NORTH CAROLINA DEPARTMENT OF PUBLIC INSTRUCTION

Pre-Formatted Reports: Benchmark Test Item Analysis - New Format

Data Selections

Institution(s): All School Types,All Schools
Benchmark Administration: 09/03/14, 2014-2015 Baseline Math Grade 4
Trend Profile: 2014-2015
Subject: Mathematics
Test Focus: Mathematics
Test Level: All Benchmark Test Levels
Test Category: District Benchmark
Grade: All Grade Levels
Enrollment: Total for 2014-2015

Number of questions: 37
Number of test-taking students: 1469

Student Responses

Question - Type	Correct		Incorrect		Most Common Mistake		Point Value	Points Achieved / Possible	P-Value/ Item Mean	Discrimination
	Rate	Value	Total Rate	Rate	Value					
1 - Multiple Choice	86%	D	14%	10%	B	1	1263 / 1469	0.84	0.26
2 - Multiple Choice	93%	A	7%	4%	C	1	1360 / 1469	0.91	0.35
3 - Multiple Choice	38%	A	62%	28%	B	1	558 / 1469	0.38	0.18
4 - Multiple Choice	66%	C	34%	19%	B	1	970 / 1469	0.65	0.48
5 - Multiple Choice	60%	B	40%	25%	A	1	887 / 1469	0.59	0.53
6 - Multiple Choice	38%	C	62%	45%	A	1	556 / 1469	0.37	0.40
7 - Multiple Choice	58%	A	42%	17%	C	1	855 / 1469	0.58	0.28
8 - Multiple Choice	52%	C	48%	41%	A	1	764 / 1469	0.51	0.40
9 - Multiple Choice	26%	C	74%	34%	B	1	379 / 1469	0.25	0.21
10 - Multiple Choice	21%	C	79%	32%	D	1	312 / 1469	0.21	0.27
11 - Multiple Choice	48%	D	52%	21%	B	1	700 / 1469	0.46	0.49
12 - Multiple Choice	41%	B	59%	26%	C	1	602 / 1469	0.40	0.30
13 - Multiple Choice	63%	B	37%	28%	A	1	927 / 1469	0.62	0.53
14 - Multiple Choice	72%	B	28%	20%	A	1	1052 / 1469	0.70	0.59
15 - Multiple Choice	92%	A	8%	3%	B	1	1349 / 1469	0.90	0.33
16 - Multiple Choice	58%	B	42%	21%	C	1	854 / 1469	0.57	0.41
17 - Multiple Choice	23%	A	77%	36%	C	1	336 / 1469	0.23	0.40
18 - Multiple Choice	46%	C	54%	27%	A	1	671 / 1469	0.44	0.55

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19 - Multiple Choice	53%	B	47%	16%	A	1	781 / 1469	0.53	0.35
20 - Multiple Choice	73%	D	27%	11%	A	1	1073 / 1469	0.71	0.40
21 - Multiple Choice	33%	D	67%	25%	A	1	482 / 1469	0.32	0.38
22 - Multiple Choice	51%	B	49%	22%	A	1	752 / 1469	0.50	0.51
23 - Multiple Choice	50%	C	50%	23%	A	1	735 / 1469	0.49	0.52
24 - Multiple Choice	70%	C	30%	13%	D	1	1021 / 1469	0.67	0.54
25 - Multiple Choice	67%	B	33%	13%	A	1	978 / 1469	0.64	0.54
26 - Multiple Choice	41%	A	59%	26%	D	1	603 / 1469	0.40	0.38
27 - Multiple Choice	87%	A	13%	5%	D	1	1278 / 1469	0.85	0.36
28 - Multiple Choice	47%	D	53%	37%	A	1	688 / 1469	0.45	0.42
29 - Multiple Choice	76%	C	24%	10%	A	1	1120 / 1469	0.73	0.49
30 - Multiple Choice	74%	C	26%	17%	A	1	1087 / 1469	0.72	0.43
31 - Multiple Choice	55%	B	45%	17%	D	1	813 / 1469	0.53	0.48
32 - Multiple Choice	63%	B	37%	19%	C	1	922 / 1469	0.60	0.40
33 - Multiple Choice	89%	B	11%	6%	A	1	1311 / 1469	0.86	0.39
34 - Multiple Choice	34%	A	66%	34%	C	1	496 / 1469	0.32	0.37
35 - Multiple Choice	57%	A	43%	23%	D	1	835 / 1469	0.55	0.59
36 - Multiple Choice	62%	C	38%	17%	B	1	905 / 1469	0.59	0.49
37 - Multiple Choice	89%	A	11%	4%	C	1	1306 / 1469	0.86	0.44
Summary	**58%**		**42%**				**854 / 1469**		

P-value represents an item's difficulty as evaluated by dividing the total number of correct responses by the total number of students tested. P-value is calculated for true/false, multiple choice, gridded or hot spot-single response items.

