

Kentucky Academic Standards for Mathematics

Public Feedback Survey and Summary

November 2025



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Public Survey

Kentucky Revised Statute (KRS) 158.6453 calls for the Kentucky Department of Education (KDE) to implement a process for reviewing all academic standards and aligned assessments. Per the current schedule, one or two content areas are reviewed each year and every 6 years thereafter on a rotating basis. The implementation of the current *Kentucky Academic Standards (KAS) for Mathematics* began in the 2019–20 school year. During fall 2025, the [Kentucky Academic Standards Review Process](#) started for mathematics.

The KAS outline what students are expected to learn in each grade or grade-band to successfully transition to the next level of learning. The curriculum, including the instructional methods and resources used to teach the standards, is a separate entity and is determined at the local level per KRS 160.345.

To inform the revisions to the mathematics standards, public feedback was sought on the existing mathematics standards from August 29 to October 3, 2025. The survey began by collecting demographic information from respondents. Respondents were then able to choose which Standards for Mathematical Content to review: all content standards (K–12) or content standards for grade bands K–5, 6–8, or 9–12. Respondents who did not select all content standards were able to select multiple grade bands for review. After reviewing the Standards for Mathematical Content, all respondents were asked to review the Standards for Mathematical Practice. For each set of standards, the survey included the text of each standard as found in the *KAS for Mathematics* standards document as well as a link to the standards document and information about where to locate the standards within the document. For each standard, respondents were instructed to reply “Keep as is” or “Revise.” If respondents selected “Revise,” they were then prompted to provide additional information about the revisions they believe should be made to the standard. Finally, respondents were asked to rate how much they agreed with a series of statements about the overall *KAS for Mathematics*.

Respondent Information

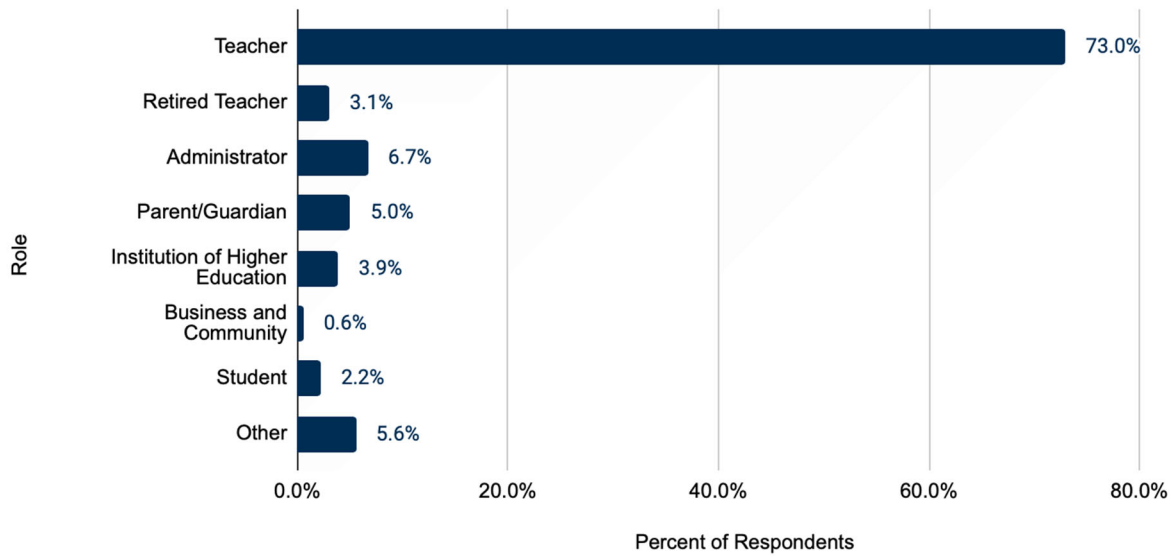
This section contains general demographic information from responses to the background information questions. Note that not all respondents completed the survey in its entirety, leading to possible discrepancies in the total number of responses for each question.

Demographic Questions	Yes		No		Total
	Number	Percent	Number	Percent	
Do you live in Kentucky? Please note that residing in Kentucky is not a requirement for responding to this survey.	363	98.1%	7	1.9%	370

Which role best describes your affiliation with the Kentucky Public Schools?	Responses	
	Percent	Number
Teacher	73.0%	262
Retired teacher	3.1%	11
Administrator	6.7%	24
Parent/guardian	5.0%	18
Institution of higher education	3.9%	14
Business and community	0.6%	2
Student	2.2%	8
Other (please specify)	5.6%	20
Total responses = 359		

Note: Of the respondents who selected “Other”, ten respondents identified as “instructional coach”, five respondents identified as “education consultant”, and one respondent identified as each of the following: “school psychologist”, “volunteer”, “KDE ER”, “college student”, and “interventionist”.

Which role best describes your affiliation with the Kentucky Public Schools?



Teacher

These questions only apply to those responding as “Teacher.”

Which grade level(s) do you teach? Check all that apply.	Responses	
	Percent	Number
PreK	0.4%	1
K	14.1%	37
1	14.1%	37
2	12.2%	32
3	13.4%	35
4	17.2%	45
5	20.2%	53
6	14.1%	37
7	15.3%	40
8	18.7%	49
9	22.5%	59
10	24.0%	63

Which grade level(s) do you teach? Check all that apply.	Responses	
	Percent	Number
11	22.1%	58
12	19.5%	51
	Total responses = 262	

How many years of teaching experience do you have?	Responses	
	Percent	Number
0–5	16.5%	43
6–10	15.7%	41
11–15	16.1%	42
16–20	19.9%	52
21–25	14.2%	37
26–30	11.9%	31
More than 30	5.7%	15
	Total responses = 261	

Note: One respondent who selected “Teacher” to describe their affiliation with the Kentucky Public Schools did not select a response to this item.

Summary of Feedback on Grade Band Standards

After the demographic questions, survey respondents were then asked to select which Standards for Mathematical Content they wanted to provide feedback on by grade band (K–5, 6–8, and 9–12). They were able to review each set of standards and clarification statements by grade band. They were also prompted to review the Standards for Mathematical Practice. Feedback on these items is included in the next section. After reviewing the standards, respondents were presented with a general item asking them to rate how much they agreed with a series of statements. Responses to these items are summarized below.

General Items About the *KAS for Mathematics*

After reviewing the Mathematics standards, how much do you agree with the following statements?

The standards represent what is essential for students to learn.	Responses	
	Percent	Number
Strongly disagree	3.3%	2
Disagree	5.0%	3
Neither agree nor disagree	8.3%	5
Agree	60.0%	36
Strongly agree	23.3%	14

The standards are aligned from elementary to high school to postsecondary education so that students can be successful at each education level.	Responses	
	Percent	Number
Strongly disagree	3.3%	2
Disagree	6.7%	4
Neither agree nor disagree	13.3%	8
Agree	56.7%	34
Strongly agree	20.0%	12

The standards outline a clear progression from conceptual understanding to procedural fluency to application.	Responses	
	Percent	Number
Strongly disagree	3.3%	2
Disagree	6.7%	4
Neither agree nor disagree	15.0%	9
Agree	63.3%	38
Strongly agree	11.7%	7

The grain size of the standards is appropriate—not too broad and not too specific.	Responses	
	Percent	Number
Strongly disagree	3.3%	2
Disagree	15.0%	9
Neither agree nor disagree	25.0%	15
Agree	43.3%	26
Strongly agree	13.3%	8

The grade-level expectations describe sufficient and appropriate depth and breadth of concepts and skills within each standard.	Responses	
	Percent	Number
Strongly disagree	3.4%	2
Disagree	15.3%	9
Neither agree nor disagree	11.9%	7
Agree	52.5%	31
Strongly agree	16.9%	10

The standards will enable educators to better prepare students for postsecondary readiness.	Responses	
	Percent	Number
Strongly disagree	6.7%	4
Disagree	3.3%	2
Neither agree nor disagree	10.0%	6
Agree	60.0%	36
Strongly agree	20.0%	12

Standards With 15% or Higher “Revise” Responses

For each Standard for Mathematical Content and Standard for Mathematical Practice, survey respondents were asked to select “Keep as is” or “Revise.” If a respondent selected “Revise,” they were prompted to give their reasoning, suggestions and/or comments in a short text box.

- All eight of the Standards for Mathematical Practice received a 92% or higher approval rating.
- Of the 721 Standards for Mathematical Content, only 16 standards had more than 15% of respondents select “Revise” and were flagged for review. The remaining 705 content standards had less than 15% of total respondents select “Revise” and were not flagged for review. By grade band, 97.8% of the grade K-5 standards, 98.6% of the grade 6-8 standards, and 97.4% of the grade 9-12 standards were not flagged for review.

