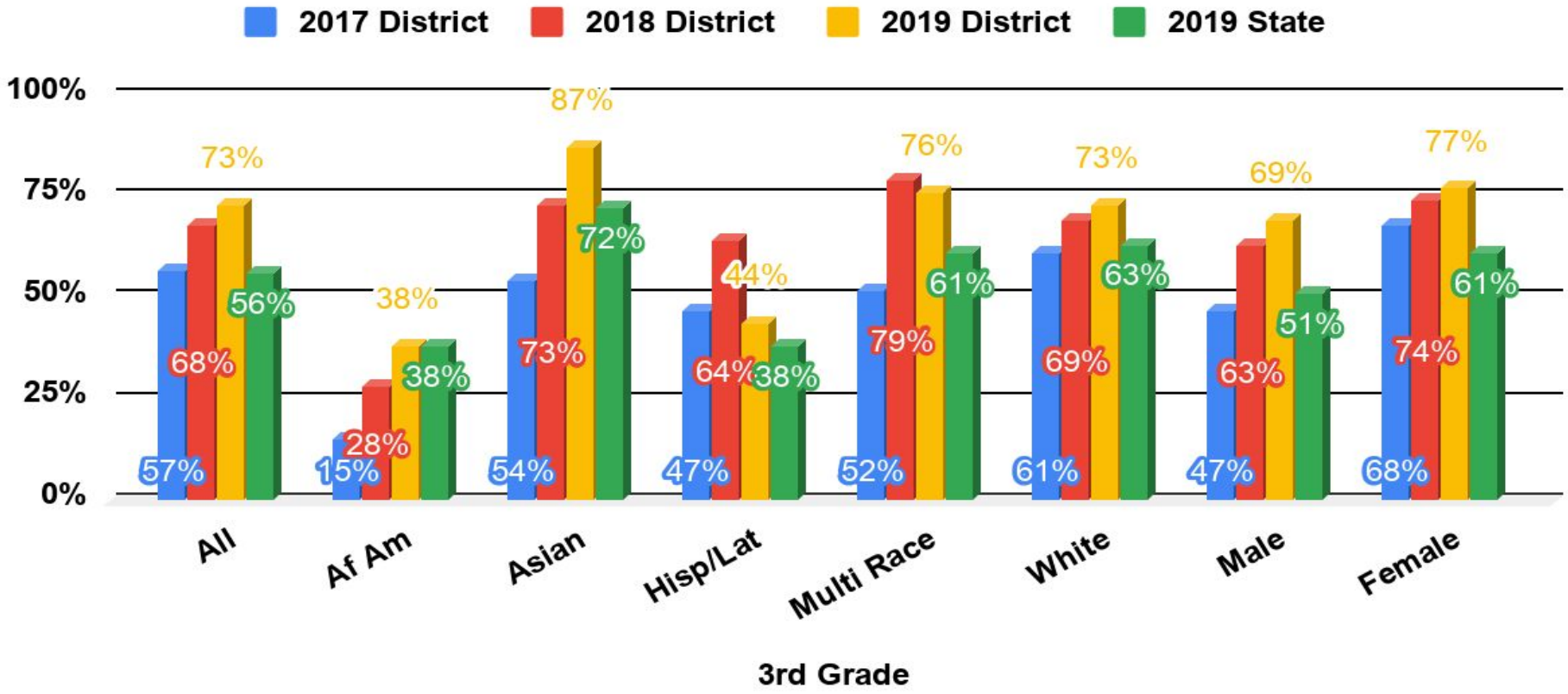
2019 Arlington Public School MCAS Report (Standard and Item Analysis)

School Committee Presentation
Thursday March 12, 2020
Presenter: Dr. Roderick MacNeal, Jr.

