

Missouri Grade 3 Mathematics Test Blueprint and Test Design—2016 Core Administration

Mathematics Core/Common Items by Content									Estimated Timing in Minutes Per Form			
Mathematics Item Types		# of Core Items	Points Per Item	# of Raw Points	Weight	# of Weighted Points	Percent of Total	Core	Core Back Up	FT or EB	Total Time	
Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	MC/MS	3	1	3	1	3	7%	4.5	3	4.5	33
		ASCR	1	1	1	1	1	2%	2			
	Understand properties of multiplication and the relationship between multiplication and division.	MC/MS	2	1	2	1	2	5%	3			
		ASCR	2	1	2	1	2	5%	4			
	Multiply and divide within 100.	MC/MS	2	1	2	1	2	5%	3			
		ASCR	1	1	1	1	1	2%	2			
	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	MC/MS	2	1	2	1	2	5%	3			
ASCR		2	1	2	1	2	5%	4				
Total		15		15		15	36%	25.5				
Numbers and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	MC/MS	3	1	3	1	3	7%	4.5	1.5	1.5	13.5
		ASCR	3	1	3	1	3	7%	6			
		Total	6		6		6	14%	10.5			
Numbers and Operations - Fractions	Develop understanding of fractions as numbers.	MC/MS	4	1	4	1	4	10%	6	1.5	3.5	17
		ASCR	3	1	3	1	3	7%	6			
		Total	7		7		7	17%	12			
Measurement and Data	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	MC/MS	2	1	2	1	2	5%	3	3	3.5	23.5
		ASCR	1	1	1	1	1	2%	2			
	Represent and interpret data.	MC/MS	1	1	1	1	1	2%	1.5			
		ASCR	1	1	1	1	1	2%	2			
	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	MC/MS	2	1	2	1	2	5%	3			
		ASCR	1	1	1	1	1	2%	2			
	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	MC/MS	1	1	1	1	1	2%	1.5			
ASCR		1	1	1	1	1	2%	2				
Total		10		10		10	24%	17				
Geometry	Reason with shapes and their attributes.	MC/MS	2	1	2	1	2	5%	3	3	3.5	13.5
		ASCR	2	1	2	1	2	5%	4			
		Total	4		4		4	10%	7			
Total Grade 3 Mathematics		42		42		42	100%	72	12	16.5	100.5	

Field Test or Research Matrix (Equating Block) Summary	Items Per Type	Number of Virtual Forms	Total FT Slots	Max Unique FT
Operations and Algebraic Thinking	MC/MS	3	7	TBD
	ASCR			
	Total	3	7	TBD
Numbers and Operations in Base Ten	MC/MS	1	7	TBD
	ASCR			
	Total	1	7	TBD
Numbers and Operations - Fractions	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Measurement and Data	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Geometry	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Total Items	10	7	70	TBD

Form Count
 FT: 5
 EB/Matrix: 2
Total: 7

Timing in Minutes	
MC/MS	1.5
ASCR	2.0

Total Testing Time	100.5
Number of Test Sessions	2
Total Testing Time Per Session	50.3

Total Items by Reporting Category	Core	FT or EB	Core BU	Total Items
Operations and Algebraic Thinking	15	3	2	20
Numbers and Operations in Base Ten	6	1	1	8
Numbers and Operations - Fractions	7	2	1	10
Measurement and Data	10	2	2	14
Geometry	4	2	2	8
Total	42	10	8	60

Core Overlap and Field Test Yield Analysis		Description of Core		Description of Backup Core (# of Items)	Description of Research or FT		
Reporting Category	Content Category	Total Core Items	Total Points		Slots per Form	Forms per Admin	Total Slots Per Admin
Operations and Algebraic Thinking	Represent and solve problems involving multiplication	4	4	2	3	5	15
	Understand properties of multiplication and the relationship between multiplication and division.	4	4				
	Multiply and divide within 100.	3	3				
	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	4	4				
	Total	15	15				
Numbers and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	6	6	1	1	5	5
	Total	6	6	1			
Numbers and Operations - Fractions	Develop understanding of fractions as numbers.	7	7	1	2	5	10
	Total	7	7	1			
Measurement and Data	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	3	3	2	2	5	10
	Represent and interpret data.	2	2				
	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	3	3				
	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	2	2				
	Total	10	10				
Geometry	Reason with shapes and their attributes.	4	4	2	2	5	10
	Total	4	4	2			
Totals		42	42	8	10	5	50

