Directions: Answer the following question(s).

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**1** MGSE5.NBT.2 (DOK 2)

Michelle is solving a mathematical problem. The answer is 627. Which problem is she trying to solve?

A.  $.627 \times 10^2$

B.  $62.7 \times 10^1$

C.  $6,270 \div 10^2$

D.  $62.7 \div 10^1$

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Master ID:                    3037574 Revision:                    4

Correct:                          **B**

Rubric:              1 Point(s)

Standards:
    MGSE5.NBT.2

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**2** MGSE5.NBT.2 (DOK 2)

Write the rule for using exponents with powers of ten.

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Master ID:                    3037578 Revision:                    6

Rubric:              2 Point(s)

MGSE5.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     **2 Point Response:**

The student responds correctly by accuratey explaining the rule for using exponents with powers of 10.

Explanation:

As the power of the exponent increases by 1, the decimal point moves one place to the right.

The student may also state that multiplying by a positive power of ten makes the value of a number larger, and multiplying by a negative power of ten makes the value of a number smaller.

1     **1 Point Response:**

Not applicable for this question.

0     **0 Point Response:**

The student does not accurately state the rule for using exponents with powers of 10.

Standards:
    MGSE5.NBT.2

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**3** MGSE5.NBT.2 (DOK 2)

There are **5.28 x 10$^3$** feet in a mile. How many feet are there in 2 miles? Write your answer in exponent form and show your thinking.

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Master ID:                    3037575 Revision:                    5

Rubric:              2 Point(s)

MGSE5.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     **2 Point Response:**

The student responds correctly by stating that there are 10,560 feet in 2 miles, and provides an explanation/ evidence of work for why the answer is correct.

Explanation/Evidence of Work:

$5.28 \times 10^3$ = 5,280 feet

5,280 feet x 2 miles = 10,560

The student must write the answer in exponent form.

Possible responses include:

$1,056 \times 10^1$

$105.6 \times 10^2$

$10.56 \times 10^3$

1     **1 Point Response:**

The student responds correctly by stating that there are 10,560 feet in 2 miles, but provides an explanation/ evidence of work that is incomplete, unclear, or incorrect.

0     **0 Point Response:**

The student responds incorrectly, and the explanation/ evidence of work is incomplete, unclear, incorrect, or not included.

Standards:
    MGSE5.NBT.2

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Directions: Answer the following question(s).

4  MGSE5.NBT.2 (DOK 2)

Tim wants to ship two packages to his grandmother. The first package weighs .**327 x 10$^2$** pounds. The second package weighs **327 ÷ 10$^2$** pounds. He only has enough money to ship the package which weighs less. Which of the two packages should he ship? Show your work.

Master ID:               3037576 Revision:               6
Rubric:            2 Point(s)
MGSE5.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    **2 Point Response:**

The student correctly states that Tim needs to ship the package weighing $327 \div 10^2$ (Package 2), and provides a correct and complete explanation/evidence of work to show why.

Explanation/Evidence of Work:

Package 1: $.327 \times 10^2$ = 32.7 lbs.

Package 2: $327 \div 10^2$ = 3.27 lbs.

Package 2 weighs less than Package 1

3.27 < 32.7

1    **1 Point Response:**

The student correctly states that Tim needs to ship the package weighing $327 \div 10^2$ (Package 2), but provides an incomplete, unclear, or incorrect explanation/ evidence of work to show why.

0    **0 Point Response:**

The student responds incorrectly, and the explanation is incomplete, unclear, incorrect, or not included.
Standards:
     MGSE5.NBT.2

5  MGSE5.NBT.2 (DOK 2)

During science class, Ms. Roberts wrote on the board the mass of two items as an expression using a power of 10.

● The first object's mass = **2.31 x 10$^1$** grams.
● The second object's mass = **54.2 ÷ 10$^2$** grams.

Compare the two masses using >, <, or =.  Be sure to show your work.

Master ID:               3037577 Revision:               5
Rubric:            2 Point(s)
MGSE5.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    **2 Point Response:**

The student correctly states that $2.31 \times 10^1 > 54.2 \div 10^2$ and provides a correct and complete explanation/ evidence of work for why $2.31 \times 10^1$ is larger.

Explanation/Evidence of Work:

Mass of object 1: $2.31 \times 10^1$ = 23.1 grams

Mass of object 2: $54.2 \div 10^2$ = .542 grams

$2.31 \times 10^1 > 54.2 \div 10^2$

OR

$54.2 \div 10^2 < 2.31 \times 10^1$

1    **1 Point Response:**

The student correctly states that $2.31 \times 10^1 > 54.2 \div 10^2$, but provides an incomplete, unclear, or incorrect explanation/evidence of work for why $2.31 \times 10^1$ is larger.

0    **0 Point Response:**

The student incorrectly compares the mass of the 2 items, and the explanation/evidence of work is incomplete, unclear, incorrect, or not included.
Standards:
     MGSE5.NBT.2

Directions: Answer the following question(s).

6    MGSE5.NBT.2 (DOK 3)

Christopher believes that the solution to **3.4 x 10$^2$** is 3,400. Is Christopher correct? If not, how would you help him to obtain the correct product? Make sure you use words, pictures, or models to justify your thinking.

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Master ID:         3037573 Revision:      6
Rubric:        2 Point(s)

MGSE5.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    **2 Point Response:**

The student responds correctly by stating that Christopher is not correct, and provides a correct and complete explanation/ evidence of work through words, pictures, or models to state/show why he is not correct.