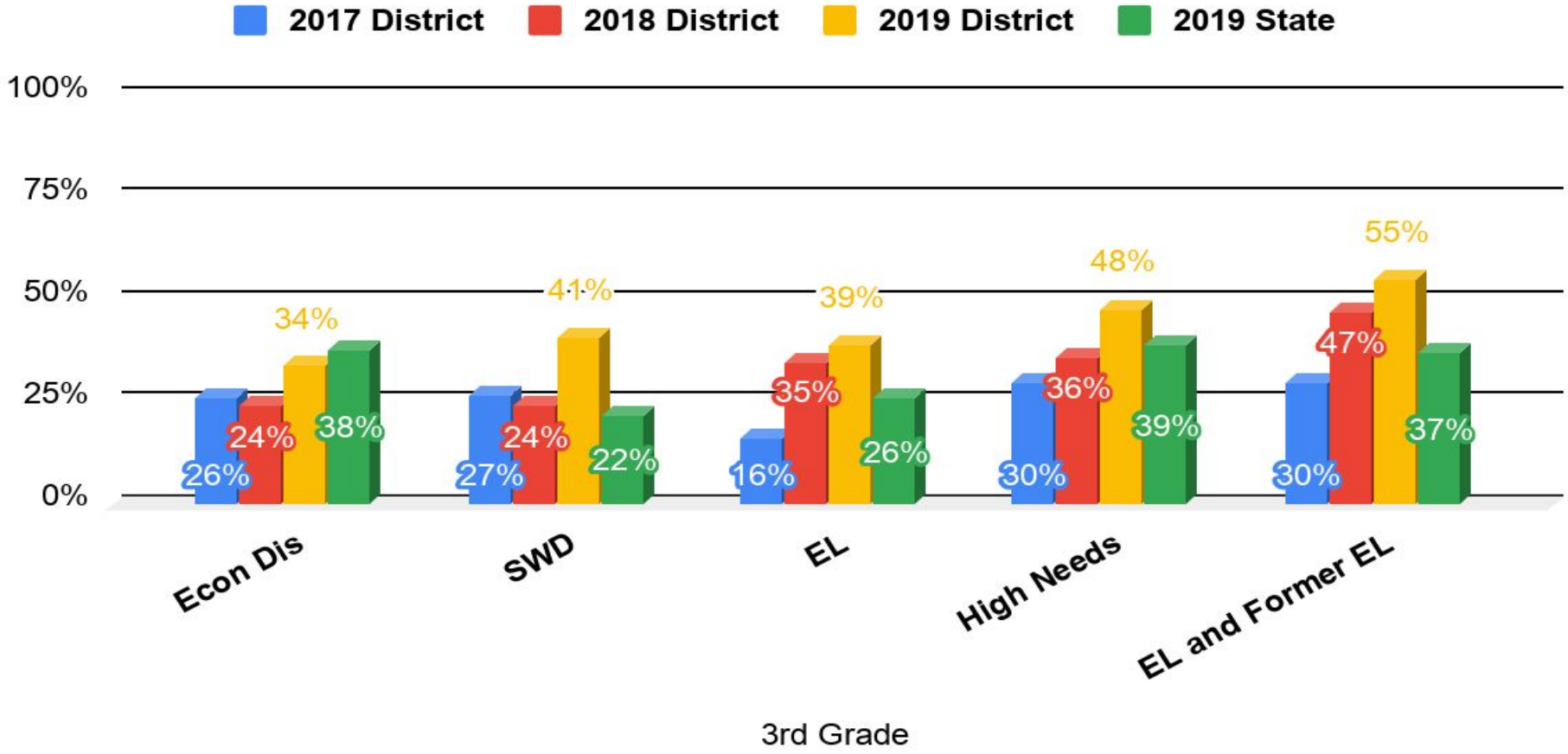
Objectives

- Display the various charts used to conduct an item and standard analysis
- Discuss how the release items can be used for practice and review
- Review the test design for 2020 MCAS
- Comments/Questions

3rd Grade ELA Race/Ethnicity/Gender Meeting/Exceeding Results



3rd Grade ELA Subgroup Meeting/Exceeding Results



3rd Grade ELA by Standards (All Students)

	Possible Points	District % Possible Points	State % Possible Points	District/State Diff
English Language Arts				
All items	44	64%	57%	7
Question Type				
Constructed Response	3	40%	40%	0
Essay	14	42%	39%	3
Selected Response	27	78%	69%	9
Domain / Cluster				
Language	**9**	**57%**	**53%**	**4**
Conventions of Standard English	8	56%	51%	5
Vocabulary Acquisition and Use	1	64%	63%	1
Reading	**27**	**74%**	**66%**	**8**
Craft and Structure	5	73%	60%	13
Integration of Knowledge and Ideas	1	61%	48%	13
Key Ideas and Details	21	75%	68%	7
Writing	**8**	**37%**	**34%**	**3**
Production and Distribution of Writing	8	37%	34%	3

3rd Grade ELA by Standards (Black/African American)