KEY

- MC: Multiple Choice
- MS: Multi-Select
- ASCR: Auto-Scored Constructed-Response

N-Count by Form Estimate	
Students per grade	65,000
FT & EB Forms	7
N-Count per FT Form	9,286
Min Required	1,500

Missouri Grade 4 Mathematics Test Blueprint and Test Design—2016 Core Administration											
Mathematics Core/Common Items by Content									Estimated Timing In Minutes Per Form		
Mathematics Item Types		# of Core Items	Points Per Item	# of Raw Points	Weight	# of Weighted Points	Percent of Total	Core	Core Back Up	FT or EB	Total Time
Operations and Algebraic Thinking	Use the four operations with whole numbers to solve problems.	MC/MS	3	1	3	1	3	7%	3	3.5	23.5
		ASCR	2	1	2	1	2	5%			
	Gain familiarity with factors and multiples.	MC/MS	1	1	1	1	1	2%			
		ASCR	1	1	1	1	1	2%			
	Generate and analyze patterns.	MC/MS	2	1	2	1	2	5%			
		ASCR	1	1	1	1	1	2%			
Total		10	10	10	10	24%	17				
Numbers and Operations in Base Ten	Generalize place value understanding for multidigit whole numbers.	MC/MS	2	1	2	1	2	5%	3	3.5	20
		ASCR	1	1	1	1	1	2%			
	Use place value understanding and properties of operations to perform multidigit arithmetic.	MC/MS	3	1	3	1	3	7%			
		ASCR	2	1	2	1	2	5%			
	Total		8	8	8	8	19%	13.5			
Numbers and Operations - Fractions	Extend understanding of fraction equivalents and ordering.	MC/MS	2	1	2	1	2	5%	3	3.5	26
		ASCR	1	1	1	1	1	2%			
	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	MC/MS	4	1	4	1	4	10%			
		ASCR	1	1	1	1	1	2%			
	Understand decimal notation for fractions, and compare decimal fractions.	MC/MS	3	1	3	1	3	7%			
		ASCR	1	1	1	1	1	2%			
Total		12	12	12	12	29%	19.5				
Measurement and Data	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	MC/MS	3	1	3	1	3	7%	3	4.5	22.5
		ASCR	1	1	1	1	1	2%			
	Represent and interpret data.	MC/MS	1	1	1	1	1	2%			
		ASCR	1	1	1	1	1	2%			
	Geometric measurement: understand concepts of angle and measure angles	MC/MS	2	1	2	1	2	5%			
		ASCR	1	1	1	1	1	2%			
Total		9	9	9	9	21%	15				
Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	MC/MS	2	1	2	1	2	5%	3	3.5	11.5
		ASCR	1	1	1	1	1	2%			
		Total		3	3	3	3	7%			
Total Grade 4 Mathematics		42	42	42	42	100%	70	15	18.5	103.5	

Field Test or Research Matrix (Equating Block) Summary	Items Per Type	Number of Virtual Forms	Total FT Slots	Max Unique FT
Operations and Algebraic Thinking	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Numbers and Operations in Base Ten	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Numbers and Operations - Fractions	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Measurement and Data	MC/MS	3	7	TBD
	ASCR	1	7	TBD
	Total	3	21	TBD
Geometry	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Total Items	11	7	77	TBD



Timing In Minutes	
MC/MS	1.5
ASCR	2.0

Form	Count
FT	4
EB/Matrix	3
Total	7

Total Testing Time	103.5
Number of Test Sessions	2
Total Testing Time Per Session	51.8

Total Items by Reporting Category	Core	FT or EB	Core BU	Total Items
Operations and Algebraic Thinking	10	2	2	14
Numbers and Operations in Base Ten	8	2	2	12
Numbers and Operations - Fractions	12	2	2	16
Measurement and Data	9	3	2	14
Geometry	3	2	2	7
Total	42	11	10	63