The following is a complete list of all 16 flagged standards where 15% or more of the **total** respondents selected “Revise.” A bar chart is included with the percentage of respondents who selected “Revise” and the accompanying short responses by respondents. Standards are listed by grade level in the order in which they appeared to respondents.

Flagged Content Standards

KY.4.NBT.5 Multiply whole numbers

- Up to four digit number by a one-digit number
- Two-digit number by two-digit number

Multiply 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.



1. Students multiply up to a four-digit number by a one-digit number and a two-digit number by a two-digit number. They use place value strategies, properties of operations, equations, arrays, and area models to solve and explain their work.
2. Up to four digit number by a one-digit or two digit number
3. Students should be able to use whichever strategy works for them.
4. Illustrations should not be required.
5. They need experience in multiplication and becoming fluent. Not memorizing facts.
6. Do students need to illustrate AND explain? I would recommend changing this to "Illustrate or explain"
7. Noting that standard algorithm, lattice, or turtle method is not appropriate here

KY.4.NBT.6 Divide up to four-digit dividends by one-digit divisors. Find whole number quotients and remainders using

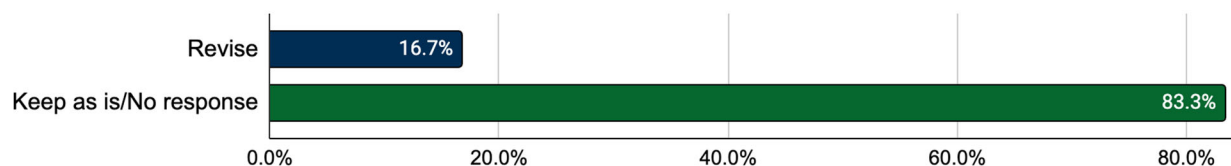
- strategies based on place value
- the properties of operations
- the relationship between multiplication and division

Illustrate and explain the calculation by using equations, rectangular arrays and/or area models.



1. Students divide up to four-digit numbers by one-digit divisors, finding whole-number quotients and remainders. They use place value, multiplication/division relationships, equations, arrays, or area models to solve and explain their reasoning.
2. KY.4.NBT.6 Divide up to four-digit dividends by one-digit or two digit divisors. Find whole number quotients and remainders using
3. Students should use whatever division strategy that works for them.
4. Illustrations should not be required.
5. Is this an and/or option for ways to find the quotient?
6. Do students need to illustrate AND explain? I would recommend changing this to "Illustrate or explain"
7. Noting that long division should not be taught/mastered

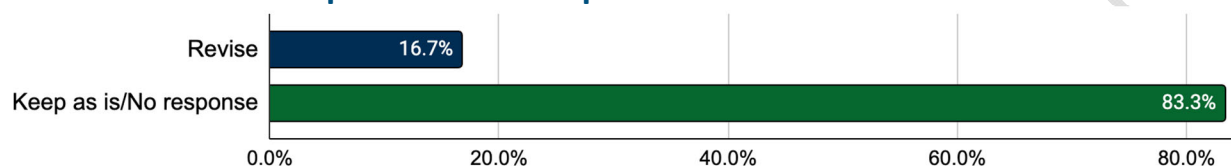
KY.5.NBT.6 Divide up to four-digit dividends by two-digit divisors.



1. Three digit dividends would be more appropriate as they work toward fluency the following year in sixth grade
2. Add statement: Long division algorithm is 6th grade
3. Should be done fluently using an algorithm.
4. I believe in 5th grade students are ready to divide using the traditional algorithm with ONLY whole numbers not decimals instead of using strategies based on place value.
5. Include using an algorithm as the way to solve. It is an algorithm for multiplication so it should be for division as well.
6. Let's remove this standard to reduce the number of standards taught. Current technology does not require that everyone be able to do this on paper, and the process isn't particularly helpful unless we are deepening understanding of place value.
7. Note that standard algorithm or long division should not be mastered?
8. Be more specific about strategies, expect standard algorithm.

KY.5.NBT.6.a Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors using...

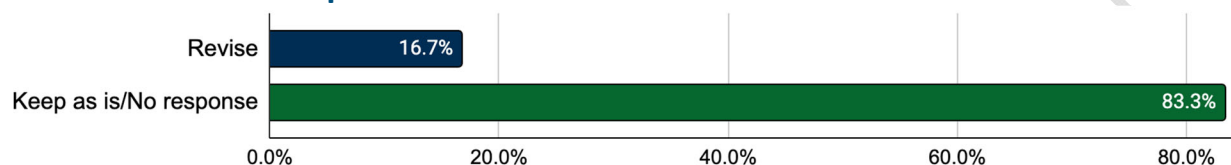
- **strategies based on place value**
- **the properties of operations**
- **the relationship between multiplication and division.**



1. Same as above
2. Add statement about long division algorithm is 6th grade
3. Quotients should be found using an algorithm.
4. I believe in 5th grade students are ready to divide using the traditional algorithm with ONLY whole numbers not decimals instead of using strategies based on place value.
5. This should be using the standard algorithm. They use multiple strategies up to now and like multiplication, it should be an algorithm.
6. Is this an and/or question?
7. Let's remove this standard to reduce the number of standards taught. Current technology does not require that everyone be able to do this on paper, and the process isn't particularly helpful unless we are deepening understanding of place value.

KY.5.NBT.7.a Add, subtract, multiply and divide decimals to hundredths using...

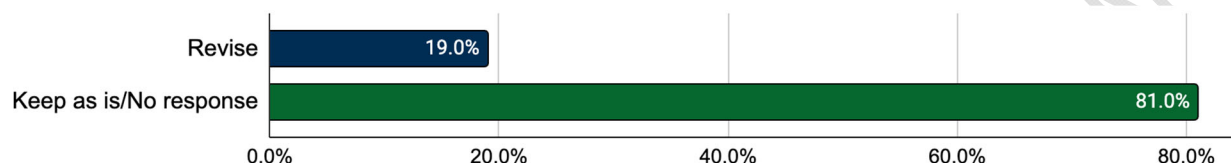
- concrete models or drawings
- strategies based on place value
- properties of operations
- the relationship between addition and subtraction.



1. Same as above
2. Should be done using an algorithm for each operation only.
3. I think division should be excluded from operations with decimals.
4. Is this an and/or or a list of items that all need to be completed?
5. Let's remove "multiply and divide". Reduce the number of standards that need to be taught.
6. Put a limit on decimal division, perhaps to dividing only by 0.1 and 0.01. Long division is in 6th grade and messier problems should wait. And should multiplication be limited to 2 digit by 4 digit (like KY.5.NBT.5)?
7. Collapse into one 5.NBT.7 standard

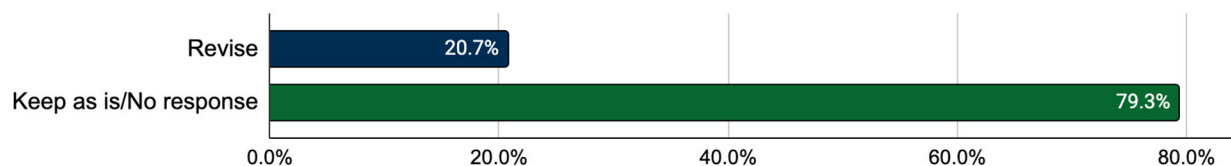
KY.5.NF.1 Efficiently add and subtract fractions with unlike denominators (including mixed numbers) by...

- using reasoning strategies, such as counting up on a number line or creating visual fraction models
- finding common denominators.



1. Do away with models and number lines. These kids need fewer strategies where they can drill and get the concept with one.
2. Give specific denominators to work with. Fraction work is not developmentally appropriate for this age.
3. This is the first time students have used unlike denominators so going straight to "efficiently" does not follow the progression. Change to: Add and subtract fractions with unlike denominators by replacing given fractions with equivalent fractions by....
4. 6th grade
5. First bullet should be eliminated.
6. Is this an and/or?
7. Fifth grade fractions is heavy. I feel like they need a limit on their denominator too, like the other grades.
8. How many numbers should they be able to add at a time? Two fractions or more?

KY.8.EE.3 Use numbers expressed in the form of a single digit times an integer power of 10 (Scientific Notation) to estimate very large or very small quantities and express how many times larger or smaller one is than the other.



1. This standard seems out of place when I teach it in the classroom. I know that it relates to exponents and the use of them in a previous standard. However, it is one that I don't understand why we need to teach.
2. This standard seems unnecessary, as we don't use numbers this large/small anywhere else in the curriculum. I think I needs to be taught in Science classes, like Chemistry and Physics.
3. Students should be able to convert numbers to scientific notation, otherwise, this topic is too tedious and takes away from other important work in 8th grade.
4. just why?? This is not used cross curricular any longer
5. postive number greater than or equal to 1 but less than 10
6. The clarifications should contain some examples of numbers written in scientific notation.

KY.8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. Interpret scientific notation that has been generated by technology.



