Name _____ Date _____

1. Fill in the chart.

Words	Expression	The Value of the Expression
a. 50 times the sum of 64 and 36		
b. Divide the difference between 1,200 and 700 by 5		
c. The sum of 3 fifteens and 17 fifteens		
d. 15 times the sum of 14 and 6		
e.	10 × (250 + 45)	
f.	(560 + 440) × 14	

2. Compare the two expressions using < , > , or = . For each, explain how you can determine the answer without calculating.

a. 100 × 8 ◯ 25 × (4 × 9)

b. 48 × 12 ◯ 50 twelves – 3 twelves

c. 24 × 36 ◯ 18 twenty-fours, doubled

3. Solve. Use words, numbers, or pictures to explain how your answers to Parts (a) and (b) are related.

   a. 25 × 30 = _____

   b. 2.5 × 30 = _____ tenths × 30 = _____

4. Multiply using the standard algorithm. Show your work below each problem. Write the product in the blank.

   a. 514 × 33 = _____

   b. 546 × 405 = _____

5. For a field trip, the school bought 47 sandwiches for $4.60 each and 39 bags of chips for $1.25 each. How much did the school spend in all?

6. Jeanne makes hair bows to sell at the craft fair. Each bow requires 1.5 yards of ribbon.

   a. At the fabric store, ribbon is sold by the foot. If Jeanne wants to make 84 bows, how many feet of ribbon must she buy? Show all your work.

   b. If the ribbon costs 10¢ per foot, what is the total cost of the ribbon in dollars? Explain your reasoning, including how you decided where to place the decimal.

   c. A manufacturer is making 1,000 times as many bows as Jeanne to sell in stores nationwide. Write an expression using exponents to show how many yards of ribbon the manufacturer will need. Do not calculate the total.

Mid-Module Assessment Task Standards Addressed	Topics A–D

Write and interpret numerical expressions.

5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*

Understand the place value system.

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.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.

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.

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.

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 students is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the students CAN do now and what they need to work on next.

A Progression Toward Mastery				
Assessment Task Item	**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 **5.OA.1** **5.OA.2**	Student is able to answer one to three items correctly.	Student is able to answer four to seven items correctly.	Student is able to answer eight to eleven items correctly.	Student is able to answer all 12 items correctly.
2 **5.OA.2**	Student is unable to compare the expressions.	Student is able to correctly compare at least two pairs of expressions but is unable to explain reasoning.	Student is able to correctly compare at least two pairs of expressions and is able to explain reasoning on some parts of the task.	Student correctly compares all pairs of expressions and is able to explain reasoning for all parts of the task.
3 **5.NBT.1** **5.NBT.2** **5.NBT.7**	Student is unable to correctly multiply either Part (a) or (b) and makes no attempt to explain the relationship between products.	Student is able to multiply either Part (a) or (b) correctly but makes no attempt to explain the relationship between the products.	Student is able to correctly multiply both Parts (a) and (b) and provides some explanation of the relationship between the products.	Student correctly multiplies both parts of the task and provides a complete explanation of the relationship between the products using words, numbers, or pictures. a. 750 b. 75
4 **5.NBT.5**	Student does not use the standard algorithm or any strategy to multiply either Part (a) or (b).	Student does not use the standard algorithm but uses another strategy to multiply Part (a) and/or Part (b).	Student uses the standard algorithm to multiply but makes errors in the partial products or the final product.	Student uses the standard algorithm to correctly multiply both Parts (a) and (b). a. 16,962 b. 221,130

A Progression Toward Mastery				
5 **5.NBT.5** **5.NBT.7**	Student uses incorrect reasoning and neither multiplies nor adds.	Student uses partially correct reasoning (multiplies but does not add, or adds but does not multiply) and makes calculation errors.	Student uses correct reasoning but makes calculation errors.	Student uses correct reasoning and also calculates the total correctly as \$264.95.
6 **5.OA.1** **5.OA.2** **5.NBT.1** **5.NBT.2** **5.NBT.5** **5.NBT.7** **5.MD.1**	Student uses incorrect reasoning in most parts of the task and is unable to correctly convert, calculate, and/or write an accurate expression.	Student uses some correct reasoning and is able to answer one part of the task.	Student uses correct reasoning but makes calculation errors on part of the task or writes an incorrect expression.	Student uses correct reasoning, correctly calculates all parts of the task, and writes a correct expression. a. 378 ft b. \$37.80 c. $84 \times 1.5 \times 10^3$ or $84 \times 10^3 \times 1.5$

Name Charlie Date

1. Fill in the chart.

Words	Expression	The Value of the Expression
a. 50 times the sum of 64 and 36	50x(64+36)	5,000
b. Divide the difference between 1,200 and 700 by 5	(1,200−700)÷5	100
c. The sum of 3 fifteens and 17 fifteens	(3x15)+(17x15)	300
d. 15 times the sum of 14 and 6	15 x(14+6)	300
e. 10 times the sum of 250 and 45	10 × (250 + 45)	2,950
f. 14 times the sum of 560 and 440	(560 + 440) × 14	14,000

2. Compare the two expressions using <, >, or =. For each, explain how you can determine the answer without calculating.

a. 100 × 8 < 25 × (4 × 9)

The product here is 800.

