend as 14 ones and 21 hundredths but does not attempt to complete the rest of the problem.<br><br>**(2 points)** | The student makes more than one mistake when renaming the dividend, calculating the quotient, or writing the quotient in standard form.<br><br>For example, the student correctly renames the dividend as 14 ones and 21 hundredths but calculates the quotients to be 2 ones and 0.3 hundredths. The student incorrectly writes 2 ones and 0.3 hundredths in standard form as 2.03.<br><br>**(3 points)** | The student makes a single mistake when renaming the dividend, calculating the quotient, or writing the quotient in standard form.<br><br>For example, the student correctly renames the dividend as 14 ones and 21 hundredths but calculates the quotients to be 2 ones and 7 hundredths. The student correctly writes 2 ones and 7 hundredths in standard form as 2.07.<br><br>**(4 points)** | The student correctly renames the dividend as 14 ones and 21 hundredths, provides the correct quotients of 2 ones and 3 hundredths, and correctly writes 2 ones and 3 hundredths in standard form as 2.03.<br><br>**(5 points)** |

| Problem | INITIATING UNDERSTANDING | DEVELOPING UNDERSTANDING | NEARING UNDERSTANDING | UNDERSTANDING |
|---|---|---|---|---|
| **5a**<br><br>**5.NBT.3a**<br><br>**5.NBT.7** | The student is unable to accurately calculate the quotient but produces work that serves as evidence that she is initiating understanding of dividing decimals.<br><br>For example, the student accurately models 0.9 on the place value chart and creates two more rows on the place value chart but is unclear how to proceed and calculate the quotient.<br><br>**(5 points)** | The student is unable to accurately calculate the quotient but produces work that serves as evidence that she is developing understanding of dividing decimals.<br><br>For example, the student makes multiple errors when calculating the quotient using the place value chart and/or the vertical method, leading to an answer other than 0.45.<br><br>**(6 points)** | The student provides the correct answer but only provides an appropriate model of the place value chart using chips or accurately shows her work using the standard algorithm, not both.<br>OR<br>The student provides an appropriate model of the place value chart using chips and calculates the same answer using the standard algorithm but provides an answer other than 0.45.<br><br>**(7 points)** | The student provides the correct answer of 0.45, provides an appropriate model of the place value chart using chips, and accurately shows her work using the standard algorithm.<br><br>**(8 points)** |
| **5b**<br><br>**5.NBT.3a**<br><br>**5.NBT.7** | The student is unable to accurately calculate the quotient but produces work that serves as evidence that she is initiating understanding of dividing decimals.<br><br>For example, the student accurately models 7.6 on the place value chart and creates five more rows on the place value chart but is unclear how to proceed and calculate the quotient.<br><br>**(5 points)** | The student is unable to accurately calculate the quotient but produces work that serves as evidence that she is developing understanding of dividing decimals.<br><br>For example, the student makes multiple errors when calculating the quotient using the place value chart and/or the vertical method, leading to an answer other than 1.52.<br><br>**(6 points)** | The student provides the correct answer but only provides an appropriate model of the place value chart using chips or accurately shows her work using the standard algorithm, not both.<br>OR<br>The student provides an appropriate model of the place value chart using chips and calculates the same answer using the standard algorithm but provides an answer other than1.52.<br><br>**(7 points)** | The student provides the correct answer of 1.52, provides an appropriate model of the place value chart using chips, and accurately shows her work using the standard algorithm.<br><br>**(8 points)** |

**Total Score = the sum of points earned out of 100 possible points**

# G5M1 End-of-Mission Assessment - Student Score Sheet

| STUDENT | 1a, 1b, 1c, 1d | 2a | 2b | 2c | 2d | 3a | 3b | 3c | 3d | 4a | 4b | 5a | 5b | TOTAL SCORE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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## ZEARN END-OF-MISSION ANSWER KEY | G5 M1