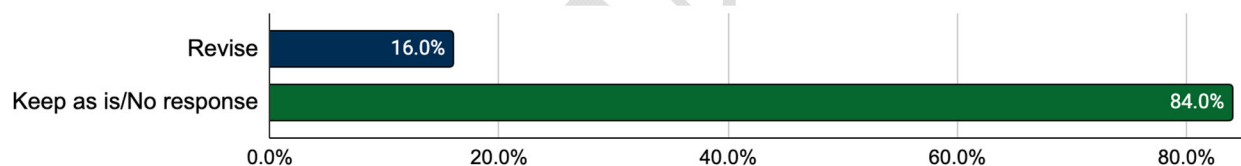
1. Too abstract for age
2. This standard seems out of place when I teach it in the classroom. I know that it relates to exponents and the use of them in a previous standard. However, it is one that I don't understand why we need to teach.
3. This standard seems unnecessary, as we don't use numbers this large/small anywhere else in the curriculum. I think I needs to be taught in Science classes, like Chemistry and Physics.
4. Omit. There is no need for students to make calculations with scientific notation.
5. again...what cross curricular??

KY.HS.N.14 Use matrices to represent and manipulate data.



1. Combine with KY.HS.N.15.
2. Make it a +
3. + standard
4. Change "represent" to "model real-world data"

KY.HS.F.2 Recognize the arithmetic and geometric sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.



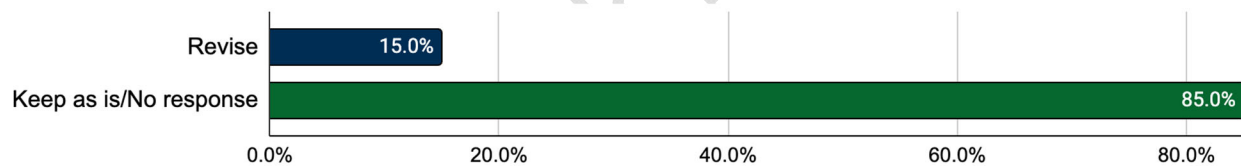
1. Use "whose domains are" instead of "whose domain is".
2. Make it a +Algebra 2 concept? not tested KAS after Alg 1 & Geom?
3. Remove or change to + standard
4. Just recognize? Should students write the function explicitly and/or recursively?

KY.HS.F.4.f (+) Graph piecewise functions, including step functions. ★



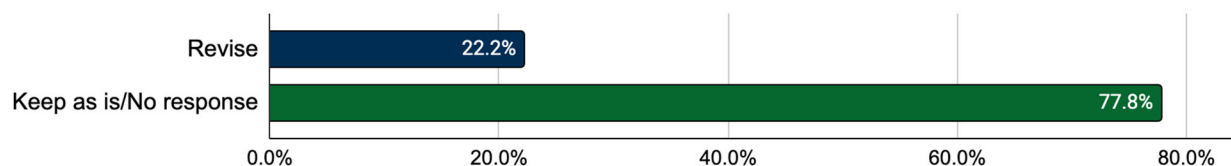
1. I think this should be a standard to be covered in Algebra II because it is on the ACT/SAT.
2. Revise to required standard and not a + standard
3. Revise to required standard and not a + standard
4. Remove the (+) from the standard.
5. Should not be a (+) standard as these are meaningful applications of other graphing skills. Add back to KY.HS.F.4b

KY.HS.F.16.c Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.



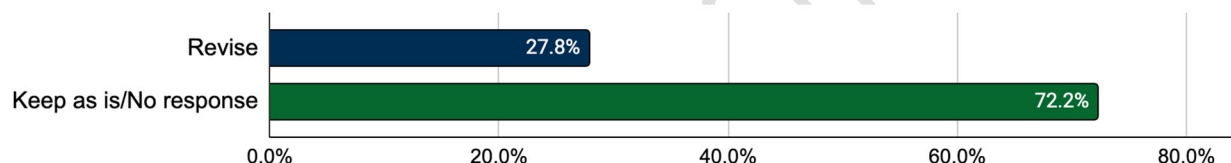
1. If KY.HS.F.16 is a (+) standard then this one should be too.
2. Why is this standard not a (+) while every other part of the standard is?
3. (+) standard

KY.HS.G.1.a Understand properties of line segments, angles and circle.



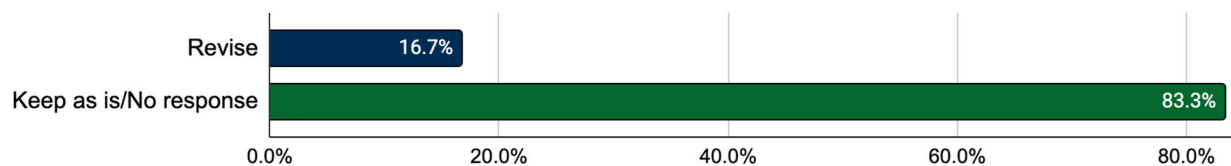
1. What type of angles? Angle pairs and transversals? Or angles of polygons? Be specific
2. This is too vague. It needs to be more specific.
3. There are so many properties! Is there a way to narrow this with more specific clarifications?
4. Add "definition" and properties

KY.HS.G.8 Create and apply geometric constructions.



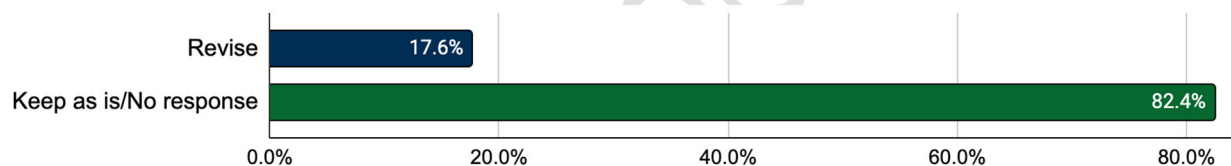
1. I do not think this is a necessary Geometry standard.
2. Include technology tools for this
3. Give specific examples of geometric constructions that should be required to be learned.
4. This is too vague. There are numerous constructions. Which ones should be taught? All of them or just some?
5. Can this change to a plus? It seems very disjointed since constructions aren't used throughout the year to complete other standards. Also, the wording for parts a and b should be the same/parallel for each part for continuity.

KY.HS.G.8.a Make formal geometric constructions with a variety of tools and methods.



1. I do not think this is a necessary Geometry standard.
2. This is too vague. There are numerous constructions. Which ones should be taught? All of them or just some?
3. Can this change to a plus?

KY.HS.G.25 Analyze and determine the validity of arguments for the formulas for the various figures and shapes.



1. Understand the formulas for the various figures and shapes.
2. +standard
3. Are students analyzing the formulas or finding the measurements?? This needs to be aligned with the parts.

Content Standards Heat Maps

The following heat maps were created to assist with highlighting areas where there is agreement to keep the Standards for Mathematical Content as-is and identifying areas where additional review and focus may be needed. The heatmaps are presented in two ways: 1) all content standards by grade band and 2) content standards by domain for Grades K-8.

Each heat map lists the standard codes, and a highlighted standard code means the standard was flagged for review based on public feedback and will coincide with the list of flagged standards that start on page 9.