The product of this part is 100, so 100 x 9 is equal to 900.

b. 48 × 12 > 50 twelves – 3 twelves

This is 48 twelves.

This is 47 twelves
The other side is 1 more group of twelve.

c. 24 × 36 = 18 twenty-fours, doubled

Double 18 is 36, so it's 36 twenty-fours on both sides.

3. Solve. Use words, numbers or pictures to explain how your answers to parts (a) and (b) are related.

a. $25 \times 30 =$ 750 b. $2.5 \times 30 =$ 25 tenths $\times 30 =$ 750 tenths $= 75.0$

The digits are exactly the same. But the units in (b) are smaller so the answer is smaller. Ones are 10 times as large as tenths so the answer to (a) is ten times larger than (b)

4. Multiply using the standard algorithm. Show your work below each problem. Write the product in the blank.

a. $514 \times 33 =$ 16,962

$$\begin{array}{r} 514 \\ \times\ 33 \\ \hline 1542 \\ +15420 \\ \hline 16,962 \end{array}$$

b. $546 \times 405 =$ 221,130

$$\begin{array}{r} 546 \\ \times\ 405 \\ \hline 2730 \\ +218400 \\ \hline 221,130 \end{array}$$

5. For a field trip, the school bought 47 sandwiches for $4.60 each and 39 bags of chips for $1.25 each. How much did the school spend in all?

460 cents $\times$ 47 = 3220 + 18400 = 21,620 cents = $216.20

125 cents $\times$ 39 = 1125 + 3750 = 4875 cents = $48.75

216.20 + 48.75 = 264.95

The school spent $264.95 in all.

6. Jeanne makes hair bows to sell at the craft fair. Each bow requires 1.5 yards of ribbon.

a. At the fabric store, ribbon is sold by the foot. If Jeanne wants to make 84 bows, how many feet of ribbon must she buy? Show all your work.

1.5 yd = 1.5 x (1 yd)
= 1.5 x (3 ft)
= 4.5 ft

45 tenths
x 84
180
+ 3600
378.0

Jeanne has to buy 378 feet of ribbon.

b. If the ribbon costs 10¢ per foot, what is the total cost of the ribbon in dollars? Explain your reasoning, including how you decided where to place the decimal.

378 x 10¢ = 3780¢ = $37.80

When I multiplied by 10, all the digits got 10 times larger and moved one place to the left. That was 3,780 cents. To find dollars, I divided by 100 which moved my digits back 2 places to the left, so my decimal point went between the 7 and 8.

c. A manufacturer is making 1,000 times as many bows as Jeanne to sell in stores nationwide. Write an expression using exponents to show how many yards of ribbon the manufacturer will need. Do not calculate the total.

$84 \times 10^3 \times 1.5$

Name _____ Date _____

1. Express the missing divisor using a power of 10. Explain your reasoning using a place value model.

   a. 5.2 ÷ _____ = 0.052

   b. 7,650 ÷ _____ = 7.65

2. Estimate the quotient by rounding the expression to relate to a one-digit fact. Explain your thinking in the space below.

   a. 432 ÷ 73 ≈ _____

   b. 1,275 ÷ 588 ≈ _____

3. Generate and solve another division problem with the same quotient and remainder as the two problems below. Explain your strategy for creating the new problem.

$$\begin{array}{r} 3 \\ 17\overline{)63} \\ -\,51 \\ \hline 12 \end{array} \qquad \begin{array}{r} 3 \\ 42\overline{)138} \\ -\,126 \\ \hline 12 \end{array}$$

4. Sarah says that 26 ÷ 8 equals 14 ÷ 4 because both are "3 R2." Show her mistake using decimal division.

5. A rectangular playground has an area of 3,392 square meters. If the width of the rectangle is 32 meters, find the length.

6. A baker uses 5.5 pounds of flour daily.

   a. How many ounces of flour will he use in two weeks? Use words, numbers, or pictures to explain your thinking. (1 lb = 16 oz)

b. The baker's recipe for a loaf of bread calls for 12 ounces of flour. If he uses all of his flour to make loaves of bread, how many full loaves can he bake in two weeks?

c. The baker sends all his bread to one store. If he can pack up to 15 loaves of bread in a box for shipping, what is the minimum number of boxes required to ship all the loaves baked in two weeks? Explain your reasoning.

d. The baker pays \$0.80 per pound for sugar and \$1.25 per pound for butter. Write an expression that shows how much the baker will spend if he buys 6 pounds of butter and 20 pounds of sugar.

e. Chocolate sprinkles cost as much per pound as sugar. Find $\frac{1}{10}$ the baker's total cost for 100 pounds of chocolate sprinkles. Explain the number of zeros and the placement of the decimal in your answer using a place value chart.