Name: **Ruthie** Date: _____

1. **Solve each problem and write the answer in standard form.**
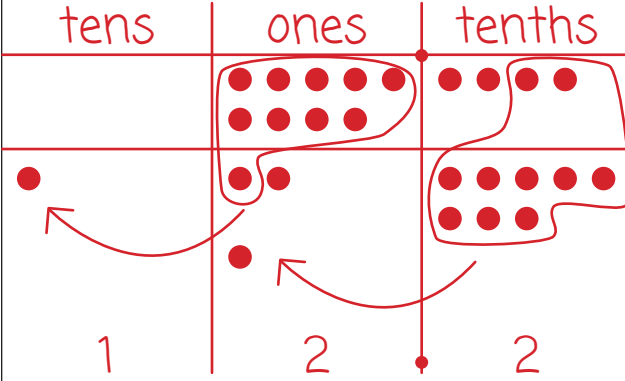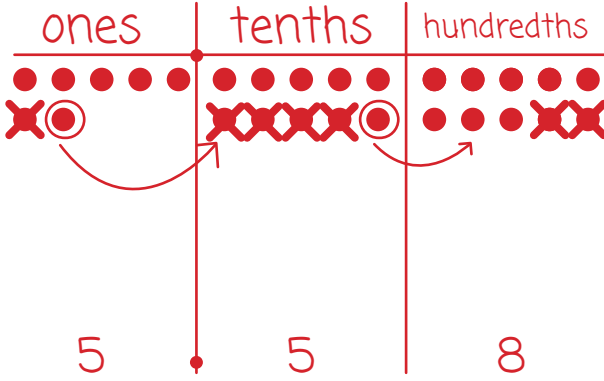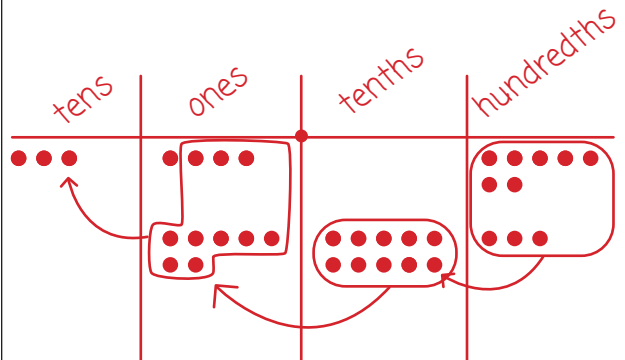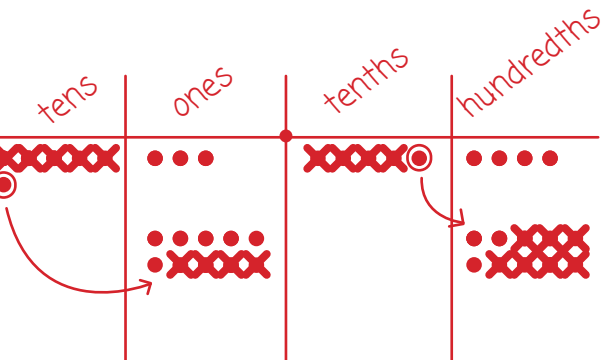
   a. 7 hundredths + 14 hundredths = **21** hundredth(s) =

   **2** tenth(s) **1** hundredth(s) = **0.21**

   b. 32 hundredths − 18 hundredths = **14** hundredth(s) =

   **1** tenth(s) **4** hundredth(s) = **0.14**

   c. 4.7 + 0.3 = **47** tenth(s) + **3** tenth(s)= **50** tenth(s) = **5.0**

   d. 5 − 0.2 = **50** tenth(s) − **2** tenth(s) = **48** tenth(s) = **4.8**

2. Solve each by drawing a model of the place value chart with chips and using the vertical method.

a. $9.40 + 2.8 =$ __12.2__

| tens | ones | tenths |
|---|---|---|
| 1 | 2 | 2 |

$$9.40$$
$$+2.80$$
$$\overline{12.20}$$

b. $7 - 1.42 =$ __5.58__

| ones | tenths | hundredths |
|---|---|---|
| 5 | 5 | 8 |

$$7.\overset{6}{\cancel{0}}\overset{9}{\cancel{1}}\overset{}{\cancel{0}}0$$
$$-1.42$$
$$\overline{5.58}$$

c. $24.07 + 6.93 =$ __31.0__

| tens | ones | tenths | hundredths |
|---|---|---|---|

$$24.07$$
$$+\ \ 6.93$$
$$\overline{31.00}$$

d. $63.54 - 54.47 =$ __9.07__

| tens | ones | tenths | hundredths |
|---|---|---|---|

$$\overset{5}{\cancel{6}}3.\overset{4}{\cancel{5}}\overset{14}{4}$$
$$-54.47$$
$$\overline{9.07}$$

3. **Solve each by using a place value strategy such as an area model, the place value chart, or algorithm.**

a. $2 \times 0.34 =$ <u>0.68</u>

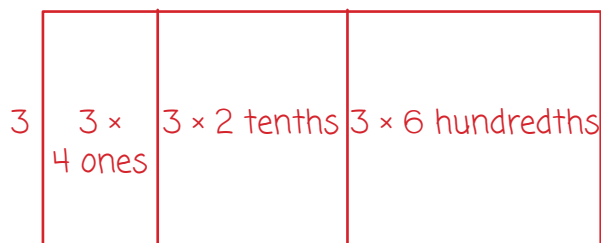| | 3 tenths | + 4 hundredths |
|---|---|---|
| 2 | 2 × 3 tenths | 2 × 4 hundredths |
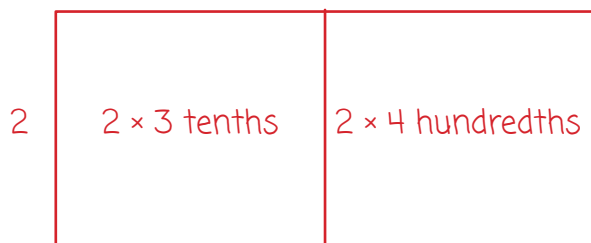
6 tenths + 8 hundredths = 68 hundredths

b. $3 \times 4.26 =$ <u>12.78</u>

| | 4 ones | + 2 tenths | + 6 hundredths |
|---|---|---|---|
| 3 | 3 × 4 ones | 3 × 2 tenths | 3 × 6 hundredths |