All Content Standards by Grade Band

Kindergarten – Grade 5: All Standards

K	1	2	3	4	5
KY.K.CC.1	KY.1.OA.1	KY.2.OA.1	KY.3.OA.1	KY.4.OA.1	KY.5.OA.1
KY.K.CC.1.a	KY.1.OA.2	KY.2.OA.2	KY.3.OA.2	KY.4.OA.2	KY.5.OA.2
KY.K.CC.1.b	KY.1.OA.3	KY.2.OA.3	KY.3.OA.3	KY.4.OA.3	KY.5.OA.3
KY.K.CC.2	KY.1.OA.4	KY.2.OA.4	KY.3.OA.4	KY.4.OA.3.a	KY.5.OA.3.a
KY.K.CC.3	KY.1.OA.5	KY.2.NBT.1	KY.3.OA.5	KY.4.OA.3.b	KY.5.OA.3.b
KY.K.CC.3.a	KY.1.OA.6	KY.2.NBT.1.a	KY.3.OA.6	KY.4.OA.4	KY.5.OA.3.c
KY.K.CC.3.b	KY.1.OA.6.a	KY.2.NBT.1.b	KY.3.OA.7	KY.4.OA.4.a	KY.5.NBT.1
KY.K.CC.4	KY.1.OA.6.b	KY.2.NBT.2	KY.3.OA.8	KY.4.OA.4.b	KY.5.NBT.2
KY.K.CC.4.a	KY.1.OA.7	KY.2.NBT.3	KY.3.OA.9	KY.4.OA.4.c	KY.5.NBT.3
KY.K.CC.4.b	KY.1.OA.8	KY.2.NBT.4	KY.3.NBT.1	KY.4.OA.4.d	KY.5.NBT.3.a
KY.K.CC.4.c	KY.1.NBT.1	KY.2.NBT.5	KY.3.NBT.2	KY.4.OA.5	KY.5.NBT.3.b
KY.K.CC.5	KY.1.NBT.1.a	KY.2.NBT.6	KY.3.NBT.3	KY.4.NBT.1	KY.5.NBT.4
KY.K.CC.5.a	KY.1.NBT.1.b	KY.2.NBT.7	KY.3.NF.1	KY.4.NBT.2	KY.5.NBT.5
KY.K.CC.5.b	KY.1.NBT.2	KY.2.NBT.7.a	KY.3.NF.2	KY.4.NBT.2.a	KY.5.NBT.6
KY.K.CC.6	KY.1.NBT.2.a	KY.2.NBT.7.b	KY.3.NF.2.a	KY.4.NBT.2.b	KY.5.NBT.6.a
KY.K.CC.7	KY.1.NBT.2.b	KY.2.NBT.8	KY.3.NF.2.b	KY.4.NBT.3	KY.5.NBT.6.b
KY.K.OA.1	KY.1.NBT.2.c	KY.2.NBT.9	KY.3.NF.3	KY.4.NBT.4	KY.5.NBT.7
KY.K.OA.2	KY.1.NBT.3	KY.2.MD.1	KY.3.NF.3.a	KY.4.NBT.5	KY.5.NBT.7.a
KY.K.OA.3	KY.1.NBT.4	KY.2.MD.2	KY.3.NF.3.b	KY.4.NBT.6	KY.5.NBT.7.b
KY.K.OA.3.a	KY.1.NBT.4.a	KY.2.MD.3	KY.3.NF.3.c	KY.4.NF.1.a	KY.5.NBT.1
KY.K.OA.3.b	KY.1.NBT.4.b	KY.2.MD.4	KY.3.NF.3.d	KY.4.NF.1.b	KY.5.NF.1
KY.K.OA.4	KY.1.NBT.5	KY.2.MD.5	KY.3.MD.1	KY.4.NF.2	KY.5.NF.2
KY.K.OA.5	KY.1.NBT.6	KY.2.MD.6	KY.3.MD.2	KY.4.NF.3	KY.5.NF.2.a
KY.K.NBT.1	KY.1.NBT.6.a	KY.2.MD.7	KY.3.MD.2.a	KY.4.NF.3.a	KY.5.NF.2.b
KY.K.MD.1	KY.1.NBT.6.b	KY.2.MD.8	KY.3.MD.2.b	KY.4.NF.3.b	KY.5.NF.3
KY.K.MD.2	KY.1.MD.1	KY.2.MD.9	KY.3.MD.3	KY.4.NF.3.c	KY.5.NF.4
KY.K.MD.3	KY.1.MD.2	KY.2.MD.9.a	KY.3.MD.3.a	KY.4.NF.3.d	KY.5.NF.4.a
KY.K.MD.4	KY.1.MD.3	KY.2.MD.9.b	KY.3.MD.3.b	KY.4.NF.4	KY.5.NF.4.b
KY.K.G.1	KY.1.MD.3.a	KY.2.MD.9.c	KY.3.MD.3.c	KY.4.NF.4.a	KY.5.NF.5
KY.K.G.1.a	KY.1.MD.3.b	KY.2.MD.10	KY.3.MD.4	KY.4.NF.4.b	KY.5.NF.5.a
KY.K.G.1.b	KY.1.MD.4	KY.2.G.1	KY.3.MD.4.a	KY.4.NF.4.c	KY.5.NF.5.b
KY.K.G.2	KY.1.MD.4.a	KY.2.G.2	KY.3.MD.4.b	KY.4.NF.5	KY.5.NF.6

KY.K.G.3	KY.1.MD.4.b	KY.2.G.3	KY.3.MD.4.c	KY.4.NF.5.a	KY.5.NF.7
KY.K.G.4	KY.1.MD.4.c		KY.3.MD.4.d	KY.4.NF.5.b	KY.5.NF.7.a
KY.K.G.5	KY.1.MD.4.d		KY.3.MD.5	KY.4.NF.6	KY.5.NF.7.b
KY.K.G.6	KY.1.G.1		KY.3.MD.6	KY.4.NF.7	KY.5.NF.7.c
	KY.1.G.2		KY.3.MD.7	KY.4.NF.7.a	KY.5.MD.1
	KY.1.G.2.a		KY.3.MD.7.a	KY.4.NF.7.b	KY.5.MD.2
	KY.1.G.2.b		KY.3.MD.7.b	KY.4.NF.7.c	KY.5.MD.3
	KY.1.G.3		KY.3.MD.7.c	KY.4.MD.1	KY.5.MD.3.a
			KY.3.MD.7.d	KY.4.MD.1.a	KY.5.MD.3.b
			KY.3.MD.8	KY.4.MD.1.b	KY.5.MD.4
			KY.3.MD.8.a	KY.4.MD.1.c	KY.5.MD.5
			KY.3.MD.8.b	KY.4.MD.2	KY.5.MD.5.a
			KY.3.MD.8.c	KY.4.MD.2.a	KY.5.MD.5.b
			KY.3.G.1	KY.4.MD.2.b	KY.5.MD.5.c
			KY.3.G.1.a	KY.4.MD.2.c	KY.5.G.1
			KY.3.G.1.b	KY.4.MD.3	KY.5.G.2
			KY.3.G.1.c	KY.4.MD.4	KY.5.G.3
			KY.3.G.2	KY.4.MD.4.a	KY.5.G.4
				KY.4.MD.4.b	
				KY.4.MD.4.c	
				KY.4.MD.5	
				KY.4.MD.6	
				KY.4.MD.7	
				KY.4.G.1	
				KY.4.G.2	
				KY.4.G.3	
				KY.4.G.3.a	
				KY.4.G.3.b	

Grades 6-8: All Standards

6	7	8
KY.6.RP.1	KY.7.RP.1	KY.8.NS.1
KY.6.RP.2	KY.7.RP.2	KY.8.NS.2
KY.6.RP.3	KY.7.RP.2.a	KY.8.EE.1
KY.6.RP.3.a	KY.7.RP.2.b	KY.8.EE.2
KY.6.RP.3.b	KY.7.RP.2.c	KY.8.EE.3
KY.6.RP.3.c	KY.7.RP.2.d	KY.8.EE.4

KY.6.NS.1	KY.7.RP.3	KY.8.EE.5
KY.6.NS.2	KY.7.RP.3.a	KY.8.EE.6
KY.6.NS.2.a	KY.7.RP.3.b	KY.8.EE.7
KY.6.NS.2.b	KY.7.NS.1	KY.8.EE.7.a
KY.6.NS.3	KY.7.NS.1.a	KY.8.EE.7.b
KY.6.NS.4	KY.7.NS.1.b	KY.8.EE.8
KY.6.NS.5	KY.7.NS.1.c	KY.8.EE.8.a
KY.6.NS.6	KY.7.NS.1.d	KY.8.EE.8.b
KY.6.NS.6.a	KY.7.NS.2	KY.8.EE.8.c
KY.6.NS.6.b	KY.7.NS.2.a	KY.8.F.1
KY.6.NS.6.c	KY.7.NS.2.b	KY.8.F.2
KY.6.NS.7	KY.7.NS.2.c	KY.8.F.3
KY.6.NS.7.a	KY.7.NS.3	KY.8.F.3.a
KY.6.NS.7.b	KY.7.EE.1	KY.8.F.3.b
KY.6.NS.7.c	KY.7.EE.2	KY.8.F.4
KY.6.NS.7.d	KY.7.EE.3	KY.8.F.4.a
KY.6.NS.8	KY.7.EE.4	KY.8.F.4.b
KY.6.EE.1	KY.7.EE.4.a	KY.8.F.5
KY.6.EE.2	KY.7.EE.4.b	KY.8.F.5.a
KY.6.EE.2.a	KY.7.G.1	KY.8.F.5.b
KY.6.EE.2.b	KY.7.G.2	KY.8.G.1
KY.6.EE.2.c	KY.7.G.3	KY.8.G.2
KY.6.EE.3	KY.7.G.4	KY.8.G.3
KY.6.EE.4	KY.7.G.4.a	KY.8.G.4
KY.6.EE.5	KY.7.G.4.b	KY.8.G.5
KY.6.EE.6	KY.7.G.5	KY.8.G.6
KY.6.EE.7	KY.7.G.6	KY.8.G.7
KY.6.EE.8	KY.7.G.6.a	KY.8.G.8
KY.6.EE.9	KY.7.G.6.b	KY.8.G.9
KY.6.EE.9.a	KY.7.SP.0	KY.8.SP.1
KY.6.EE.9.b	KY.7.SP.1	KY.8.SP.2
KY.6.EE.9.c	KY.7.SP.2	KY.8.SP.3
KY.6.G.1	KY.7.SP.2.a	
KY.6.G.2	KY.7.SP.2.b	
KY.6.G.3	KY.7.SP.2.c	
KY.6.G.4	KY.7.SP.3	
KY.6.SP.0	KY.7.SP.4	
KY.6.SP.0.a	KY.7.SP.5	