Core Overlap and Field Test Yield Analysis				Description of Core		Description of Research or FT		
Reporting Category	Content Category	Total Core Items	Total Points	Description of Backup Core (# of Items)	Slots per Form	Forms per Admin	Total Slots Per Admin	
Operations and Algebraic Thinking	Use the four operations with whole numbers to solve problems.	5	5	2	2	4	8	
	Gain familiarity with factors and multiples.	2	2					
	Generate and analyze patterns.	3	3					
	Total	10	10					
Numbers and Operations in Base Ten	Generalize place value understanding for multidigit	3	3	2	2	4	8	
	Use place value understanding and properties of	5	5					
	Total	8	8					
Numbers and Operations - Fractions	Extend understanding of fraction equivalents and	3	3	2	2	4	8	
	Build fractions from unit fractions by applying and	5	5					
	Understand decimal notation for fractions, and compare decimal fractions.	4	4					
	Total	12	12					
Measurement and Data	Solve problems involving measurement and conversion	4	4	2	3	4	12	
	Represent and interpret data.	2	2					
	Geometric measurement: understand concepts of angle	3	3					
	Total	9	9					
Geometry	Draw and identify lines and angles, and classify shapes	3	3	2	2	4	8	
		3	3					
	Total	3	3					
Total		42	42	10	11	4	44	



- MC Multiple Choice
- MS Multi-Select
- ASCR Auto-Scored Constructed-Response

N-Count by Form Estimate	
Students per grade	65,000
FT & EB Forms	7
N-Count per FT Form	9,286
Min Required	1,500

Missouri Grade 5 Mathematics Test Blueprint and Test Design—2016 Core Administration									Estimated Timing In Minutes Per Form			
Mathematics Core/Common Items by Content												
Mathematics Item Types		# of Core Items	Points Per Item	# of Raw Points	Weight	# of Weighted Points	Percent of Total	Core	Core Back Up	FT or EB	Total Time	
Operations and Algebraic Thinking	Write and interpret numerical expressions.	MC/MS	3	1	3	1	3	7%	3	3.5	16.5	
		ASCR	1	1	1	1	1	2%				
	MC/MS	1	1	1	1	1	2%					
	ASCR	1	1	1	1	1	2%					
Analyze patterns and relationships.		Total	6	6	6	14%	10					
Numbers and Operations in Base Ten	Understand the place value system.	MC/MS	2	1	2	1	2	5%	3	3.5	20	
		ASCR	2	1	2	1	2	5%				
	MC/MS	3	1	3	1	3	7%					
	ASCR	1	1	1	1	1	2%					
Perform operations with multi-digit whole numbers and with decimals to hundredths.		Total	8	8	8	19%	13.5					
Numbers and Operations - Fractions	Use equivalent fractions as a strategy to add and subtract fractions.	MC/MS	4	1	4	1	4	10%	3	3.5	33	
		ASCR	2	1	2	1	2	5%				
	MC/MS	7	1	7	1	7	17%					
	ASCR	3	1	3	1	3	7%					
Apply and extend previous understandings of multiplication and division to multiply and divide fractions.		Total	16	16	16	38%	26.5					
Measurement and Data	Convert like measurement units within a given measurement system.	MC/MS	1	1	1	1	1	2%	3	3.5	18.5	
		ASCR	1	1	1	1	1	2%				
	MC/MS	1	1	1	1	1	2%					
	ASCR	1	1	1	1	1	2%					
	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	MC/MS	2	1	2	1	2	5%				
		ASCR	1	1	1	1	1	2%				
		Total	7	7	7	17%	12					
Geometry	Graph points on the coordinate plane to solve real-world and mathematical problems.	MC/MS	2	1	2	1	2	5%	3	3.5	15	
		ASCR	1	1	1	1	1	2%				
	MC/MS	1	1	1	1	1	2%					
	ASCR	1	1	1	1	1	2%					
Classify two-dimensional figures into categories based on their properties.		Total	5	5	5	12%	8.5					
Total Grade 5 Mathematics			42		42		42	100%	70.5	15	17.5	103

Field Test or Research Matrix (Equating Block) Summary	Items Per Type	Number of Virtual Forms	Total FT Slots	Max Unique FT
Operations and Algebraic Thinking	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Numbers and Operations in Base Ten	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Numbers and Operations - Fractions	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Measurement and Data	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Geometry	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Total Items	10	7	70	TBD



Timing In Minutes	
MC/MS	1.5
ASCR	2.0

Form	Count
FT	4
EB/Matrix	3
Total	7

Total Testing Time	103.0
Number of Test Sessions	2
Total Testing Time Per Session	51.5