12 ones + 6 tenths + 18 hundredths

= 12 ones 78 hundredths

c. $4.56 \times 4 =$ <u>18.24</u>

$4 \times 4 = 16$
$4 \times 0.5 = 2$
$4 \times 0.06 = 0.24$
$4 \times 4.56 = 18.24$

d. $6 \times 3.19 =$ <u>19.14</u>

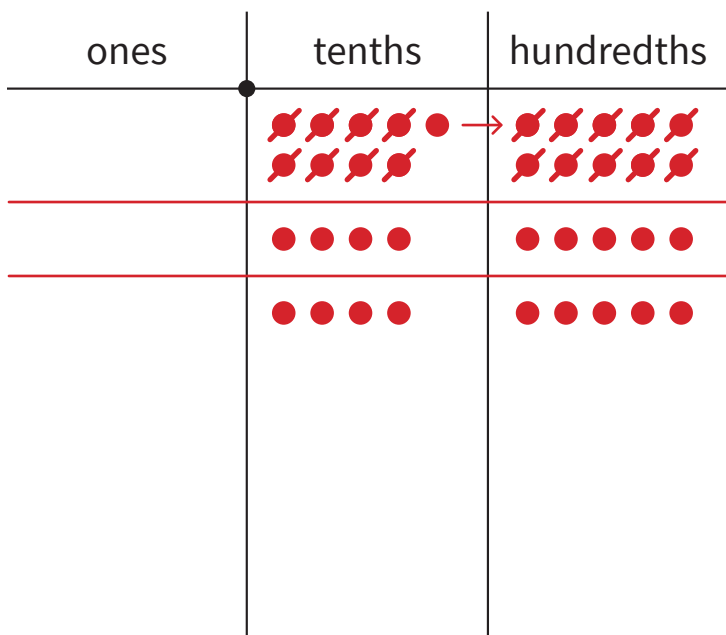$$\begin{array}{r} 319 \text{ hundredths} \\ \times \quad 6 \\ \hline 1914 \text{ hundredths} \end{array}$$

4. Complete the number sentence. Express the quotient in unit form and then in standard form.

a. 8.1 ÷ 9 = __81__ tenths ÷ 9 = __9__ tenths = __0.9__

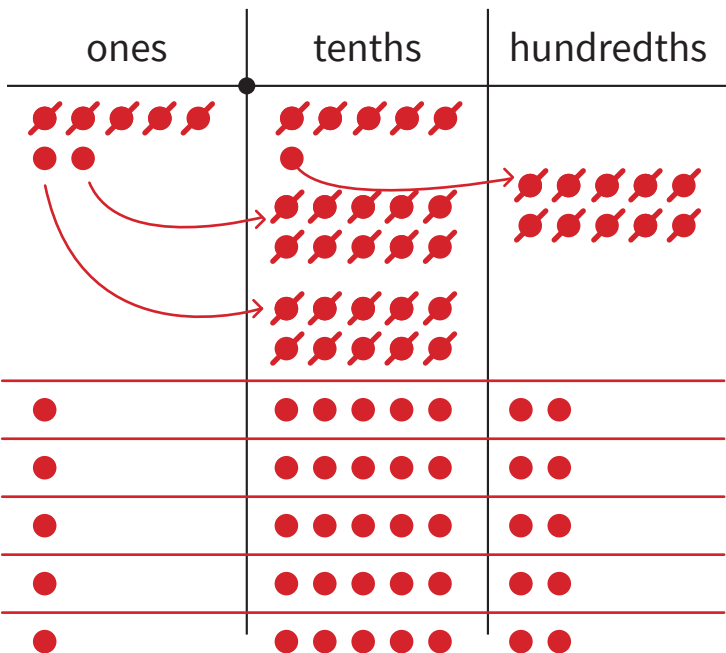b. 14.21 ÷ 7 = __14__ ones ÷ 7 + __21__ hundredths ÷ 7

= __2__ ones + __3__ hundredths

= __2.03__

5. Solve each by drawing a model of the place value chart with chips and using the standard algorithm.

a. $0.9 \div 2 =$ __0.45__

| ones | tenths | hundredths |
|---|---|---|

$$\begin{array}{r} 0.45 \\ 2\overline{)0.9\,0} \\ -0.8 \phantom{0} \\ \hline 0.10 \\ -0.10 \\ \hline 0 \end{array}$$

b. $7.6 \div 5 =$ __1.52__

| ones | tenths | hundredths |
|---|---|---|

$$\begin{array}{r} 1.52 \\ 5\overline{)7.6\,0} \\ -5 \phantom{.0} \\ \hline 2.6 \\ -2.5 \\ \hline 0.10 \\ -0.10 \\ \hline 0 \end{array}$$