KY.6.SP.0.b	KY.7.SP.6	
KY.6.SP.0.c	KY.7.SP.7	
KY.6.SP.0.d	KY.7.SP.7.a	
KY.6.SP.1	KY.7.SP.7.b	
KY.6.SP.2	KY.7.SP.8	
KY.6.SP.3	KY.7.SP.8.a	
KY.6.SP.4	KY.7.SP.8.b	
KY.6.SP.5	KY.7.SP.8.c	
KY.6.SP.5.a		
KY.6.SP.5.b		
KY.6.SP.5.c		
KY.6.SP.5.d		
KY.6.SP.5.e		

High School (Grades 9-12): All Standards

Conceptual Category Number and Quantity	Conceptual Category Algebra	Conceptual Category Functions	Conceptual Category Geometry	Conceptual Category Statistics and Probability	Calculus (+)
KY.HS.N.1	KY.HS.A.1	KY.HS.F.1	KY.HS.G.1	KY.HS.SP.1	KY.HS.C.1 (+)
KY.HS.N.2	KY.HS.A.1.a	KY.HS.F.1.a	KY.HS.G.1.a	KY.HS.SP.2	KY.HS.C.1.a (+)
KY.HS.N.3 (+)	KY.HS.A.1.b	KY.HS.F.1.b	KY.HS.G.1.b	KY.HS.SP.3	KY.HS.C.1.b (+)
KY.HS.N.4	KY.HS.A.2	KY.HS.F.1.c	KY.HS.G.2	KY.HS.SP.4 (+)	KY.HS.C.2 (+)
KY.HS.N.4.a	KY.HS.A.3	KY.HS.F.1.d	KY.HS.G.2.a	KY.HS.SP.5	KY.HS.C.3 (+)
KY.HS.N.4.b	KY.HS.A.3.a	KY.HS.F.1.e	KY.HS.G.2.b	KY.HS.SP.6	KY.HS.C.4 (+)
KY.HS.N.5	KY.HS.A.3.b	KY.HS.F.2	KY.HS.G.2.c	KY.HS.SP.6.a	KY.HS.C.5 (+)
KY.HS.N.6	KY.HS.A.3.c	KY.HS.F.3	KY.HS.G.3 (+)	KY.HS.SP.6.b	KY.HS.C.6 (+)
KY.HS.N.7	KY.HS.A.3.d (+)	KY.HS.F.3.a	KY.HS.G.4	KY.HS.SP.7	KY.HS.C.7 (+)
KY.HS.N.7.a	KY.HS.A.4 (+)	KY.HS.F.3.b	KY.HS.G.4.a	KY.HS.SP.8	KY.HS.C.8 (+)
KY.HS.N.7.b	KY.HS.A.5	KY.HS.F.4	KY.HS.G.4.b	KY.HS.SP.8.a	KY.HS.C.9 (+)
KY.HS.N.7.c (+)	KY.HS.A.6 (+)	KY.HS.F.4.a	KY.HS.G.4.c	KY.HS.SP.8.b	KY.HS.C.9.a (+)
KY.HS.N.8 (+)	KY.HS.A.7	KY.HS.F.4.b	KY.HS.G.5	KY.HS.SP.8.c	KY.HS.C.9.b (+)
KY.HS.N.8.a (+)	KY.HS.A.8 (+)	KY.HS.F.4.c	KY.HS.G.5.a	KY.HS.SP.9	KY.HS.C.10 (+)
KY.HS.N.8.b (+)	KY.HS.A.9 (+)	KY.HS.F.4.d	KY.HS.G.5.b	KY.HS.SP.10	KY.HS.C.11 (+)
KY.HS.N.8.c (+)	KY.HS.A.10 (+)	KY.HS.F.4.e (+)	KY.HS.G.6	KY.HS.SP.11	KY.HS.C.11.a (+)
KY.HS.N.9	KY.HS.A.11 (+)	KY.HS.F.4.f (+)	KY.HS.G.7	KY.HS.SP.12	KY.HS.C.11.b (+)
KY.HS.N.10 (+)	KY.HS.A.12	KY.HS.F.4.g (+)	KY.HS.G.7.a	KY.HS.SP.13	KY.HS.C.12 (+)
KY.HS.N.11 (+)	KY.HS.A.13	KY.HS.F.5	KY.HS.G.7.b (+)	KY.HS.SP.14	KY.HS.C.13 (+)
KY.HS.N.12 (+)	KY.HS.A.14	KY.HS.F.5.a	KY.HS.G.8	KY.HS.SP.15	KY.HS.C.14 (+)

KY.HS.N.12.a (+)	KY.HS.A.15	KY.HS.F.5.b	KY.HS.G.8.a	KY.HS.SP.15.a	KY.HS.C.15 (+)
KY.HS.N.12.b (+)	KY.HS.A.16	KY.HS.F.6	KY.HS.G.8.b	KY.HS.SP.15.b (+)	KY.HS.C.16 (+)
KY.HS.N.12.c (+)	KY.HS.A.17	KY.HS.F.6.a	KY.HS.G.9	KY.HS.SP.15.c	KY.HS.C.17 (+)
KY.HS.N.13 (+)	KY.HS.A.17.a	KY.HS.F.6.b	KY.HS.G.9.a	KY.HS.SP.16	KY.HS.C.18 (+)
KY.HS.N.13.a (+)	KY.HS.A.17.b	KY.HS.F.6.c (+)	KY.HS.G.9.b	KY.HS.SP.16.a	KY.HS.C.19 (+)
KY.HS.N.13.b (+)	KY.HS.A.18	KY.HS.F.7	KY.HS.G.10	KY.HS.SP.16.b (+)	KY.HS.C.20 (+)
KY.HS.N.13.c (+)	KY.HS.A.19	KY.HS.F.7.a	KY.HS.G.11	KY.HS.SP.16.c	KY.HS.C.21 (+)
KY.HS.N.13.d (+)	KY.HS.A.19.a	KY.HS.F.7.b	KY.HS.G.11.a	KY.HS.SP.16.d	KY.HS.C.22 (+)
KY.HS.N.13.e (+)	KY.HS.A.19.b (+)	KY.HS.F.7.c (+)	KY.HS.G.11.b (+)	KY.HS.SP.17 (+)	KY.HS.C.23 (+)
KY.HS.N.14	KY.HS.A.19.c (+)	KY.HS.F.8	KY.HS.G.11.c	KY.HS.SP.18 (+)	KY.HS.C.24 (+)
KY.HS.N.15	KY.HS.A.20	KY.HS.F.8.a	KY.HS.G.12	KY.HS.SP.19	KY.HS.C.25 (+)
KY.HS.N.15.a	KY.HS.A.20.a	KY.HS.F.8.b	KY.HS.G.12.a	KY.HS.SP.19.a	KY.HS.C.26 (+)
KY.HS.N.15.b	KY.HS.A.20.b	KY.HS.F.9	KY.HS.G.12.b	KY.HS.SP.19.b	KY.HS.C.27 (+)
KY.HS.N.16 (+)	KY.HS.A.21	KY.HS.F.9.a	KY.HS.G.12.c	KY.HS.SP.19.c (+)	KY.HS.C.28 (+)
KY.HS.N.16.a (+)	KY.HS.A.22 (+)	KY.HS.F.9.b (+)	KY.HS.G.13 (+)	KY.HS.SP.20 (+)	KY.HS.C.29 (+)
KY.HS.N.16.b (+)	KY.HS.A.22.a (+)	KY.HS.F.9.c (+)	KY.HS.G.14 (+)	KY.HS.SP.21 (+)	KY.HS.C.30 (+)
KY.HS.N.16.c (+)	KY.HS.A.22.b (+)	KY.HS.F.9.d (+)	KY.HS.G.14.a (+)	KY.HS.SP.22 (+)	KY.HS.C.31 (+)
KY.HS.N.17 (+)	KY.HS.A.22.c (+)	KY.HS.F.10	KY.HS.G.14.b (+)	KY.HS.SP.22.a	KY.HS.C.32 (+)
	KY.HS.A.23	KY.HS.F.11	KY.HS.G.15	KY.HS.SP.22.b	KY.HS.C.32.a (+)
	KY.HS.A.24	KY.HS.F.11.a	KY.HS.G.16	KY.HS.SP.23 (+)	KY.HS.C.32.b (+)

