Fifth Grade Cluster 2 Assessment 1

This assessment assesses students' ability to:

- Fluently multiply up to 3-digit by 2-digit numbers using a variety of strategies to work towards more efficient strategies.
- Represent multi-digit multiplication using the area model
- Use multiple strategies to divide numbers up to 4-digit dividends by two digit divisors.
- Consider the context of the problems to determine what to do with the remainder.
- Write expressions that represent mathematical situations.
- Follow the order of operations to evaluate an expression.
- Explain expressions involving commutative, associative, and distributive properties.

NCSCOS 2017 Standards:

Standard	Questions
NC.5.OA.2	3, 6, 13, 16
NC.5.NBT.5	2, 4, 8, 9, 10, 12, 14
NC.5.NBT.6	1, 5, 7, 11, 15

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Question	Standard	Answer	Question	Standard	Answer
1	NC.5.NBT.6	C	9	NC.5.NBT.5	A
2	NC.5.NBT.5	D	10	NC.5.NBT.5	C
3	NC.5.OA.2	A	11	NC.5.NBT.6	1,392
4	NC.5.NBT.5	B	12	NC.5.NBT.5	27,412
5	NC.5.NBT.6	C	13	NC.5.OA.2	17
6	NC.5.OA.2	B	14	NC.5.NBT.5	Rubric
7	NC.5.NBT.6	C	15	NC.5.NBT.6	Rubric
8	NC.5.NBT.5	D	16	NC.5.OA.2	Rubric

Rubric Scoring Guide:

Question 14 (3 points):

Student receives 1 point for each of the following bullets:

- Student states that the value of 3 is 300, the value of the 5 is 50, and the value of the 4 is 40.
- Student uses the area model correctly to multiply 357 x 42
- Student states that the correct product is 14,994.

Question 15 (4 points):

Student receives 1 point for each of the following bullets:

- Student work demonstrates that 39 students participated in the taste test.
- Student work shows one way to solve the problem correctly.
- Student work show a second way to solve the problem correctly.
- Student uses arrays, area models, or equations to explain their answer.

Question 16 (3 points):

Student receives 1 point for including each of the following bullets in their response:

- Student states that Haven's statement is true because you can multiply any two numbers first in an expression when three numbers are being multiplied and it does not change the product (Note this focuses on the application of the associative property, but students do not need to state that it is the associative property).
- Student states that Mason's statement is not true because you can change the order of the whole numbers in a multiplication problem (commutative property), but you cannot change the numbers themselves and still have the same product.
- Student states that Devin's statement is true because you can decompose a number and multiply it in parts, and then add the products together (Note this focuses on the application of the distributive property, but students do not need to state that it is the distributive property).

Student Name: _____   Date: _____

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1. Anyta has several packs of stickers that she does not want anymore.

   - She has 84 animal stickers, 92 star stickers, 141 emoji stickers, and 27 rainbow stickers.
   - She wants to give an equal number of stickers to her 4 younger sisters.

   How many stickers should she give to each sister?

   A 76   B 85

   C 86   D 344

   (handwritten work: 84, 92, 176, +141, 317, 27, 344; long division 4)344, 86, 32, 24, 24, 0)

2. Tomas earns $28 each time he mows the lawn for a neighbor. Tomas mowed 39 lawns in the month of August. How much money did Tomas earn in August?

   A 67   B 390

   C 992   D 1,092

   (handwritten work: 39 ×28, 312, 780, 1092; area model 20|600|180, 8|240|72, 840, 252, 1092)

3. A runner training for a race ran 5 miles on Day 1.

   - On Day 2, she ran 3 miles more than on Day 1. *8 5+3*
   - On Day 3, she doubled the distance run on Day 2. *16 2(5+3)*

   Which expression represents the distance run on Day 3?

   A 2 x (5 + 3)   B 3 x (5 + 2)

   C 2 x 5 + 3   D 3 + 5 x 2

4. Mr. Hoover bought 15 bags of candy.

   - 8 of the bags had 27 pieces of candy each. *27×8= 216*
   - 7 of the bags had 132 pieces of candy each. *132×7 = 924*

   How many pieces of candy did Mr. Hoover buy? *1140*

   A 363   B 1,140

   C 1,272   D 2,196

   (handwritten area models: 20 7 / 8|160|56; 100 30 2 / 7|700|210|14)

5. A large math event was held for 5th grade students in North Carolina.

   - 54 different schools sent students to the event.
   - Each school sent 28 students.
   - Students were placed into teams with 12 students on each team.

   How many teams were formed?

   A 18,144   B 1,512

   C 126   D 7

   (handwritten work: area model 50 4 / 20|1000|80, 8|400|32, 1400, 112, +1512; long division 12)1512, 126, 12, 31, 24, 72, 72, 0)

6. Which expression has a value that is 9 less than 7 tripled?

21-9

A $(13 \times 7) - 9$ B $(3 \times 7) - 9$
C $(3 + 7) - 9$ D $3 \times 7 + 9$

7. Two hundred thirty fifth graders from Panthers Elementary School were attending a
   play at Charlotte Children's Theater. Each row has 28 seats. If the Panthers
   Elementary students use the fewest number of rows possible, in how many rows will
   they be seated?

230

A 14   B 10
C 9   D 8

8. Mrs. Patterson bought a case of pencils at the beginning of the school year.

- The case had 48 boxes with 24 pencils in each box. *1152*
- She wants to give 8 pencils to each of her 23 students to begin the year.