End-of-Module Assessment Task Standards Addressed	Topics A–H

Write and interpret numerical expressions.

5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*

Understand the place value system.

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.

Perform operations with multi-digit whole numbers and with decimals to hundredths.

5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.

5.NBT.6 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.

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.

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.

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 students is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the students CAN do now and what they need to work on next.

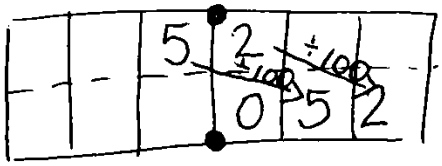
A Progression Toward Mastery				
Assessment Task Item	**STEP 1 Little evidence of reasoning without a correct answer. (1 Point)**	**STEP 2 Evidence of some reasoning without a correct answer. (2 Points)**	**STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)**	**STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)**
1 **5.NBT.1** **5.NBT.2** **5.NBT.7**	Student is unable to express the divisors as powers of 10 either as multiples of 10 or as exponents and produces a place value chart with errors.	Student either shows the divisors as powers of 10 (as multiples of 10 or exponents) or uses correct reasoning on the place value chart.	Student correctly expresses the divisors as powers of 10 either as multiples of 10 or exponents and uses correct reasoning on the place value chart for either Part (a) or Part (b).	Student correctly expresses the divisors as powers of 10 either as multiples of 10 or exponents. Student also shows correct reasoning on the place value chart for both Part (a) and Part (b). a. 100 and/or 10^2 b. 1000 and/or 10^3
2 **5.NBT.1** **5.NBT.2** **5.NBT.6**	Student is unable to round either the dividend or the divisor to a one-digit fact.	Student rounds the dividend and divisor but not to a one-digit fact.	Student correctly rounds to a one-digit fact for either Part (a) or Part (b) or rounds both parts correctly without a clear explanation.	Student correctly rounds both Part (a) and Part (b) to a one-digit fact and clearly explains thinking. a. 420 ÷ 70 = 6 b. 1,200 ÷ 600 = 2
3 **5.OA.1** **5.NBT.6**	Student is unable to generate a division problem with a quotient of 3 and remainder of 12.	Student generates a division problem with either a quotient of 3 or a remainder of 12 but is unable to explain reasoning used.	Student generates a division problem with both a quotient of 3 and a remainder of 12 but shows no evidence of a strategy other than guess and check.	Student generates a division problem with a quotient of 3 and remainder of 12 and describes a sound strategy (e.g., writes a checking equation _____ = 3 × _____ + 12).

A Progression Toward Mastery				
4 **5.NBT.7**	Student is unable to perform the decimal division necessary to show non-equivalence of quotients.	Student is able to perform the division necessary to produce the whole number portion of the quotient but is unable to continue dividing the decimal places to show non-equivalence of quotients.	Student is able to explain the non-equivalence of the quotients but with errors in the division calculation.	Student divides accurately and shows the non-equivalence of the quotients. $26 \div 8 = 3.25$ $14 \div 4 = 3.5$
5 **5.NBT.6**	Student does not divide to find the length of the playground.	Student makes two errors in division that lead to an incorrect length of the playground.	Student makes one error in division that leads to an incorrect length of the playground.	Student correctly divides and finds the length of the rectangle to be 106 m.
6 **5.OA.1** **5.OA.2** **5.NBT.1** **5.NBT.2** **5.NBT.5** **5.NBT.6** **5.NBT.7** **5.MD.1**	Student uses incorrect reasoning for all parts of the task.	Student uses correct reasoning for at least two parts of the task but makes errors in calculation.	Student uses correct reasoning for all parts of the task but makes errors in calculation.	Student describes correct reasoning using words, numbers, or pictures and correctly calculates for all parts of the task. a. 1,232 oz b. 102 loaves c. 7 boxes d. $(20 \times 0.80) + (6 \times \$1.25)$ e. \$8.00