Total Items by Reporting Category	Core	FT or EB	Core BU	Total Items
Operations and Algebraic Thinking	6	2	2	10
Numbers and Operations in Base Ten	8	2	2	12
Numbers and Operations - Fractions	16	2	2	20
Measurement and Data	7	2	2	11
Geometry	5	2	2	9
Total	42	10	10	62

Core Overlap and Field Test Yield Analysis		Description of Core		Description of Backup Core (# of Items)	Description of Research or FT		
Reporting Category	Content Category	Total Core Items	Total Points		Slots per Form	Forms per Admin	Total Slots Per Admin
Operations and Algebraic Thinking	Write and interpret numerical expressions.	4	4	2	2	4	8
	Analyze patterns and relationships.	2	2				
	Total	6	6				
Numbers and Operations in Base Ten	Understand the place value system.	4	4	2	2	4	8
	Perform operations with multi-digit whole	4	4				
	Total	8	8				
Numbers and Operations - Fractions	Use equivalent fractions as a strategy to add	6	6	2	2	4	8
	Apply and extend previous understandings of	10	10				
	Total	16	16				
Measurement and Data	Convert like measurement units within a given	2	2	2	2	4	8
	Represent and interpret data.	2	2				
	Geometric measurement: understand concepts	3	3				
Total	7	7	2				
Geometry	Graph points on the coordinate plane to solve	3	3	2	2	4	8
	Classify two-dimensional figures into	2	2				
	Total	5	5				
Total		42	42	10	4	40	

KEY	
MC	Multiple Choice
MS	Multi-Select
ASCR	Auto-Scored Constructed-Response

N-Count by Form Estimate	
Students per grade	65,000
FT & EB Forms	7
N-Count per FT Form	9,286
Min Required	1,500

Missouri Grade 6 Mathematics Test Blueprint and Test Design—2016 Core Administration													
Mathematics Core/Common Items by Content									Estimated Timing In Minutes Per Form				
Mathematics Item Types		# of Core Items	Points Per Item	# of Raw Points	Weight	# of Weighted Points	Percent of Total	Core	Core Back Up	FT or EB	Total Time		
Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems.	MC/MS	4	1	4	1	4	9%	6	3	3.5	16.5	
		ASCR	2	1	2	1	2	4%					4
		Total	6		6		6	13%					10
The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	MC/MS	1	1	1	1	1	2%	3	3.5	28.5		
		ASCR	1	1	1	1	1	2%				2	
	Compute fluently with multi-digit numbers and find common factors and multiples.	MC/MS	3	1	3	1	3	7%				4.5	
		ASCR	2	1	2	1	2	4%				4	
	Apply and extend previous understandings of numbers to the system of rational numbers.	MC/MS	4	1	4	1	4	9%				6	
		ASCR	2	1	2	1	2	4%				4	
Total	13		13		13	28%	22						
Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	MC/MS	4	1	4	1	4	9%	3	4.5	32.5		
		ASCR	2	1	2	1	2	4%				4	
	Reason about and solve one-variable equations and inequalities.	MC/MS	4	1	4	1	4	9%				6	
		ASCR	2	1	2	1	2	4%				4	
	Represent and analyze quantitative relationships between dependent and independent variables.	MC	2	1	2	1	2	4%				3	
		ASCR	1	1	1	1	1	2%				2	
Total	15		15		15	33%	25						
Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	MC/MS	4	1	4	1	4	9%	6	3	3.5	16.5	
		ASCR	2	1	2	1	2	4%					4
		Total	6		6		6	13%					10
Statistics and Probability	Develop understanding of statistical variability.	MC/MS	2	1	2	1	2	4%	3	3.5	17		
		ASCR	1	1	1	1	1	2%				2	
	Summarize and describe distributions.	MC/MS	1	1	1	1	1	2%				1.5	
		ASCR	2	1	2	1	2	4%				4	
	Total	6		6		6	13%	10.5					
Total Grade 6 Mathematics			46		46		46	100%	77.5	15	18.5	111	

Field Test or Research Matrix (Equating Block) Summary		Items Per Type	Number of Virtual Forms	Total FT Slots	Max Unique FT
Ratios and Proportional Relationships	MC/MS	1	7	7	TBD
	ASCR	1	7	7	TBD
	Total	2	14	14	TBD
The Number System	MC/MS	1	7	7	TBD
	ASCR	1	7	7	TBD
	Total	2	14	14	TBD
Expressions and Equations	MC/MS	3	7	21	TBD
	ASCR	3	7	21	TBD
	Total	6	14	42	TBD
Geometry	MC/MS	1	7	7	TBD
	ASCR	1	7	7	TBD
	Total	2	14	14	TBD
Statistics and Probability	MC/MS	1	7	7	TBD
	ASCR	1	7	7	TBD
	Total	2	14	14	TBD
Total Items		11	7	77	TBD