How many extra pencils will she have after she gives the pencils to her students?

*48
× 24
1152*

A 1,336   B 1,152
C 1,068   D 968

184

*1152
- 184
968*

9. 100 elementary schools are collecting can food items for a local charity.

- The schools have a goal to donate 40,000 cans.
- 57 schools have each collected 386 items. *22602*
- 43 schools have each collected 178 items. *7654 / 29656*

How many more cans need to be collected to reach the goal?

A 10,344   B 16,400
C 22,002   D 29,656

*40000 → 39999 10
- 29656   - 29656
10 344   10 344*

10. A new school needs to purchase Chromebooks for third through fifth grade classes
    and for the 2 computer labs.

- There are 24 third through fifth grade classes.
- The school plans to purchase 29 Chromebooks for each class.
- The school will also purchase 32 Chromebooks for each computer lab.

How many Chromebooks need to be purchased?

*24
×29*

*20 | 400 | 80
9 | 180 | 36
696*

*32
× 2
64*

A 696   B 728
C 760   D 1,464

*696
  64
760*

Gridded Response Questions:

11. The principal found 8,352 pencils in a storage room. If she wants to give an equal number to each of the 6 fifth grade classrooms, how many should each class receive?

Answer:

| 1,392 pencils |

$$
\begin{array}{r}
1\ 3\ 9\ 2 \\
6)\overline{8352} \\
\underline{6} \\
23 \\
\underline{18} \\
55 \\
\underline{54} \\
12\ -12 = 0
\end{array}
$$

12. A toy company makes 3,916 hula hoops every hour. The company makes seven times as many hula hoops in a whole day. How many hula hoops are made in one day? (For your answer, write 1 digit of the answer in each box).

Answer:

| 2 | 7 | 4 | 1 | 2 | hula hoops |

$$
\begin{array}{r}
3916 \\
\times 7
\end{array}
$$

3000	900	10	6
21000	6300	70	42

7

$$
\begin{array}{r}
21000 \\
6300 \\
70 \\
42 \\
\hline
27412
\end{array}
$$

13. What is the value of the expression shown below?

$$20 - 12 \div 4$$

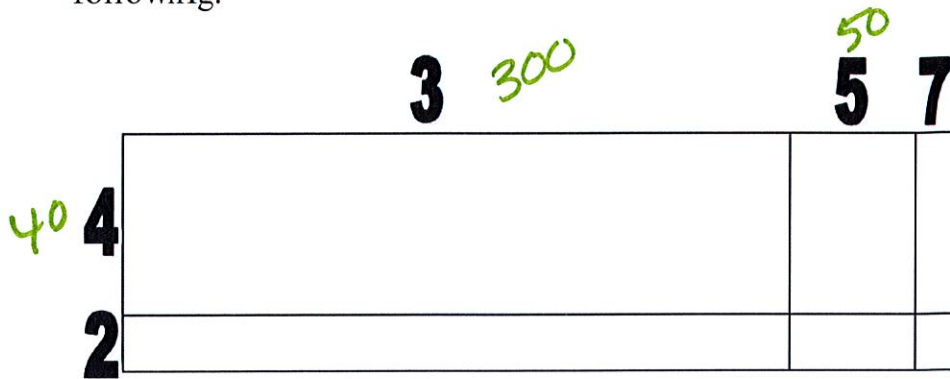Answer:

| 17 |

$$20 - 12 \div 4$$

$$20 - 3$$

$$17$$

Open Response Questions:

14. To multiply 357 x 42, Andrew draws the area model below. Explain each of the following:

- What is Andrew's error?   place value

- Show how Andrew should use the area model to find the product.

- What is the product?

$$
\begin{array}{r}
1\,2\,0\,0\,0 \\
2\,0\,0\,0 \\
2\,8\,0 \\
6\,0\,0 \\
1\,0\,0 \\
1\,4 \\
\hline
1\,4\,9\,9\,4
\end{array}
$$

15. A potato chip company paid students to participate in a taste test. Each student was paid $25. The potato chip company paid a total of $975. How many students participated in the taste test? Show two ways to solve this problem in the space below. Use arrays, area models, or equations to represent your thinking.

Way 1	Way 2
$$975$$ $$25\overline{)250} \quad 10$$ $$725 \quad 10$$ $$250$$ $$4\ 75 \quad 3$$ $$\ 75$$ $$400 \quad 10$$ $$250$$ $$150 \quad 5$$ $$125$$ $$25 \quad 1 \quad /\!/39$$ $$25$$ $$0$$	$$975$$ $$900 \div 25 = 36 \quad 75 \div 25 = 3$$ $$25 \times 4 = 100$$ $$4 \times 9 = 36$$ $$\begin{array}{r} 36 \\ + 3 \\ \hline 39 \end{array}$$

Open Response Question:

16. Three students made the statements below. Tell whether each statement is <u>true</u> or <u>not true</u>. Explain how you know <u>without</u> finding the value of each expression.

T <u>Haven</u>: **(46 x 100) x 89** is the same as **(46 x 89) x 100** When all are multiplied order doesn't matter

F <u>Mason</u>: **45 x 32** is the same as **35 x 42** Not the same 5×30 ≠ 5×40

T <u>Devin</u>: **23 x (30 + 9)** is the same as **(23 x 30) + (23 x 9)** true decomp!