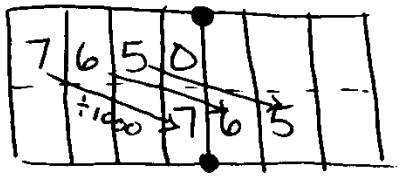
Name Garrett Date _____

1. Express the missing divisor using an exponent. Explain your reasoning using a place value chart.

a. $5.2 \div 10^2 = 0.052$



b. $7{,}650 \div 10^3 = 7.65$



2. Estimate the quotient by rounding the equation to relate to a 1-digit fact. Explain your thinking in the space below.

a. $432 \div 73 \approx 6$

$420 \div 70 = 42 \div 7 = 6$

73 is close to 7 tens. The nearest multiple of 7 that's like 432 is 42 tens. So $42 \div 7 = 6$

b. $1275 \div 588 \approx 2$

$1200 \div 600 = 12 \div 6 = 2$

588 is close to 600. The nearest multiple of 100 that is close to 1275 is 12 hundreds. So $12 \div 6 = 2$

3. Generate and solve another division problem with the same quotient and remainder as the two problems below. Explain your strategy for creating the new problem.

$$17 \overline{)\,63} \quad 3,\ 51,\ 12$$

$$42 \overline{)\,138} \quad 3,\ 126,\ 12$$

$$27 \overline{)\,93} \quad 3,\ -81,\ 12$$

To check division, I can multiply the answer and the divisor, then add the remainder. So I multiplied 3 X my number which was 27 and got 81 and then I added 12. So my dividend must be 93.

$$\begin{array}{r} 27 \\ \times\ 3 \\ \hline 81 \\ +\ 12 \\ \hline 93 \end{array}$$

4. Sarah says that 26 ÷ 8 equals 14 ÷ 4 because both are "3 R2." Show her mistake using decimal division.

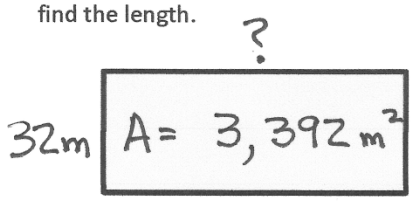
```
   3.25
8)26.00
-24
 20
-16
 40
-40
  0
```

```
   3.5
4)14.0
-12
 20
-20
  0
```

26 ÷ 8 = 3.25

14 ÷ 4 = 3.5

5. A rectangular playground has an area of 3,392 square meters. If the width of the rectangle is 32 meters, find the length.



32 × ? = 3,392

```
   106
32)3,392
-32
 19
- 0
 192
-192
   0
```

The length of the rectangle is 106 meters.

6. A baker uses 5.5 pounds of flour daily.

   a. How many ounces of flour will he use in two weeks? Use words, numbers, or pictures to explain your thinking. (1 lb = 16 oz.)

5.5 lbs = ___ oz

5.5 × (1 lb) = ___ oz

5.5 × (16 oz) = ___ oz

```
 55 tenths
× 16
 330
+550
 880 tenths = 88
```

```
  88 oz
× 14
 352
+880
1,232 oz
```

First, I found the ounces he uses every day. Then I multiplied by 14 days.

The baker uses 1,232 oz of flour in 2 weeks.

b. The baker's recipe for a loaf of bread calls for 12 ounces of flour. If he uses all of his flour to make loaves of bread, how many full loaves can he bake in two weeks?

$$\begin{array}{r} 102 \text{ r } 8 \\ 12\overline{)1,232} \\ -12 \\ \hline 03 \\ -00 \\ \hline 32 \\ -24 \\ \hline 8 \end{array}$$

The baker can bake 102 full loaves in two weeks.

c. The baker sends all his bread to one store. If he can pack up to 15 loaves of bread in a box for shipping, what is the minimum number of boxes required to ship all the loaves baked in two weeks. Explain your reasoning.

$$\begin{array}{r} 6 \\ 15\overline{)102} \\ -90 \\ \hline 12 \end{array}$$

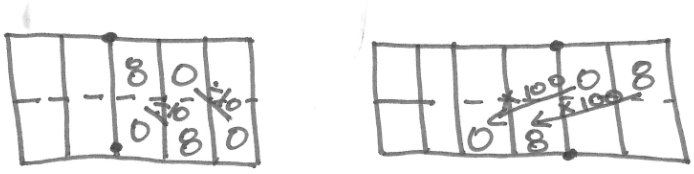
He needs 7 boxes to ship all the bread. The last box won't be full. It will only have 12 loaves in it.

d. The baker pays \$0.80 per pound for sugar and \$1.25 per pound for butter. Write an expression that shows how much the baker will spend if he buys 6 pounds of butter and 20 pounds of sugar.

$(6 \times \$1.25) + (20 \times \$0.80)$

e. Chocolate sprinkles cost as much per pound as sugar. Find $\frac{1}{10}$ the baker's total cost for 100 pounds of chocolate sprinkles. Explain the number of zeros and the placement of the decimal in your answer using a place value chart.

$\$0.80 \div 10 = \$0.08$



The baker pays \$8.00 for 100 lbs of sprinkles.