Timing In Minutes	
MC/MS	1.5
ASCR	2.0

Form	Count
FT	4
EB/Matrix	3
Total	7

Total Testing Time	111.0
Number of Test Sessions	2
Total Testing Time Per Session	55.5

Total Items by Reporting Category	Core	FT or EB	Core BU	Total
Ratios and Proportional Relationships	6	2	2	10
The Number System	13	2	2	17
Expressions and Equations	15	3	2	20
Geometry	6	2	2	10
Statistics and Probability	6	2	2	10
Total	46	11	10	67

Core Overlap and Field Test Yield Analysis				Description of Core		Description of Research or FT		
Reporting Category	Content Category	Total Core Items	Total Points	Description of Backup Core (# of Items)	Slots per Form	Forms per Admin	Total Slots Per Admin	
Ratios and Proportional Relationships	Understand ratio concepts and use ratio reasoning	6	6	2	2	4	8	
	Total	6	6	2				
The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	2	2	2	2	4	8	
	Compute fluently with multi-digit numbers and find common factors and multiples.	5	5					
	Apply and extend previous understandings of numbers to the system of rational numbers.	6	6					
	Total	13	13					2
Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions.	6	6	2	3	4	12	
	Reason about and solve one-variable equations and inequalities.	6	6					
	Represent and analyze quantitative relationships between dependent and independent variables.	3	3					
	Total	15	15					2
Geometry	Solve real-world and mathematical problems involving area, surface area, and volume.	6	6	2	2	4	8	
	Total	6	6					2
Statistics and Probability	Develop understanding of statistical variability.	3	3	2	2	4	8	
	Summarize and describe distributions.	3	3					
	Total	6	6					2
Total		46	46	10	11	4	44	

KEY

- MC Multiple Choice
- MS Multi-Select
- ASCR Auto-Scored Constructed-Response

N-Count by Form Estimate

Students per grade	65,000
FT & EB Forms	7
N-Count per FT Form	9,286
Min Required	1,500

Missouri Grade 7 Mathematics Test Blueprint and Test Design—2016 Core Administration									Estimated Timing In Minutes Per Form			
Mathematics Core/Common Items by Content												
Mathematics Item Types			# of Core Items	Points Per Item	# of Raw Points	Weight	# of Weighted Points	Percent of Total	Core	Core Back Up	FT or EB	Total Time
Ratios and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems.	MC/MS	7	1	7	1	7	15%	10.5	3	3.5	23
		ASCR	3	1	3	1	3	7%	6			
		Total	10		10		10	22%	16.5			
The Number System	Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	MC/MS	5	1	5	1	5	11%	7.5	3	3.5	20
		ASCR	3	1	3	1	3	7%	6			
		Total	8		8		8	17%	13.5			
Expressions and Equations	Use properties of operations to generate equivalent expressions.	MC/MS	4	1	4	1	4	9%	6	3	3.5	27.5
		ASCR	1	1	1	1	1	2%	2			
	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	MC/MS	6	1	6	1	6	13%	9			
		ASCR	2	1	2	1	2	4%	4			
Total	13		13		13	28%	21					
Geometry	Draw, construct and describe geometrical figures and describe the relationships between them.	MC/MS	1	1	1	1	1	2%	1.5	3	3.5	18.5
		ASCR	1	1	1	1	1	2%	2			
	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	MC/MS	3	1	3	1	3	7%	4.5			
		ASCR	2	1	2	1	2	4%	4			
Total	7		7		7	15%	12					
Statistics and Probability	Use random sampling to draw inferences about a population.	MC/MS	2	1	2	1	2	4%	3	3	3.5	20
		ASCR	1	1	1	1	1	2%	2			
	Draw informal comparative inferences about two populations.	MC/MS	1	1	1	1	1	2%	1.5			
		ASCR	1	1	1	1	1	2%	2			
	Investigate chance processes and develop, use, and evaluate probability models.	MC/MS	2	1	2	1	2	4%	3			
		ASCR	1	1	1	1	1	2%	2			
Total	8		8		8	17%	13.5					
Total Grade 7 Mathematics			46		46		46	100%	76.5	15	17.5	109