	KY.HS.A.25	KY.HS.F.11.b	KY.HS.G.16.a	KY.HS.SP.23.a (+)	KY.HS.C.33 (+)
	KY.HS.A.25.a	KY.HS.F.11.c	KY.HS.G.16.b	KY.HS.SP.23.b (+)	KY.HS.C.34 (+)
	KY.HS.A.25.b	KY.HS.F.12	KY.HS.G.16.c	KY.HS.SP.23.c (+)	KY.HS.C.35 (+)
		KY.HS.F.13	KY.HS.G.17 (+)		KY.HS.C.36 (+)
		KY.HS.F.14	KY.HS.G.17.a (+)		KY.HS.C.37 (+)
		KY.HS.F.15 (+)	KY.HS.G.17.b (+)		KY.HS.C.38 (+)
		KY.HS.F.16 (+)	KY.HS.G.18 (+)		KY.HS.C.39 (+)
		KY.HS.F.16.a (+)	KY.HS.G.18.a (+)		KY.HS.C.40 (+)
		KY.HS.F.16.b (+)	KY.HS.G.18.b (+)		KY.HS.C.41 (+)
		KY.HS.F.16.c (+)	KY.HS.G.19		KY.HS.C.42 (+)
		KY.HS.F.17 (+)	KY.HS.G.19.a		KY.HS.C.43 (+)
		KY.HS.F.18 (+)	KY.HS.G.19.b (+)		KY.HS.C.44 (+)
		KY.HS.F.19 (+)	KY.HS.G.19.c (+)		KY.HS.C.45 (+)
		KY.HS.F.20 (+)	KY.HS.G.20 (+)		
		KY.HS.F.20.a (+)	KY.HS.G.20.a (+)		
		KY.HS.F.20.b (+)	KY.HS.G.20.b (+)		
			KY.HS.G.21		
			KY.HS.G.22		
			KY.HS.G.23		
			KY.HS.G.23.a		
			KY.HS.G.23.b		
			KY.HS.G.24		
			KY.HS.G.24.a		
			KY.HS.G.24.b		

			KY.HS.G.25		
			KY.HS.G.25.a		
			KY.HS.G.25.b		
			KY.HS.G.26 (+)		
			KY.HS.G.27		
			KY.HS.G.28		
			KY.HS.G.29		
			KY.HS.G.30		
			KY.HS.G.31		

Content Standards by Domain for K-8

Operations and Algebraic Thinking Standards Progression

K	1	2	3	4	5
KY.K.OA.1	KY.1.OA.1	KY.2.OA.1	KY.3.OA.1	KY.4.OA.1	KY.5.OA.1
KY.K.OA.2	KY.1.OA.2	KY.2.OA.2	KY.3.OA.2	KY.4.OA.2	KY.5.OA.2
KY.K.OA.3	KY.1.OA.3	KY.2.OA.3	KY.3.OA.3	KY.4.OA.3	KY.5.OA.3
KY.K.OA.3.a	KY.1.OA.4	KY.2.OA.4	KY.3.OA.4	KY.4.OA.3.a	KY.5.OA.3.a
KY.K.OA.3.b	KY.1.OA.5		KY.3.OA.5	KY.4.OA.3.b	KY.5.OA.3.b
KY.K.OA.4	KY.1.OA.6		KY.3.OA.6	KY.4.OA.4	KY.5.OA.3.c
KY.K.OA.5	KY.1.OA.6.a		KY.3.OA.7	KY.4.OA.4.a	
	KY.1.OA.6.b		KY.3.OA.8	KY.4.OA.4.b	
	KY.1.OA.7		KY.3.OA.9	KY.4.OA.4.c	
	KY.1.OA.8			KY.4.OA.4.d	
				KY.4.OA.5	

Number and Operations in Base Ten Standards Progression

K	1	2	3	4	5
KY.K.NBT.1	KY.1.NBT.1	KY.2.NBT.1	KY.3.NBT.1	KY.4.NBT.1	KY.5.NBT.1
	KY.1.NBT.1.a	KY.2.NBT.1.a	KY.3.NBT.2	KY.4.NBT.2	KY.5.NBT.2
	KY.1.NBT.1.b	KY.2.NBT.1.b	KY.3.NBT.3	KY.4.NBT.2.a	KY.5.NBT.3
	KY.1.NBT.2	KY.2.NBT.2		KY.4.NBT.2.b	KY.5.NBT.3.a
	KY.1.NBT.2.a	KY.2.NBT.3		KY.4.NBT.3	KY.5.NBT.3.b
	KY.1.NBT.2.b	KY.2.NBT.4		KY.4.NBT.4	KY.5.NBT.4
	KY.1.NBT.2.c	KY.2.NBT.5		KY.4.NBT.5	KY.5.NBT.5
	KY.1.NBT.3	KY.2.NBT.6		KY.4.NBT.6	KY.5.NBT.6
	KY.1.NBT.4	KY.2.NBT.7			KY.5.NBT.6.a
	KY.1.NBT.4.a	KY.2.NBT.7.a			KY.5.NBT.6.b
	KY.1.NBT.4.b	KY.2.NBT.7.b			KY.5.NBT.7
	KY.1.NBT.5	KY.2.NBT.8			KY.5.NBT.7.a
	KY.1.NBT.6	KY.2.NBT.9			KY.5.NBT.7.b
	KY.1.NBT.6.a				
	KY.1.NBT.6.b				

Measurement and Data Standards Progression

K	1	2	3	4	5
KY.K.MD.1	KY.1.MD.1	KY.2.MD.1	KY.3.MD.1	KY.4.MD.1	KY.5.MD.1
KY.K.MD.2	KY.1.MD.2	KY.2.MD.2	KY.3.MD.2	KY.4.MD.1.a	KY.5.MD.2
KY.K.MD.3	KY.1.MD.3	KY.2.MD.3	KY.3.MD.2.a	KY.4.MD.1.b	KY.5.MD.3
KY.K.MD.4	KY.1.MD.3.a	KY.2.MD.4	KY.3.MD.2.b	KY.4.MD.1.c	KY.5.MD.3.a
	KY.1.MD.3.b	KY.2.MD.5	KY.3.MD.3	KY.4.MD.2	KY.5.MD.3.b
	KY.1.MD.4	KY.2.MD.6	KY.3.MD.3.a	KY.4.MD.2.a	KY.5.MD.4
	KY.1.MD.4.a	KY.2.MD.7	KY.3.MD.3.b	KY.4.MD.2.b	KY.5.MD.5
	KY.1.MD.4.b	KY.2.MD.8	KY.3.MD.3.c	KY.4.MD.2.c	KY.5.MD.5.a
	KY.1.MD.4.c	KY.2.MD.9	KY.3.MD.4	KY.4.MD.3	KY.5.MD.5.b
	KY.1.MD.4.d	KY.2.MD.9.a	KY.3.MD.4.a	KY.4.MD.4	KY.5.MD.5.c
		KY.2.MD.9.b	KY.3.MD.4.b	KY.4.MD.4.a	
		KY.2.MD.9.c	KY.3.MD.4.c	KY.4.MD.4.b	
		KY.2.MD.10	KY.3.MD.4.d	KY.4.MD.4.c	
			KY.3.MD.5	KY.4.MD.5	
			KY.3.MD.6	KY.4.MD.6	
			KY.3.MD.7	KY.4.MD.7	
			KY.3.MD.7.a		
			KY.3.MD.7.b		
			KY.3.MD.7.c		
			KY.3.MD.7.d		
			KY.3.MD.8		
			KY.3.MD.8.a		
			KY.3.MD.8.b		
			KY.3.MD.8.c		

Numbers & Operations-Fractions Standards Progression

3	4	5
KY.3.NF.1	KY.4.NF.1.a	KY.5.NF.1
KY.3.NF.2	KY.4.NF.1.b	KY.5.NF.2
KY.3.NF.2.a	KY.4.NF.2	KY.5.NF.2.a
KY.3.NF.2.b	KY.4.NF.3	KY.5.NF.2.b
KY.3.NF.3	KY.4.NF.3.a	KY.5.NF.3
KY.3.NF.3.a	KY.4.NF.3.b	KY.5.NF.4
KY.3.NF.3.b	KY.4.NF.3.c	KY.5.NF.4.a
KY.3.NF.3.c	KY.4.NF.3.d	KY.5.NF.4.b
KY.3.NF.3.d	KY.4.NF.4	KY.5.NF.5
	KY.4.NF.4.a	KY.5.NF.5.a
	KY.4.NF.4.b	KY.5.NF.5.b
	KY.4.NF.4.c	KY.5.NF.6
	KY.4.NF.5	KY.5.NF.7
	KY.4.NF.5.a	KY.5.NF.7.a
	KY.4.NF.5.b	KY.5.NF.7.b
	KY.4.NF.6	KY.5.NF.7.c
	KY.4.NF.7	
	KY.4.NF.7.a	
	KY.4.NF.7.b	