<u>Explanation/Evidence of Work</u>:

$3.4 \times 10^2 = 340$, not 3,400

The correct expression to yield 3,400 is $3.4 \times 10^3$ (multiply 3.4 by 1,000 instead of 100)

The student may choose to explain their thinking through a picture or model. Ensure that the student's picture or model accurately demonstrates $3.4 \times 10^2 = 340$.

1    **1 Point Response:**

The student responds correctly by stating that Christopher is not correct, but provides an incomplete, unclear, or incorrect explanation/evidence of work through words, pictures, or models to state/show why he is not correct.

0    **0 Point Response:**

The student responds incorrectly, and the explanation/ evidence of work through words, pictures, or models is incomplete, unclear, incorrect, or not included.

Standards:
    MGSE5.NBT.2

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7    MGSE5.NBT.7 (DOK 2)

Ms. Jones has $67.50 left from her paycheck. She paid a medical bill, spent $42.92 for gas, and gave her two daughters $20.00 allowance each. If her paycheck was $357.80, what is the cost of the medical bill?

A.    $103.69

B.    $113.69

C.    $207.38

D.    $227.38

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Master ID:         3037581 Revision:      6
Correct:              C
Standards:
    MGSE5.NBT.7

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8    MGSE5.NBT.7 (DOK 2)

Ten cars are setting out on a race. The total distance of the race is 378.5 miles. A driver needs to refuel after every 42.5 miles. About how many times will he or she need to refuel before finishing the race? Determine which student below is correct.

A.    April says about 4 times.

B.    Marcus says about 8 times.

C.    Luther says about 9 times.

D.    Brittany says about 10 times.

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Master ID:         3037583 Revision:      3
Correct:              D
Rubric:        1 Point(s)
Standards:
    MGSE5.NBT.7

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Directions: Answer the following question(s).

**9** MGSE5.NBT.7 (DOK 2)

Choose 3 of the following numbers from the box to make the following equation below true.

| 2.50 | 4.45 | 3.80 | 6.27 | 9.50 |

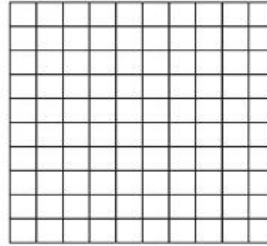[ ] x [ ] = [ ]

A.   3.80, 4.45, 6.27

B.   9.50, 2.50, 6.27

C.   2.50, 3.80, 9.50

D.   4.45, 6.27, 2.50

Master ID:          3037582 Revision:          5

Correct:                 **C**

Standards:
    MGSE5.NBT.7

**10** MGSE5.NBT.7 (DOK 2)

Solve the following equation using the model below.

**0.72 ÷ 0.6 = n**



Master ID:              3037595 Revision:          4

Rubric:          2 Point(s)

MGSE5.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.

2   **2 Point Response:**

The student responds correctly by accurately shading 0.72 on the hundredths grid, circling groups of .6, and then counting the number of groups and the amount remaining (1.2). The model accurately shows $0.72 \div .6$ = 1.2. The student also provides the correct answer to the equation $0.72 \div .6$ = 1.2.

1   **1 Point Response:**

The student correctly states the answer to the equation $0.72 \div .6$ = 1.2, but does not accurately show the expression $0.72 \div .6$ on the hundredths grid.

0   **0 Point Response:**

The student responds incorrectly, and does not accurately show the expression $0.72 \div .6$ on the hundredths grid.

Standards:
    MGSE5.NBT.7

Directions: Answer the following question(s).

11  MGSE5.NBT.7 (DOK 3)

Ann bought three boxes of cereal for $3.15 each. She paid with a ten dollar bill. Does she have enough money to buy a fourth box of cereal? Why or why not?

Master ID:            3037579 Revision:            4
Rubric:            2 Point(s)
MGSE5.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.

2    **2 Point Response:**

The student correctly states that Ann will not have enough money to buy a fourth box of cereal.  The student provides a correct and complete explanation/ evidence of work to show why she does not have enough money.

Explanation/Evidence of Work:

3 boxes of cereal = $3.15 (1 box) x 3 boxes= $9.45

Ann has $10.  She can pay for the 3 boxes of cereal, but not a fourth box.  An additional box of cereal would cost an additional $3.15, for a total of $12.60.

1    **1 Point Response:**

The student correctly states that Ann will not have enough money to buy a fourth box of cereal, but the student provides an incomplete, unclear, or incorrect explanation/evidence of work to show why she does not have enough money.

0    **0 Point Response:**

The student incorrectly states that Ann will have enough money to buy a fourth box of cereal, and the student provides an incomplete, unclear, or incorrect explanation/evidence of work to show why she does not have enough money.

Standards:
    MGSE5.NBT.7

12  MGSE5.NBT.7 (DOK 3)

Tracey wants to buy 4 birthday cards to give to her friends. Each card costs $2.69. If she uses a coupon for $.75 off the price of one card, how much will she pay altogether? Explain how you got your answer.

Master ID:            3037580 Revision:            6
Rubric:            2 Point(s)
MGSE5.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.

2    **2 Point Response:**

The student responds correctly with the answer of $10.01 and provides a correct and complete explanation/evidence of work for why $10.01 is correct.

Explanation/Evidence of Work:

$2.69 for 1 card x 4 cards = $10.76

$10.76 - $.75 coupon = $10.01

Tracey will pay $10.01 for the 4 cards

1    **1 Point Response:**

The student responds correctly with the answer of $10.01, but provides an incomplete, unclear, or incorrect explanation/evidence of work for why $10.01 is correct.

0    **0 Point Response:**

The student responds incorrectly and provides an explanation/evidence of work that is incomplete, unclear, incorrect, or not included.

Standards:
    MGSE5.NBT
    MGSE5.NBT.7