Name _____ Date _____

1. Compare using >, <, or =.

a. 0.4 ◯ 0.127

b. 2 thousandths + 4 hundredths ◯ 0.036

c. 2 tens 3 tenths 1 thousandth ◯ 20.31

d. 24 tenths ◯ 2.5

e. $4 \times 10^3 + 2 \times 100 + 3 \times \frac{1}{10}$ ◯ $4 \times 1000 + 2 \times 10^2 + 3 \times \frac{1}{10}$

f. $3 \times \frac{1}{10} + 4 \times \frac{1}{1000}$ ◯ 0.340

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

a. Use words, numbers, and your model to explain why each of the digits has a different value. Be sure to use "ten times as large" and "one tenth as large" in your explanation.

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

c. Divide the product from (b) by $10^2$. Explain the shift of the digits and the change in the value of each digit.

3. Rainfall collected in a rain gauge was found to be 2.3 cm when rounded to the nearest tenth of a centimeter.

a. Circle all the measurements below that could be the actual measurement of the rainfall.

2.251 cm 2.349 cm 2.352 cm 2.295 cm

b. Convert the rounded measurement to meters. Write an equation to show your work.

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

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

a. Put the rainfall measurements in order from least to greatest. Write the smallest total rainfall in word form and expanded form.

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

c. Imagine New York City's rainfall is the same every year. How much rain 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.

| Mid-Module Assessment Task<br>Standards Addressed | Topics A–C |
|---|---|

**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 1/10 of what it represents in the place to its left.

**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.

**5.NBT.3** Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

**5.NBT.4** Use place value understanding to round decimals to any place.

**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.

## Evaluating Student Learning Outcomes

A Progression Toward Mastery is provided to describe steps that illuminate the gradually increasing understandings that students develop *on their way to proficiency.* In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for each student is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the student CAN do now and what they need to work on next.

| A Progression Toward Mastery | | | | |
|---|---|---|---|---|
| **Assessment Task Item and Standards Assessed** | **STEP 1 Little evidence of reasoning without a correct answer. (1 Point)** | **STEP 2 Evidence of some reasoning without a correct answer. (2 Points)** | **STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)** | **STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)** |
| **1**<br>**5.NBT.3a**<br>**5.NBT.3b** | The student answers none or one part correctly. | The student answers two or three parts correctly. | The student answers four or five parts correctly. | The student correctly answers all six parts:<br>a. > d. <<br>b. > e. =<br>c. < f. < |
| **2**<br>**5.NBT.1**<br>**5.NBT.2** | The student answers none or one part correctly. | The student answers two parts correctly. | The student is able to answers all parts correctly but is unable to explain his strategy in Part (a), (b), or (c), or answers three of the four parts correctly. | The student accurately models 8.88 on the place value chart and correctly:<br>▪ Uses words, numbers, and model to explain why each digit has a different value.<br>▪ Finds product of 88,800 and explains.<br>▪ Finds quotient of 888 and explains. |
| **3**<br>**5.NBT.4**<br>**5.MD.1** | The student is unable to identify any answers for Part (a) or answer Part (b) correctly. | The student identifies one or two answers correctly for Part (a) and makes an attempt to convert but gets an incorrect solution for Part (b). | The student identifies two answers correctly for Part (a) and converts correctly for Part (b), or the student identifies three answers correctly for Part (a) and converts with a small error for Part (b). | The student identifies all three answers correctly for Part (a) and answers Part (b) correctly:<br>a. 2.251 cm, 2.349 cm, 2.295 cm.<br>b. $2.3 \div 10^2 = 0.023$ |

| A Progression Toward Mastery | | | | |
|---|---|---|---|---|
| **4**<br><br>**5.NBT.1**<br>**5.NBT.2**<br>**5.NBT.3**<br>**5.NBT.4** | The student answers none or one part correctly. | The student answers two problems correctly. | The student is able to answer all parts correctly but is unable to explain strategy in Part (d), or the student answers three of the four problems correctly. | The student correctly responds:<br>a. 0.947 m, 0.97 m, 1.268 m, 1.5 m.<br>▪ Nine hundred forty-seven thousandths meters.<br>▪ 0.9 + 0.04 + 0.007 or (9 × 0.1) + (4 × 0.01) + (7 × 0.001).<br>b. Rochester ≈ 1.0 m, Ithaca ≈ 0.9 m, Saratoga Springs ≈ 1.5 m, NYC ≈ 1.3 m.<br>c. 126.8 m.<br>d. $1.268 \times 10^2 = 126.8$, with valid explanation. |

Name Zenin Date _____

1. Compare using >, <, or =.

a. 0.4 > 0.127

b. 2 thousandths + 4 hundredths > 0.036

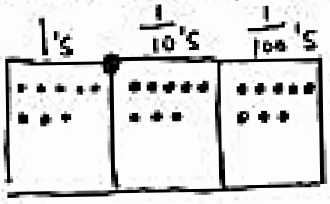
c. 2 tens 3 tenths 1 thousandth < 20.31

d. 24 tenths < 2.5

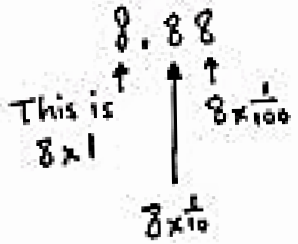
e. $4 \times 10^3 + 2 \times 100 + 3 \times \frac{1}{10}$ = $4 \times 1000 + 2 \times 10^2 + 3 \times \frac{1}{10}$

f. $3 \times \frac{1}{10} + 4 \times \frac{1}{1000}$ < 0.340

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



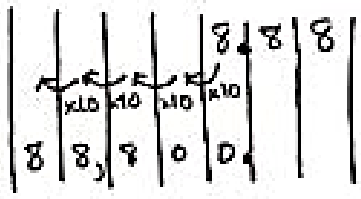

a. Use words, numbers, and your model to explain why each of the digits has a different value. Be sure to use "ten times as large" and "one tenth as large" in your explanation.




Even though there are 8 dicks 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 $\frac{1}{10}$ as large as 8 tenths.

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

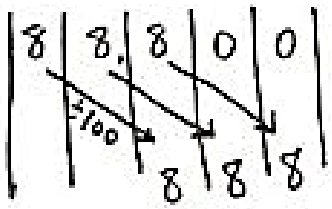
$8.88 \times 10^4 = 88{,}800$




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.

c. Divide the product from (b) by $10^2$. Explain the shift of the digits and the change in the value of each digit.

$88{,}800 \div 10^2 = 888$




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 $\frac{1}{100}$ as large.

3. Rainfall collected in a rain gauge was found to be 2.3 cm when rounded to the nearest tenth of a centimeter.

a. Circle all the measurements below that could be the actual measurement of the rainfall.

2.251 cm  2.349 cm  2.352 cm  2.295 cm

b. Convert the rounded measurement 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. Annual rainfall total for cities in New York are listed below.

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

a. Put the rainfall measurements in order from least to greatest. Write the smallest total rainfall in word form and expanded form.

0.947 m , 0.97 m , 1.268 m , 1.5 m

nine hundred forty-seven thousandths

$9 \times \frac{1}{10} + 4 \times \frac{1}{100} + 7 \times \frac{1}{1000}$

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

0.97m ≈ 1.0 m

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?

1.268 m × 100 = 126.8 m

126.8 m 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.

$1.268\ m \times 10^2 = 126.8\ m$

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