

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

### Data Selections

**Institution(s):** Elementary School, All Schools  
**Benchmark Administration:** 03/24/15, 2014-2015 BA2 4th Math  
**Trend Profile:** 2014-2015  
**Subject:** Mathematics  
**Test Focus:** All Test Focuses  
**Test Level:** 04  
**Test Category:** District Benchmark  
**Grade:** 04  
**Enrollment:** Current

Number of questions: 40  
 Number of test-taking students: 1499

### 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	51%	B	49%	26%	D	1	765 / 1499	0.51	0.41
2 - Multiple Choice	80%	B	20%	11%	A	1	1193 / 1499	0.84	0.35
3 - Multiple Choice	79%	D	21%	11%	B	1	1181 / 1499	0.84	0.49
4 - Multiple Choice	39%	A	61%	37%	B	1	580 / 1499	0.40	0.32
5 - Multiple Choice	79%	C	21%	9%	B	1	1191 / 1499	0.85	0.40
6 - Multiple Choice	89%	B	11%	5%	D	1	1337 / 1499	0.92	0.34
7 - Multiple Choice	67%	C	33%	17%	A	1	1006 / 1499	0.66	0.33
8 - Multiple Choice	67%	C	33%	15%	A	1	1005 / 1499	0.74	0.57
9 - Multiple Choice	35%	D	65%	31%	A	1	523 / 1499	0.38	0.58
10 - Multiple Choice	39%	A	61%	32%	B	1	581 / 1499	0.41	0.23
11 - Multiple Choice	73%	D	27%	11%	B	1	1099 / 1499	0.78	0.42
12 - Multiple Choice	80%	B	20%	15%	A	1	1198 / 1499	0.81	0.26
13 - Multiple Choice	31%	C	69%	28%	B	1	466 / 1499	0.33	0.33
14 - Multiple Choice	38%	C	62%	31%	B	1	574 / 1499	0.40	0.31
15 - Multiple Choice	57%	D	43%	15%	A	1	854 / 1499	0.62	0.45
16 - Multiple Choice	68%	C	32%	27%	B	1	1019 /	0.72	0.39

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							1499		
17 - Multiple Choice	70%	D	30%	14%	A	1	1048 / 1499	0.75	0.41
18 - Multiple Choice	57%	B	43%	23%	A	1	850 / 1499	0.62	0.43
19 - Multiple Choice	89%	C	11%	4%	B	1	1340 / 1499	0.94	0.25
20 - Multiple Choice	66%	B	34%	24%	A	1	996 / 1499	0.72	0.54
21 - Multiple Choice	66%	D	34%	14%	B	1	984 / 1499	0.72	0.40
22 - Multiple Choice	72%	D	28%	13%	B	1	1086 / 1499	0.80	0.35
23 - Multiple Choice	52%	A	48%	30%	D	1	786 / 1499	0.53	0.32
24 - Multiple Choice	47%	C	53%	22%	A	1	711 / 1499	0.54	0.32
25 - Multiple Choice	58%	B	42%	16%	A	1	862 / 1499	0.63	0.63
26 - Multiple Choice	50%	C	50%	33%	A	1	752 / 1499	0.54	0.18
27 - Multiple Choice	44%	C	56%	21%	B	1	654 / 1499	0.50	0.50
28 - Multiple Choice	60%	C	40%	27%	A	1	896 / 1499	0.69	0.44
29 - Multiple Choice	43%	B	57%	32%	A	1	643 / 1499	0.49	0.41
30 - Multiple Choice	50%	A	50%	21%	D	1	751 / 1499	0.54	0.41
31 - Multiple Choice	57%	D	43%	18%	A	1	859 / 1499	0.61	0.43
32 - Multiple Choice	67%	D	33%	12%	A	1	1008 / 1499	0.71	0.51
33 - Multiple Choice	53%	D	47%	22%	B	1	795 / 1499	0.57	0.46
34 - Multiple Choice	41%	C	59%	21%	B	1	613 / 1499	0.43	0.45
35 - Multiple Choice	44%	D	56%	24%	C	1	666 / 1499	0.50	0.32
36 - Multiple Choice	83%	A	17%	7%	D	1	1249 / 1499	0.86	0.31
37 - Multiple Choice	30%	D	70%	50%	A	1	455 / 1499	0.30	0.23
38 - Multiple Choice	31%	C	69%	44%	D	1	468 / 1499	0.33	0.26
39 - Multiple Choice	41%	B	59%	29%	A	1	619 / 1499	0.46	0.54
40 - Multiple Choice	36%	A	64%	40%	B	1	547 / 1499	0.42	0.53
<b>Summary</b>	<b>57%</b>		<b>43%</b>				<b>855 / 1499</b>		