Field Test or Research Matrix (Equating Block) Summary	Items Per Type	Number of Virtual Forms	Total FT Slots	Max Unique FT
Ratios and Proportional Relationships	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
The Number System	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Expressions and Equations	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Geometry	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Statistics and Probability	MC/MS	1	7	TBD
	ASCR	1	7	TBD
	Total	2	14	TBD
Total Items	10	7	70	TBD



Form Count

Form	Count
FT	4
EB/Matrix	3
Total	7

Timing In Minutes	
MC/MS	1.5
ASCR	2.0

Total Testing Time	109.0
Number of Test Sessions	2
Total Testing Time Per Session	54.5

Total Items by Reporting Category	Core	FT or EB	Core BU	Total Items
Ratios and Proportional Relationships	10	2	2	14
The Number System	8	2	2	12
Expressions and Equations	13	2	2	17
Geometry	7	2	2	11
Statistics and Probability	8	2	2	12
Total	46	10	10	66

Core Overlap and Field Test Yield Analysis		Description of Core		Description of Backup Core (# of Items)	Overlap	New	Description of Research or FT		
Reporting Category	Content Category	Total Core Items	Total Points		Roughly 60%	Roughly 40%	Slots per Form	Forms per Admin	Total Slots Per Admin
Ratios and Proportional Relationships	Analyze proportional relationships and use them	10	10	2	6	4	2	4	8
	Total	10	10	2	6	4			
The Number System	Apply and extend previous understandings of ope	8	8	2	5	3	2	4	8
	Total	8	8	2	5	3			
Expressions and Equations	Use properties of operations to generate	5	5	2	3	2	2	4	8
	Solve real-life and mathematical problems using	8	8		5	3			
	Total	13	13		8	5			
Geometry	Draw, construct and describe geometrical figures	2	2	2	1	1	2	4	8
	Solve real-life and mathematical problems involv	5	5		3	2			
	Total	7	7		4	3			
Statistics and Probability	Use random sampling to draw inferences about a	3	3	2	2	1	2	4	8
	Draw informal comparative inferences about	2	2		1	1			
	Investigate chance processes and develop, use,	3	3		2	1			
	Total	8	8		5	3			
Total		46	46	10	28	18	10	4	40

KEY

- MC Multiple Choice
- MS Multi-Select
- ASCR Auto-Scored Constructed-Response

N-Count by Form

Students per grade	65,000
FT & EB Forms	7
N-Count per FT Form	9,286
Min Required	1,500

Missouri Grade 8 Mathematics Test Blueprint and Test Design—2016 Core Administration								Estimated Timing In Minutes Per Form				
Mathematics Core/Common Items by Content												
Mathematics Item Types		# of Core Items	Points Per Item	# of Raw Points	Weight	# of Weighted Points	Percent of Total	Core	Core Back Up	FT or EB	Total Time	
The Number System	Know that there are numbers that are not rational, and approximate them by rational	MC/MS	2	1	2	1	2	4%	3	3	3.5	13.5
		ASCR	2	1	2	1	2	4%	4			
		Total	4		4		4	9%	7			
Expressions and Equations	Work with radicals and integer exponents.	MC/MS	3	1	3	1	3	7%	4.5	3	4.5	32.5
		ASCR	2	1	2	1	2	4%	4			
	Understand the connections between proportional relationships, lines, and linear equations.	MC/MS	3	1	3	1	3	7%	4.5			
		ASCR	1	1	1	1	1	2%	2			
	Analyze and solve linear equations and pairs of simultaneous linear equations.	MC/MS	4	1	4	1	4	9%	6			
		ASCR	2	1	2	1	2	4%	4			
Total		15		15		15	33%	25				
Functions	Define, evaluate, and compare functions.	MC/MS	4	1	4	1	4	9%	6	3	3.5	22.5
		ASCR	1	1	1	1	1	2%	2			
	Use functions to model relationships between quantities.	MC/MS	4	1	4	1	4	9%	6			
		ASCR	1	1	1	1	1	2%	2			
Total		10		10		10	22%	16				
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry	MC/MS	2	1	2	1	2	4%	3	3	3.5	25
		ASCR	2	1	2	1	2	4%	4			
	Understand and apply the Pythagorean Theorem.	MC/MS	2	1	2	1	2	4%	3			
		ASCR	1	1	1	1	1	2%	2			
	Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.	MC/MS	3	1	3	1	3	7%	4.5			
		ASCR	1	1	1	1	1	2%	2			
Total		11		11		11	24%	18.5				
Statistics and Probability	Investigate patterns of association in bivariate data.	MC/MS	4	1	4	1	4	9%	1.5	3	3.5	12
		ASCR	2	1	2	1	2	4%	4			
		Total	6		6		6	13%	5.5			
Total Grade 8 Mathematics			46		46		46	100%	72	15	18.5	105.5