Item Mean is the average score for student responses to an open response question or to a multi-part question. Item Mean is calculated for inline response, matching or hot spot-multiple selections items.

Discrimination or Item Total Score Correlation is the correlation between the question score and the overall test score and indicates the extent to which success on an item corresponds to success on the test.

Standards Alignment to NC Standards

Question	ID	Standard Description
1 - Multiple Choice	**CCSS.Math.Content.3.NBT.A.2**	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

2 - Multiple Choice	**CCSS.Math.Content.3.NBT.A.3**	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.
3 - Multiple Choice	**CCSS.Math.Content.3.NBT.A.3**	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.
4 - Multiple Choice	**CCSS.Math.Content.3.MD.A.1**	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
5 - Multiple Choice	**CCSS.Math.Content.3.MD.A.1**	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
6 - Multiple Choice	**CCSS.Math.Content.3.MD.A.1**	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
7 - Multiple Choice	**CCSS.Math.Content.3.MD.A.2**	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. Excludes compound units such as cm³ and finding the geometric volume of a container. Excludes multiplicative comparison problems (problems involving notions of "times as much"; see Glossary, Table 2).
8 - Multiple Choice	**CCSS.Math.Content.3.MD.D.8**	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
9 - Multiple Choice	**CCSS.Math.Content.3.OA.B.5**	Apply properties of operations as strategies to multiply and divide. Students need not use formal terms for these properties. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)
10 - Multiple Choice	**CCSS.Math.Content.3.OA.B.5**	Apply properties of operations as strategies to multiply and divide. Students need not use formal terms for these properties. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)
11 - Multiple Choice	**CCSS.Math.Content.3.MD.A.2**	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. Excludes compound units such as cm³ and finding the geometric volume of a container. Excludes multiplicative comparison problems (problems involving notions of "times as much"; see Glossary, Table 2).
12 - Multiple Choice	**CCSS.Math.Content.3.MD.C.7**	Relate area to the operations of multiplication and addition.
13 - Multiple Choice	**CCSS.Math.Content.3.MD.C.7**	Relate area to the operations of multiplication and addition.
14 - Multiple Choice	**CCSS.Math.Content.3.NBT.A.3**	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and

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properties of operations.

15 - Multiple Choice CCSS.Math.Content.3.OA.A.1	Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7.
16 - Multiple Choice CCSS.Math.Content.3.OA.A.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
17 - Multiple Choice CCSS.Math.Content.3.NBT.A.2	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
18 - Multiple Choice CCSS.Math.Content.3.OA.D.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
19 - Multiple Choice CCSS.Math.Content.3.NBT.A.1	Use place value understanding to round whole numbers to the nearest 10 or 100.
20 - Multiple Choice CCSS.Math.Content.3.G.A.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
21 - Multiple Choice CCSS.Math.Content.3.G.A.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
22 - Multiple Choice CCSS.Math.Content.3.OA.D.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
23 - Multiple Choice CCSS.Math.Content.3.OA.D.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
24 - Multiple Choice CCSS.Math.Content.3.OA.D.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
25 - Multiple Choice CCSS.Math.Content.3.OA.A.2	Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are

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partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.

26 - Multiple Choice CCSS.Math.Content.3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

27 - Multiple Choice CCSS.Math.Content.3.OA.A.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.

28 - Multiple Choice CCSS.Math.Content.3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

29 - Multiple Choice CCSS.Math.Content.3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

30 - Multiple Choice CCSS.Math.Content.3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

31 - Multiple Choice CCSS.Math.Content.3.NF.A.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

32 - Multiple Choice CCSS.Math.Content.3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

33 - Multiple Choice CCSS.Math.Content.3.NF.A.1 Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.

34 - Multiple Choice CCSS.Math.Content.3.OA.B.5 Apply properties of operations as strategies to multiply and divide. Students need not use formal terms for these properties. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)

35 - Multiple Choice CCSS.Math.Content.3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

36 - Multiple Choice CCSS.Math.Content.3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

37 - Multiple Choice CCSS.Math.Content.3.NF.A.1 Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b.