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 Common Core State Standards**

Question	ID	Standard Description
<b>1 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NBT.A.1</b>	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.
<b>2 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NBT.A.3</b>	Use place value understanding to round multi-digit whole numbers to any place.
<b>3 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NBT.B.4</b>	Fluently add and subtract multi-digit whole numbers using the standard algorithm.
<b>4 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NBT.A.1</b>	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.
<b>5 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NBT.B.5</b>	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
<b>6 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NBT.B.6</b>	Find whole-number quotients and remainders with up to four-digit dividends and one-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.
<b>7 - Multiple Choice</b>	<b>CCSS.Math.Content.4.OA.B.4</b>	Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.
<b>8 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NF.B.3</b>	Understand a fraction $a/b$ with $a > 1$ as a sum of fractions $1/b$ .
<b>9 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NF.A.1</b>	Explain why a fraction $a/b$ is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
<b>10 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NF.A.1</b>	Explain why a fraction $a/b$ is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
<b>11 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NF.A.2</b>	Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using a visual fraction model.
<b>12 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NF.B.4</b>	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
<b>13 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NF.B.4</b>	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
<b>14 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NF.B.3</b>	Understand a fraction $a/b$ with $a > 1$ as a sum of fractions $1/b$ .
<b>15 - Multiple Choice</b>	<b>CCSS.Math.Content.4.NF.C.5</b>	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade. For example, express $3/10$ as $30/100$ , and add $3/10 + 4/100 = 34/100$ .

- 16 - Multiple Choice CCSS.Math.Content.4.NF.C.6** Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
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- 17 - Multiple Choice CCSS.Math.Content.4.NF.C.7** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual model.
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- 18 - Multiple Choice CCSS.Math.Content.4.G.A.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
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- 19 - Multiple Choice CCSS.Math.Content.4.G.A.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
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- 20 - Multiple Choice CCSS.Math.Content.4.NF.C.6** Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
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- 21 - Multiple Choice CCSS.Math.Content.4.G.A.2** Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
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- 22 - Multiple Choice CCSS.Math.Content.4.G.A.2** Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
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- 23 - Multiple Choice CCSS.Math.Content.4.G.A.3** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
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- 24 - Multiple Choice CCSS.Math.Content.4.G.A.3** Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
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- 25 - Multiple Choice CCSS.Math.Content.4.NF.A.2** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as  $1/2$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.
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- 26 - Multiple Choice CCSS.Math.Content.4.NF.C.7** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual model.
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- 27 - Multiple Choice CCSS.Math.Content.4.NF.B.3** Understand a fraction  $a/b$  with  $a > 1$  as a sum of fractions  $1/b$ .
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- 28 - Multiple Choice CCSS.Math.Content.4.MD.C.5** Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
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- 29 - Multiple Choice CCSS.Math.Content.4.G.A.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
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- 30 - Multiple Choice CCSS.Math.Content.4.NBT.A.3** Use place value understanding to round multi-digit whole numbers to any place.
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- 31 - Multiple Choice CCSS.Math.Content.4.NBT.B.6** Find whole-number quotients and remainders with up to four-digit dividends and one-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.
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- 32 - Multiple Choice CCSS.Math.Content.4.NBT.B.5** Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
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- 33 - Multiple Choice CCSS.Math.Content.4.OA.A.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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.
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- 34 - Multiple Choice CCSS.Math.Content.4.NF.C.6** Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as  $\frac{62}{100}$ ; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
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- 35 - Multiple Choice CCSS.Math.Content.4.OA.A.3** Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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.
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- 36 - Multiple Choice CCSS.Math.Content.4.NF.C.6** Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as  $\frac{62}{100}$ ; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
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- 37 - Multiple Choice CCSS.Math.Content.4.NBT.B.6** Find whole-number quotients and remainders with up to four-digit dividends and one-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.
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- 38 - Multiple Choice CCSS.Math.Content.4.MD.B.4** Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.
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- 39 - Multiple Choice CCSS.Math.Content.4.NF.A.1** Explain why a fraction  $\frac{a}{b}$  is equivalent to a fraction  $\frac{n \times a}{n \times b}$  by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
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- 40 - Multiple Choice CCSS.Math.Content.4.OA.C.5** Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.
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