	Possible Points	District % Possible Points	State % Possible Points	District/State Diff
English Language Arts				
All items	44	48%	50%	-2
Question Type				
Constructed Response	3	29%	36%	-7
Essay	14	28%	34%	-6
Selected Response	27	61%	60%	1
Domain / Cluster				
Language	**9**	**41%**	**46%**	**-5**
Conventions of Standard English	8	41%	45%	-4
Vocabulary Acquisition and Use	1	47%	55%	-8
Reading	**27**	**57%**	**58%**	**-1**
Craft and Structure	5	59%	50%	9
Integration of Knowledge and Ideas	1	40%	36%	4
Key Ideas and Details	21	57%	60%	-3
Writing	**8**	**26%**	**30%**	**-4**
Production and Distribution of Writing	8	26%	30%	-4

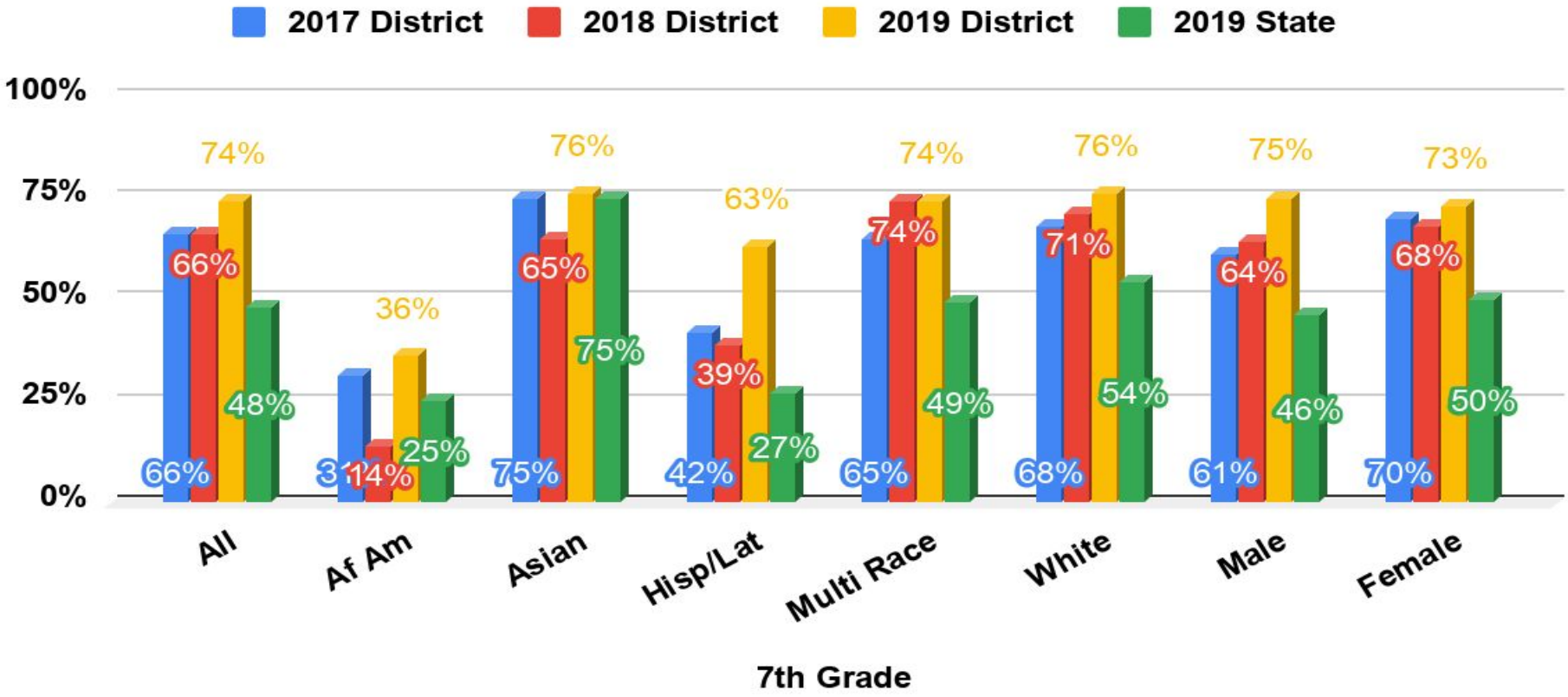
3rd Grade ELA by Standards (Hispanic/Latino Students)

	Possible Points	District % Possible Points	State % Possible Points	District/State Diff
English Language Arts				
All items	44	53%	50%	3
Question Type				
Constructed Response	3	21%	36%	-15
Essay	14	31%	34%	-3
Selected Response	27	67%	60%	7
Domain / Cluster				
Language	**9**	**45%**	**46%**	**-1**
Conventions of Standard English	8	44%	45%	-1
Vocabulary Acquisition and Use	1	56%	54%	2
Reading	**27**	**62%**	**57%**	**5**
Craft and Structure	5	62%	49%	13
Integration of Knowledge and Ideas	1	40%	38%	2
Key Ideas and Details	21	63%	60%	3
Writing	**8**	**28%**	**30%**	**-2**
Production and Distribution of Writing	8	28%	30%	-2