Geometry Standards Progression

K	1	2	3	4	5
KY.K.G.1	KY.1.G.1	KY.2.G.1	KY.3.G.1	KY.4.G.1	KY.5.G.1
KY.K.G.1.a	KY.1.G.2	KY.2.G.2	KY.3.G.1.a	KY.4.G.2	KY.5.G.2
KY.K.G.1.b	KY.1.G.2.a	KY.2.G.3	KY.3.G.1.b	KY.4.G.3	KY.5.G.3
KY.K.G.2	KY.1.G.2.b		KY.3.G.1.c	KY.4.G.3.a	KY.5.G.4
KY.K.G.3	KY.1.G.3		KY.3.G.2	KY.4.G.3.b	
KY.K.G.4					
KY.K.G.5					
KY.K.G.6					

6	7	8
KY.6.G.1	KY.7.G.1	KY.8.G.1
KY.6.G.2	KY.7.G.2	KY.8.G.2
KY.6.G.3	KY.7.G.3	KY.8.G.3
KY.6.G.4	KY.7.G.4	KY.8.G.4
	KY.7.G.4.a	KY.8.G.5
	KY.7.G.4.b	KY.8.G.6
	KY.7.G.5	KY.8.G.7
	KY.7.G.6	KY.8.G.8
	KY.7.G.6.a	KY.8.G.9
	KY.7.G.6.b	

Ratios & Proportional Relationships Standards Progression

6	7
KY.6.RP.1	KY.7.RP.1
KY.6.RP.2	KY.7.RP.2
KY.6.RP.3	KY.7.RP.2.a
KY.6.RP.3.a	KY.7.RP.2.b
KY.6.RP.3.b	KY.7.RP.2.c
KY.6.RP.3.c	KY.7.RP.2.d
	KY.7.RP.3
	KY.7.RP.3.a
	KY.7.RP.3.b

The Number System Standards Progression

6	7	8
KY.6.NS.1	KY.7.NS.1	KY.8.NS.1
KY.6.NS.2	KY.7.NS.1.a	KY.8.NS.2
KY.6.NS.2.a	KY.7.NS.1.b	
KY.6.NS.2.b	KY.7.NS.1.c	
KY.6.NS.3	KY.7.NS.1.d	
KY.6.NS.4	KY.7.NS.2	
KY.6.NS.5	KY.7.NS.2.a	
KY.6.NS.6	KY.7.NS.2.b	
KY.6.NS.6.a	KY.7.NS.2.c	
KY.6.NS.6.b	KY.7.NS.3	
KY.6.NS.6.c		
KY.6.NS.7		
KY.6.NS.7.a		
KY.6.NS.7.b		
KY.6.NS.7.c		
KY.6.NS.7.d		
KY.6.NS.8		

Expressions & Equations Standards Progression

6	7	8
KY.6.EE.1	KY.7.EE.1	KY.8.EE.1
KY.6.EE.2	KY.7.EE.2	KY.8.EE.2
KY.6.EE.2.a	KY.7.EE.3	KY.8.EE.3
KY.6.EE.2.b	KY.7.EE.4	KY.8.EE.4
KY.6.EE.2.c	KY.7.EE.4.a	KY.8.EE.5
KY.6.EE.3	KY.7.EE.4.b	KY.8.EE.6
KY.6.EE.4		KY.8.EE.7
KY.6.EE.5		KY.8.EE.7.a
KY.6.EE.6		KY.8.EE.7.b
KY.6.EE.7		KY.8.EE.8
KY.6.EE.8		KY.8.EE.8.a

KY.6.EE.9		KY.8.EE.8.b
KY.6.EE.9.a		KY.8.EE.8.c
KY.6.EE.9.b		
KY.6.EE.9.c		

Statistics & Probability Standards Progression

6	7	8
KY.6.SP.0	KY.7.SP.0	KY.8.SP.1
KY.6.SP.0.a	KY.7.SP.1	KY.8.SP.2
KY.6.SP.0.b	KY.7.SP.2	KY.8.SP.3
KY.6.SP.0.c	KY.7.SP.2.a	
KY.6.SP.0.d	KY.7.SP.2.b	
KY.6.SP.1	KY.7.SP.2.c	
KY.6.SP.2	KY.7.SP.3	
KY.6.SP.3	KY.7.SP.4	
KY.6.SP.4	KY.7.SP.5	
KY.6.SP.5	KY.7.SP.6	
KY.6.SP.5.a	KY.7.SP.7	
KY.6.SP.5.b	KY.7.SP.7.a	
KY.6.SP.5.c	KY.7.SP.7.b	
KY.6.SP.5.d	KY.7.SP.8	
KY.6.SP.5.e	KY.7.SP.8.a	
	KY.7.SP.8.b	
	KY.7.SP.8.c	

Public Comments Received

The following pages include the public comments received on the *Kentucky Academic Standards (KAS) for Mathematics* by grade band.

Grades K–5 Comments

- 3rd graders need to be able to read numbers up to 1,000,000.
5th graders are still struggling with whole numbers and they are absent from their standards with the exception of multiplying and dividing.
- A ctrl+F of the entire 200+ page math standards PDF does not give a single occurrence of the terms "prime factor" or "prime factorization." I do not know the Elementary or Middle School standards well enough to say where this would fit best, but it concerns me greatly. There are multiple areas in elementary, middle, and high school math where students can benefit from knowing what "prime factorization" means and from being able to use it. But if the term doesn't show up in the standards, what does that communicate to (especially) inexperienced teachers?
- As a veteran of 31 years and someone whose math scores have been solid for 5 years since COVID, these kids need real life math!!!
- Create consistency in the structure of standards. For example, the "word problem" standards for all grade levels should either all be their own stand alone standard OR should be a "part __" of whichever standard it best aligns with. Whatever choice is made for 1 grade level keep consistent for others.
- Ensuring that concepts are developmentally appropriate. Time and money are two concepts that students still seem to struggle with in 5th grade, but they don't practice after primary.
- Fluency being named in upper elementary as mastering Computational Fluency. Also, choosing an efficient strategy instead of the word algorithm may be helpful toward the flexibility part of our standards. Some standard algorithms at elementary undermine their understanding of the magnitude of numbers they are computing with when digit based algorithms are the focus, instead of number based strategies. Also from 2nd grade, place value to 1,000, no expansion of that in third grade, maybe at least to 10,000. That way their would be an extension of place value learning in third, better preparing to 1,000,000 in fourth grade.
- I appreciate the layout and the clarifications.

- I didn't know where to put this, but implementing a standard that emphasizes the transitivity of equality would be nice. If we have $a+3 = b+3$ and later $b-2 = c-2$, then $a = b = c$, for example. On a related note, emphasizing the reason why operations must be done on both sides to preserve equality I think would be good.
- I have personally witnessed poor mathematics skills and how changing the ages of incorporation requirements have impacted children. We are now in times that children are rushed to learn things faster and quicker which in turn does not allow them the time needed to master each step in basic mathematics before incorporation of new ideals and strategies are given. Many questions asked regarding third and fourth grade levels my son was not taught and he is now in fifth grade. So unfortunately I am very concerned with those things in mind. When kids graduate and cannot add basic mathematics before compositions without using their phone, it concerns me. We are living in days where everyone wants to depend on screens and phone which gives them answers faster without making them use their own brain to figure it out. Check the studies on dementia and you will find that the less you rely on your own knowledge and brain power to process and address basic equations the higher your risk of dementia.
- I really like the way the SMPs are woven into every cluster. I like the structure with clarifications and SMP connections for every cluster. The actual assignments of SMPs to specific standards may need to be reconsidered - perhaps the SMP connections could take more of a "cluster" view and show how all of the SMPs work together?
- I think that emphasizing the concept of the transitivity of equality would be good. For example, where if $a+3=b+3$ and $b-1=c-1$, then $a=b=c$. Moreover, one would stress that manipulating both sides of an equation maintains the equality. Also, there could be more of an introduction to the basics of sets, such as unions, intersections, complements, and the fact that we can do mathematical manipulation with sets that are not subsets of the real line.
- If on the overview page, the grade level domains are being suggested to be taught together, guidance in the coherence should reflect such, and it often does not. In general, there is a misuse or overuse of MP4 as a potential pathway for standards. This may need to be revisited on all standards. Additionally, on the overview pages, notes should be provided as to how non-critical areas (domains and clusters) should be taught, but not required to be taught to mastery of the skill. The 5th-grade overview page indicates that measurement/data and geometry should be taught together, but when reading the critical areas, none of the bulleted notes mention the geometry clusters - this may need to be revisited. Noting on the overview what is most critical, like K and 3rd, is helpful - might this be appropriate for all grade levels?