Field Test or Research Matrix (Equating Block) Summary		Items Per Type	Number of Virtual Forms	Total FT Slots	Max Unique FT
The Number System	MC/MS	1	7	7	TBD
	ASCR	1	7	7	TBD
	Total	2		14	TBD
Expressions and Equations	MC/MS	3	7	21	TBD
	ASCR				TBD
	Total	3		21	TBD
Functions	MC/MS	1	7	7	TBD
	ASCR	1	7	7	TBD
	Total	2		14	TBD
Geometry	MC/MS	1	7	7	TBD
	ASCR	1	7	7	TBD
	Total	2		14	TBD
Statistics and Probability	MC/MS	1	7	7	TBD
	ASCR	1	7	7	TBD
	Total	2		14	TBD
Total Items		11	7	77	TBD



Timing In Minutes	
MC/MS	1.5
ASCR	2.0

Form	Count
FT	5
EB/Matrix	2
Total	7

Total Testing Time	105.5
Number of Test Sessions	2
Total Testing Time Per Session	52.8

Total Items by Reporting Category	Core	FT or EB	Core BU	Total Items
The Number System	4	2	2	8
Expressions and Equations	15	3	2	20
Functions	10	2	2	14
Geometry	11	2	2	15
Statistics and Probability	6	2	2	10
Total	46	11	10	67

Core Overlap and Field Test Yield Analysis		Description of Core		Description of Backup Core (# of Items)	Description of Research or FT		
Reporting Category	Content Category	Total Core Items	Total Points		Slots per Form	Forms per Admin	Total Slots Per Admin
The Number System	Know that there are numbers that are not ratio	4	4	2	2	5	10
	Total	4	4	2			
Expressions and Equations	Work with radicals and integer exponents.	5	5	2	3	5	15
	Understand the connections between proportio	4	4				
	Analyze and solve linear equations and pairs	6	6				
	Total	15	15				
Functions	Define, evaluate, and compare functions.	5	5	2	2	5	10
	Use functions to model relationships between	5	5				
	Total	10	10				
Geometry	Understand congruence and similarity using ph	4	4	2	2	5	10
	Understand and apply the Pythagorean Theore	3	3				
	Solve real-world and mathematical problems	4	4				
	Total	11	11				
Statistics and Probability	Investigate patterns of association in bivariate data.	6	6	2	2	5	10
	Total	6	6	2			
Total		46	46	10	11	5	55

KEY

- MC Multiple Choice
- MS Multi-Select
- ASCR Auto-Scored Constructed-Response

N-Count by Form Estimate

Students per grade	65,000
FT & EB Forms	7
N-Count per FT Form	9,286
Min Required	1,500

Assumptions

Equating Block

Since we have three forms with one equating block (EB) slot per form in each grade, we would like to do the following:

- 1) For grades 4-7: use one slot for on-grade level CDT items, one slot for below grade level OP MAP items, and one slot for above grade level OP MAP items. For example, grade 4 test forms with EB slots will include: a set of grade 4 CDT items (Form 1), a set of grade 3 OP items (Form 2) and a set of grade 5 OP items (Form 3).
- 2) For grades 3 and 8 we will only need two EB slots – one for on grade level CDT items and one for off-grade level OP items from the adjacent grade (a set of grade 4 OP items will be administered to Grade 3 students and a set of grade 7 items will be administered to grade 8 students).

The equating blocks content coverage should represent the content of the grade in which it is administered and the grade from which it comes from.

This design will allow us to accomplish two goals: create a direct link between MAP summative and interim assessments and also build a custom vertical scale for summative assessment using MO content.

FT form amount will vary by grade

FT form total will be dependent on the number of items remaining after CBR.