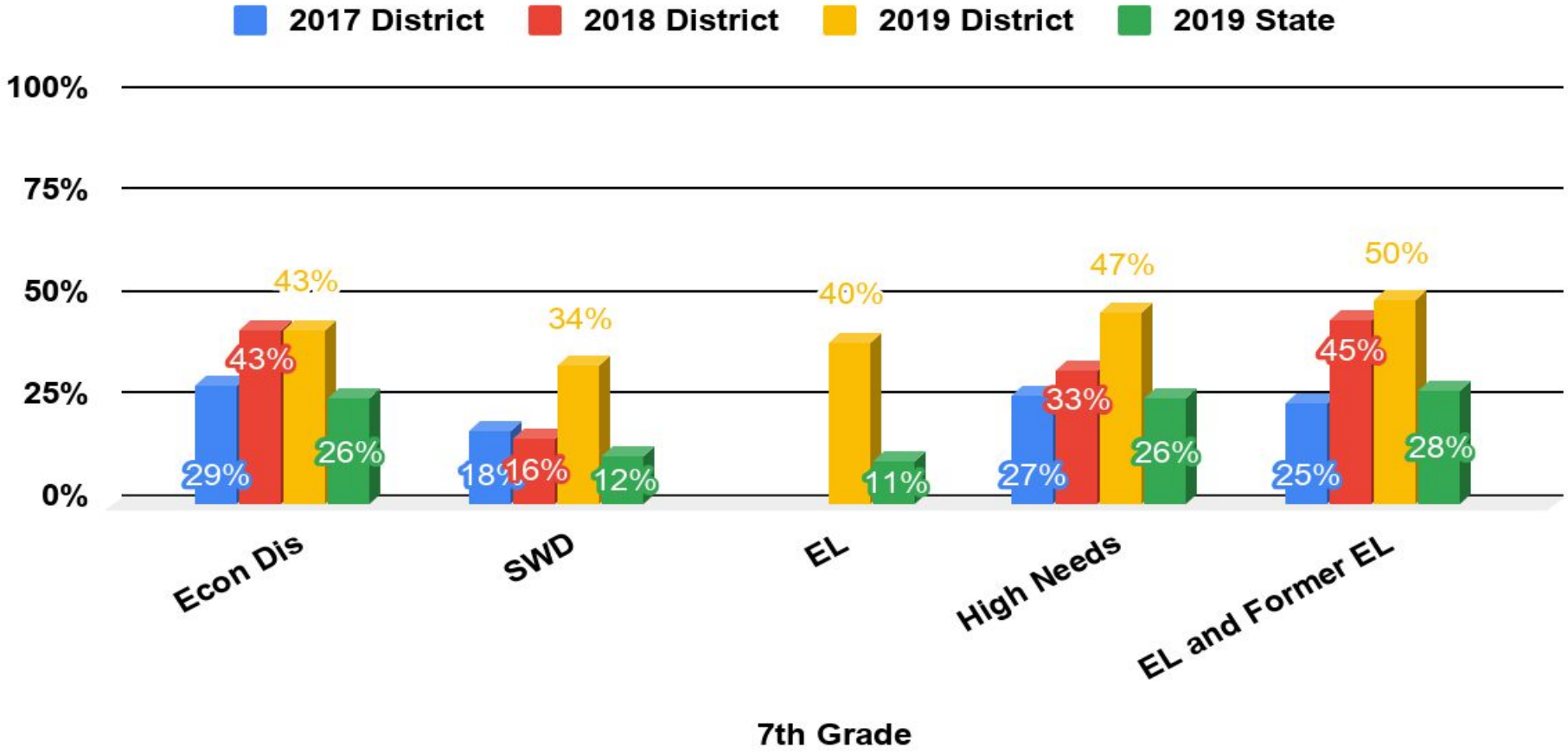
3rd Grade ELA by Standards (EL students)

	Possible Points	District % Possible Points	State % Possible Points	District/State Diff
English Language Arts				
All items	44	51%	45%	6
Question Type				
Constructed Response	3	29%	34%	-5
Essay	14	31%	30%	1
Selected Response	27	64%	54%	10
Domain / Cluster				
Language	**9**	**47%**	**42%**	**5**
Conventions of Standard English	8	47%	41%	6
Vocabulary Acquisition and Use	1	44%	45%	-1
Reading	**27**	**60%**	**51%**	**9**
Craft and Structure	5	51%	41%	10
Integration of Knowledge and Ideas	1	39%	32%	7
Key Ideas and Details	21	63%	54%	9
Writing	**8**	**26%**	**26%**	**0**
Production and Distribution of Writing	8	26%	26%	0