- In 5th grade, the overview page mentions geometry as a critical domain. However, none of the bulleted point align to any of the geometry standards.
In Table 1 under COMPARE and DIFFERENCE UNKNOWN. It should say "How many more apples does Julie have than Lucy." All fluency standards should have MP2, MP7, and MP8 attached to signify that students can use any of the avenues of thinking to approach the problems. The use of MP4 needs to be thought about throughout the document. Modeling should always be attached to real-world situations, not to standards that only require mathematical problems with no context.
- In various professional learning experiences, we talk about identifying the target of the standard (conceptual understanding, procedural fluency, application). At times this is difficult for teachers to determine. I would strongly recommend including the intended target of standard with each content standard included in KSA. I think this would help provide consistency when teaching the standards if this was explicitly stated. Also, it would be helpful for teachers if NCTM's Effective Mathematics Teaching Practices were included in the introduction to the standards.
- Kindergarten-I would like to see a standard added that addresses identifying numbers 0-20.
- Pictorial representations should be used in the lower grades for students to make connections of math concepts, but should be taken away in the later years, so students are more connected with the math and not trying to "draw a picture". More emphasis needs to be placed on students understanding the true algorithms for each operation, knowing their multiplication tables at least up through 10x10, and relating simple division problems to their multiplication facts ($30 \div 5 = 6$ because $5 \times 6 = 30$).
- The Attending to the Standards for Mathematical Practice section needs revisiting. Some of the connections appear to be made solely to claim that all SMPs were addressed in a domain. SMP1 in particular needs revisiting throughout. Many images are fuzzy in the clarifications in the current version.
- They align grade to grade pretty well. However, many of the standards require thinking that young brains are just not capable of yet. They need time to fully master whole numbers before going to decimals and time to master decimals before moving into operations with fractions.
- This survey leaves out the standards for mathematical practices and the clarification statements.
- We should not teach statistical analysis in elementary school.

Grades 6–8 Comments

- 6th grade overview page mentions surface area, but this was moved to 7th grade. It needs to be moved to the 7th grade overview page. All fluency standards should include the thinking avenues (MP2, MP7, and MP8). MP4 should ONLY be referenced in problems that are based in context, not in conceptual understanding standards."
- For the most part, I am okay with the 6-8 math standards. There are only a few revisions that I believe need to be considered and possibly made.
- I think some of the standards are worded in ways that can be confusing. By simplifying the language, we can ensure that more people clearly understand the purpose of the standard.
- Integers should be introduced in 6th grade so that students have time to master the skills by 8th grade...8th graders are expected to have integers mastered but they have not have time to process the rules. There are SO MANY 8th grade standards. We are expecting things from their brains their brains are not prepared for yet. Come on people!
- It would be helpful to have a compacted 7th/8th course that includes 7th grade and the 8th grade standards that are not taught in Algebra 1 defined in the course matrix in the same way that the appendix b defines these courses in the Common Core.
- Perhaps add to the clarifications that "elimination" as a strategy to solve systems of equations isn't required in 8th grade? Like the notes about fractions in elementary school?
- Students are coming to middle school without a basic knowledge of the number system. We have put too many abstract standards in at too low of an age. If students entered school with the ability to add, subtract, multiply, and divide positive numbers we would be able to see some more difficult concepts. Additionally, the reading levels of real world problems is absurd for the average student. Finally, questions should not be written to confuse students.
- Students should not be required to show quotient of fractions by using area models nor should they be required to compute Mean Absolute Deviation for a data set when the requirements of the other standard are sufficient.
- The change in percents and surface area to 7th grade were unnecessary and should return to 6th grade as 6th graders are capable. They have been converting fractions to decimals since 4th grade so it is natural to move to percents by at least 6th grade. Students learn volume in 5th grade and ready to learn surface area in 6th, this change was also unnecessary.

- The diagrams that are available in the clarifications are blurry in this version. I hope that we have clearer ones in the new edition.
- The standards are clear & word fine in my opinion. I wish we could find a way to have a few less standards per grade level so that we can effectively cover all of them each year.
- The standards are numerous so the only change I may consider is having less per grade level, if possible.
- The standards did not need to be changed from common core. The changes that were made detracted from the effectiveness rather than enhancing.
- There is a lot of words in the standards that I'm not sure everyone will know what they mean.
- These standards are so ambitious. They represent an ideal that is only realistic for some students. The result is that in some districts (like mine) we end up with students who enter high school knowing little of what they are supposed to. They cannot solve the equation $3x-8=5$ consistently, but their teachers in MS are pressing on to solve systems of equations. They cannot plot (5,6) or graph $y=x$ on the coordinate plane, but they are solving systems of equations. I really wish there were more flexibility in the middle school standards that would give schools guidance and permission to identify students who need remediation on certain key algebra topics to the point where there is no point in them moving on to the next logical standard--until certain things are better understood. In the long run, those students would be more prepared for high school math that way. Computation is another concern. The standards should dictate that computational skills without a calculator be taught in elementary school but then maintained and deepened in middle and high school. There are 9 occurrences of "calculator" in the standards document, and all of them tell when a calculator could/should be used. This leads to middle school (and then high school) teachers using calculators as a band-aid for all sorts of math skills that many students should have but don't have. Lack of basic computational skills directly impacts algebraic understanding in many cases. Surely the standards could be revised in a way that encourages middle school teachers to strike a balance between teaching students how and when to use calculators, but also continuing to foster their computational abilities, rather than giving them unrestricted access to calculators, thereby saying "it's okay that you don't know that $-5 + 5 = 0$ " (for example). Lastly, I posted this in the elementary section too, because I don't know for sure where it belongs and there could be different groups looking at the different levels: A ctrl+F of the entire 200+ page math standards PDF does not give a single occurrence of the terms "prime factor" or "prime factorization." I

do not know the Elementary or Middle School standards well enough to say where this would fit best, but it concerns me greatly. There are multiple areas in elementary, middle, and high school math where students can benefit from knowing what "prime factorization" means and from being able to use it. But if the term doesn't show up in the standards, what does that communicate to (especially) inexperienced teachers?"

- This feedback applies more generally than just the 6-8 standards, but I didn't see a place to write it. I've seen from KDE that each standard has a target (e.g. conceptual understanding, application, procedural skill). If that is true, then it should be described in the document and indicated for each standard.
- When providing the overview pages for grades 7 and 8, domains should be taught together, but it is not noted in the coherence of the standards. Overuse/misuse of MP 4 on several pathways
- With Algebra 1 being the next step up from 8th grade, I believe that some of the geometry content should be taken out of the 8th grade standards (if they will not help them in Algebra 1)

Grades 9–12 Comments

- I know that the KDE separates the Algebra I and Geometry standards, but I think the KDE really needs to separate all of the other standards as well. I know that Algebra II is no longer a required course, but if we are going to still have required standards past 10th grade, then I think those standards need to be divided up into grade levels at the very least. For example, standards 1, 2, 3 should be covered in 11th grade while 4, 5, 6 should be covered in 12th. Or there might be a different way to do this, but I think it would be helpful for the required standards to be broken up in some capacity.
- Most of my issues stemmed from language inconsistency. Double check that all of them use the same tense.
- Please provide more continuity with the revision. Verbs and sentence structure are not consistent. It seems obvious that various people completed different parts of the standards and then they were all compiled without making sure they were in agreement. Make sure they aren't redundant and are well-clarified.
- Please use the cluster notation when naming the standards. This helps us to think about how the standards in a cluster are related and to more efficiently align standards goals to HQIR.

- Solving rational function equations should not be a required standard. This is such a difficult concept and it is really only useful for students taking pre-calculus and calculus. I do not think that rational function problems (beyond simple proportions) benefit all students.
- There are too many standards that are not applicable to students who are not taking high school math courses that are more advanced than Algebra I or Geometry. With Algebra II no longer being a required course some of these standards should be removed, combined, or changed to (+) standards as they are no longer applicable to the majority of high school students. Also very few of them have little application outside of an advanced math classroom setting.
- Wondering why the plus standards need to be maintained in the document if they aren't required for every student. Having them there can be confusing and it also makes the printing a lot longer. All the calculus standards are plus so why should that be included when the standards are required for all students. Is math the only subject area to include unrequired standards? When you compare the Attending to the SMPs component for high school to that of elementary and middle school, the high school component is not at the same level of quality. The K-5 and 6-8 give examples of what students are doing when they engage in those practices but the high school just restates the language of the SMP - which isn't helpful when teaching that content. Since fewer high schools have adopted high quality materials compared to K-5 and 6-8, that makes this component of the standards particularly important and valuable in high school. Last thing because this applies overall not just to high school - the architecture shouldn't change because so much of what is on each page is what teachers need. Learning a new architecture isn't something we have time for when we are already learning our new materials.
- Would love to see critical areas for the Alg. 1 and Geometry courses. The modeling domain lacks the star to indicate modeling standards in the matrix. The calculus overview page has errors on the clusters and domains that need to be updated.

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