7th Grade Math Race/Ethnicity/Gender Meeting/Exceeding Results



7th Grade Math Subgroup Meeting/Exceeding Results



7th Grade Math Item Analysis (Item Analysis)

Item No.	Item Type	Reporting Category	Standard	Item Description	Possible Points	School	District	State	School-State Diff.
1	SR	RP	7.RP.A.1	Determine the unit rate using fractions and whole numbers to solve a real-world problem.	1	90%	89%	76%	14
2	SA	NS	7.NS.A.2	Determine the product of an expression using order of operations.	1	80%	79%	62%	18
3	SR	SP	7.SP.A.2	Use a given two-way table containing data from two populations to determine the probability of an event.	1	74%	72%	58%	16
4	CR	RP	7.RP.A.2	Determine whether the graphed relationship is proportional; use rate and ratio language to analyze the relationship; and write an equation to describe a proportional relationship.	4	81%	80%	62%	19
5	SR	NS	7.NS.A.2	Determine the quotient when dividing a decimal number by a decimal number that has a value less than one.	1	75%	74%	55%	20
6	SR	NS	7.NS.A.3	Use the four operations to determine the value of a given multi-step expression containing fractions.	1	55%	55%	47%	8
7	SR	NS	7.NS.A.3	Compute with rational numbers representing temperature changes in a real-world context.	1	65%	65%	45%	20
8	SR	GE	7.G.A.3	Determine which two-dimensional figure results from slicing a three-dimensional figure in a given way.	1	75%	75%	73%	2
9	SA	EE	7.EE.B.3	Solve a multi-step real-life problem posed with a positive whole number, percent, and a fraction.	1	44%	43%	30%	14
10	SA	NS	7.NS.A.1	Determine the sum of two numbers expressed as absolute values.	1	80%	79%	58%	22
11	SR	SP	7.SP.A.1	Determine which sampling strategy will result in a representative sample of a population.	1	50%	50%	35%	15
12	CR	EE	7.EE.B.4	Given a real-world context, create an equation and an inequality with variables, and use them to solve problems.	4	70%	70%	55%	15
13	SA	GE	7.G.A.2	Determine if a unique triangle can be formed using a given set of conditions.	1	33%	33%	21%	12
14	SR	SP	7.SP.B.3	Create correct comparison statements about mean and mean absolute deviation based on line plots.	1	60%	59%	38%	22
15	SA	SP	7.SP.C.8	Determine the probability of a given compound event by using a tree diagram.	1	51%	51%	26%	25
16	SR	EE	7.EE.A.2	Determine an equivalent expression to a given expression representing a real-world context.	1	53%	52%	29%	24
17	SR	GE	7.G.B.4	Determine the circumference and the area of a given circle.	2	77%	76%	61%	16
18	SA	EE	7.EE.A.1	Use the distributive property to simplify a linear expression.	1	36%	36%	25%	11
19	SR	SP	7.SP.C.7	Using a uniform probability model, determine the probabilities of events expressed as decimals, fractions, or percents.	1	64%	64%	34%	30
20	SR	RP	7.RP.A.3	Solve a multi-step percent problem using proportional relationships involving markdowns.	1	49%	48%	32%	17

7th Grade Math Item Analysis (Description of the Items)

SUBJECT: Math | GRADE: Grade 7 | VIEW: All Items

Displaying 1 group(s) matching your criteria

All Items

Item Identifier	Year (1)	Item Number (2)	Item Type	Item Description	Reporting Category
MA302315	2019	1	Selected-Response	Determine the unit rate using fractions and whole numbers to solve a real-world problem.	Ratios and Proportiona…
MA306606	2019	2	Short-Answer	Determine the product of an expression using order of operations.	The Number System
MA298218	2019	3	Selected-Response	Use a given two-way table containing data from two populations to determine the probability of an event.	Statistics and Probability
MA302339	2019	4	Constructed-Response	Determine whether the graphed relationship is proportional; use rate and ratio language to analyze the relationship; and write an equation to describe a proportional relationship.	Ratios and Proportiona…
MA272149	2019	5	Selected-Response	Determine the quotient when dividing a decimal number by a decimal number that has a value less than one.	The Number System
MA311091	2019	6	Selected-Response	Use the four operations to determine the value of a given multi-step expression containing fractions.	The Number System
MA703873828	2019	7	Selected-Response	Compute with rational numbers representing temperature changes in a real-world context.	The Number System

7th Grade Math released item

A principal surveyed 200 seventh-grade students to find out whether they prefer to participate in fall sports or spring sports. This table shows the results.

Sports Survey

Season	Boys	Girls
fall	63	45
spring	37	55

Exhibits

Based on the table, what is the probability that a seventh-grade student chosen at random would prefer to participate in spring sports rather than fall sports?

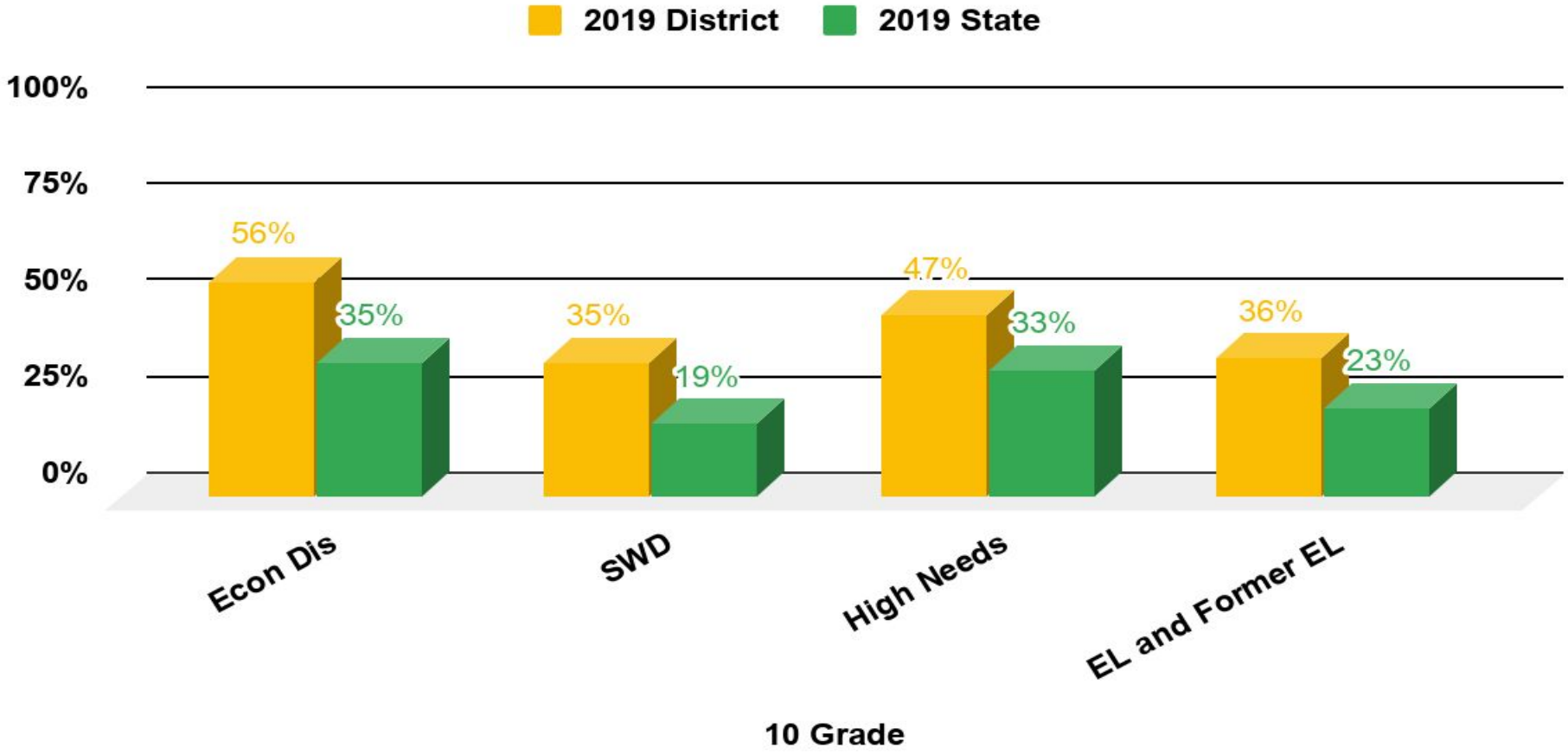
- A. 37%
- B. 46%
- C. 54%
- D. 92%

Reset | Correct Response | Score Response | Close

8th Grade Math Item Analysis (Black/African American Students)

Item Information						% Possible Points			
Item No.	Item Type	Reporting Category	Standard	Item Description	Possible Points	School	District	State	School-State Diff.
1	SA	NSEE	8.EE.A.4	Convert a number given in scientific notation to a number in standard notation.	1	61%	63%	56%	5
2	SR	NSEE	8.NS.A.2	Identify a point on a number line that corresponds to the approximate location of an irrational number.	1	50%	53%	48%	2
3	SR	NSEE	8.EE.A.1	Use the properties of integer exponents to determine an expression equivalent to a given expression.	1	56%	53%	53%	3
4	SR	NSEE	8.EE.C.7	Determine the solution to a linear equation by using the distributive property.	1	33%	32%	33%	0
5	CR	FN	8.F.A.2	Compare properties of two different functions, representing real-world contexts, graphically and verbally; write equations that represent functions.	4	49%	47%	47%	2
6	SR	NSEE	8.NS.A.2	Determine the location of an irrational number between two rational numbers on a number line.	1	39%	42%	49%	-10
7	SR	NSEE	8.EE.A.3	Determine how many times greater one number is than another when both are expressed as single digits multiplied by integer powers of ten.	1	11%	16%	36%	-25
8	SA	NSEE	8.EE.A.1	Apply the properties of integer exponents to simplify a given expression.	1	0%	0%	15%	-15
9	SR	NSEE	8.EE.C.7	Solve a pair of linear equations expressed as verbal descriptions.	1	44%	47%	59%	-15
10	SR	GE	8.G.A.5	Determine the measure of an unknown angle in a figure containing two parallel lines cut by a transversal.	1	89%	89%	70%	19
11	SA	GE	8.G.B.7	Choose side lengths to create a right triangle.	1	33%	37%	54%	-21
12	SR	GE	8.G.A.3	Determine the coordinates of the image of a vertex of a polygon after the polygon has been reflected over the x-axis.	1	78%	79%	73%	5
13	SA	GE	8.G.A.5	Given parallel lines cut by a transversal, select all angles that must be congruent to one of the angles.	1	83%	84%	54%	29
14	SR	NSEE	8.EE.B.5	Interpret and compare proportional relationships on a graph, and identify an equation to represent the relationship.	1	50%	47%	44%	6
15	CR	SP	8.SP.A.4	Interpret a two-way table to answer statistical questions about categorical data collected from the same subjects.	4	25%	25%	26%	-1
16	SA	GE	8.G.A.3	Transform a two-dimensional figure on a coordinate plane.	1	61%	58%	58%	3
17	SR	GE	8.G.C.9	Determine the volume of a sphere.	1	39%	37%	47%	-8
18	SR	FN	8.F.B.5	Analyze a graph of a functional relationship to determine if different statements are true; then select another graph that exhibits a different qualitative feature of the functional relationship.	2	28%	26%	21%	7
19	SR	GE	8.G.B.8	Determine the length of a side of a right triangle graphed on the coordinate plane by using the Pythagorean Theorem.	1	22%	21%	28%	-6
20	SR	GE	8.G.A.4	Determine which measurements belong to a triangle similar to a given triangle.	1	61%	58%	45%	16
21	SR	SP	8.SP.A.1	Determine which scatter plot matches a given description that includes information about linearity and direction of correlation.	1	94%	95%	81%	13

10th Grade Math Subgroup Meeting/Exceeding Results



10 Grade Math Item Analysis (SWD)

Item No.	Item Type	Reporting Category	Standard	Item Description	Possible Points	School	District	State	School-State Diff.
1	SR	AF	AI.A-APR.A.1 MII.A-APR.A.1	Multiply two polynomial expressions.	1	80%	71%	74%	6
2	SR	AF	AI.F-IF.A.2 MI.F-IF.A.2	Evaluate a quadratic function for different input values.	1	31%	31%	28%	3
3	SR	GE	GEO.G-C.A.2 MII.G-C.A.2	Use an inscribed right triangle to determine the circumference of a circle.	1	69%	60%	39%	30
4	SR	GE	GEO.G-CO.B.6 MI.G-CO.B.6	Identify transformations that would produce a congruent figure.	1	40%	36%	31%	9
5	SA	AF	AI.A-REI.C.6 MI.A-REI.C.6	Solve for one variable in a system of linear equations algebraically.	1	44%	44%	28%	16
6	SR	AF	AI.A-SSE.A.2 MII.A-SSE.A.2	Factor a trinomial expression.	1	51%	47%	64%	-13
7	SA	AF	AI.A-REI.D.12 MI.A-REI.D.12	Graph the solution set of a linear inequality in two variables.	1	31%	31%	16%	15
8	SR	GE	GEO.G-GPE.B.5 MI.G-GPE.B.5	Identify an equation of a line perpendicular to a given line.	1	33%	33%	30%	3
9	CR	NQ	AI.N-RN.A.2 MII.N-RN.A.2	Evaluate expressions involving radicals and rational exponents.	4	26%	23%	20%	6
10	SR	SP	AI.S-ID.A.2 MI.S-ID.A.2	Compare measures of center and spread of two data sets.	1	47%	45%	42%	5
11	SR	GE	GEO.G-GPE.B.6 MII.G-GPE.B.6	Find the midpoint of a line segment graphed on a coordinate plane.	1	62%	60%	40%	22
12	SA	SP	GEO.S-CP.B.6 MII.S-CP.B.6	Calculate conditional probabilities of real-world events from a description.	2	50%	48%	32%	18
13	SR	AF	AI.A-REI.B.4 MII.A-REI.B.4	Find the solutions of a quadratic equation in one variable.	1	47%	45%	38%	9
14	CR	SP	AI.S-ID.A.2 MI.S-ID.A.2	Interpret data in a data display and compare the measures of center of the data sets.	4	38%	35%	26%	12
15	SR	NQ	AI.N-Q.A.2 MI.N-Q.A.2	Estimate the solution of a real-world problem using units.	1	47%	42%	30%	17
16	SR	GE	GEO.G-SRT.A.3 MII.G-SRT.A.3	Use similarity criteria to identify and name similar triangles.	2	64%	57%	42%	22
17	SR	AF	AI.A-SSE.B.3 MII.A-SSE.B.3	Factor a quadratic trinomial expression.	1	20%	16%	28%	-8
18	SA	GE	GEO.G-SRT.A.1 MII.G-SRT.A.1	Graph a figure on a coordinate plane after a dilation.	1	49%	42%	21%	28
19	SR	NQ	AI.N-RN.B.3 MII.N-RN.B.3	Consider and complete statements about operations with rational and irrational numbers.	2	40%	36%	28%	12

8th Grade Science by Standards (All Students)

	Possible Points	District % Possible Points	State % Possible Points	District/State Diff
Science and Technology/Engineering				
All items	54	68%	54%	14
Question Type				
Constructed Response	16	57%	42%	15
Selected Response	38	73%	59%	14
Domain / Cluster				
Earth and Space Sciences	**14**	**67%**	**54%**	**13**
Earth and Human Activity	1	62%	54%	8
Earth's Place in the Universe	7	74%	62%	12
Earth's Systems	6	59%	45%	14
Life Science	**14**	**67%**	**54%**	**13**
Biological Evolution: Unity and Diversity	5	46%	31%	15
Ecosystems: Interactions, Energy, and Dynamics	3	86%	79%	7
From Molecules to Organisms: Structures and Processes	4	75%	62%	13
Heredity: Inheritance and Variation of Traits	2	77%	54%	23
Physical Science	**13**	**69%**	**53%**	**16**
Energy	3	75%	56%	19
Matter and Its Interactions	7	64%	51%	13
Motion and Stability: Forces and Interactions	2	76%	60%	16
Waves and Their Applications in Technologies for Information Transfer	1	62%	39%	23
Technology/Engineering	**13**	**69%**	**55%**	**14**
Engineering Design	2	71%	58%	13
Materials, Tools, and Manufacturing	5	69%	57%	12
Technological Systems	6	70%	53%	17

2020 ELA Test Design

Question Type		Total Points	Grade Levels
Selected Response (SR)	Multiple Choice *Students select one correct answer from four answer options.*	1	Grades 3–8
	Multiple Choice – Two-Part *These items are two-part questions. Students select one correct answer for each part of the question.*	2	Grades 3–8
	Technology Enhanced *Students taking the computer-based test answer questions using technology such as drag-and-drop.*	2	Grades 3–8
Constructed Response (CR)	Short Response *Students construct a short written response.*	3	Grades 3–4
Essay (ES)	Text-Based Essay *Students write an essay in response to text(s) they have read.*	7	Grades 3–5
		8	Grades 6–8

Distribution of Points for 2020 Assessment

Grade	Number of 1-Point Questions (SR)	Number of 2-Point Questions (SR)	Number of Constructed Responses (CR)	Number of Essays (ES)	Total Points on Test
3–4	24–28	3–5	1	1	44
5	24–28	3–5	0	2	48
6–8	24–28	3–5	0	2	50

Question/Comments