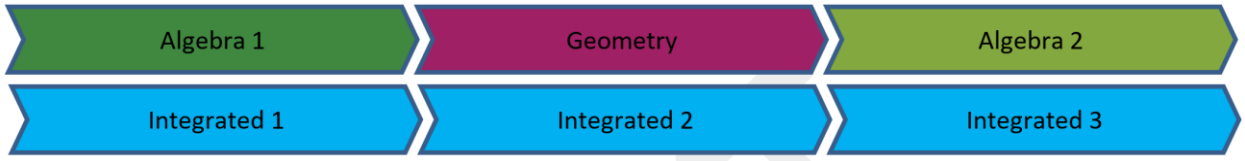
SECTION ONE: Introduction

1A: Common Historical Course Sequences

In Oregon, districts and schools need to plan courses that provide the opportunity for students to have access to the adopted high school standards by the end of a three credit sequence or sooner. State law does not prescribe any specific high school math course sequence, rather only that students have access to the content identified in the adopted state standards. Traditionally, three credits of high school course content have been arranged into either an Algebra, Geometry, Algebra 2 sequence (AGA), or an integrated equivalent.

Figure 1: Common High School Course Options



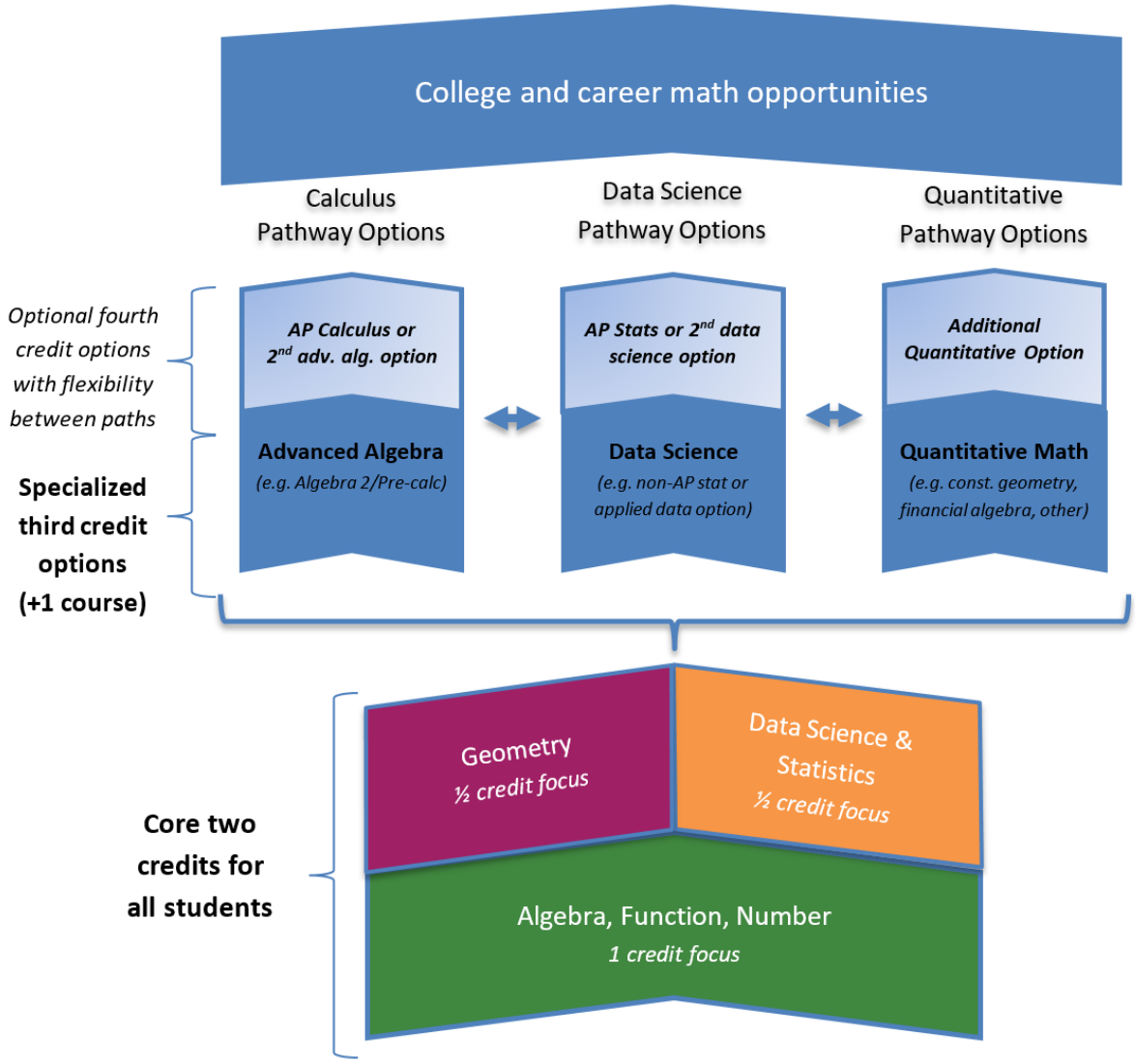
In 2010, Oregon adopted high school math standards based on the Common Core State Standards (CCSS), which currently identify 111 non-advanced standards for all students. In addition, there are 36 optional advanced (+) standards that could either be included in the core three credit sequence or as additional study. Content is divided into six domains of Number, Algebra, Functions, Modeling, Geometry, and Statistics & Probability.

1B: Standards Revision and Future High School Pathways

Oregon State Standards are reviewed and revised on a regular basis. In mathematics, the planned review by educators occurred in the 2019-20 school year and was prepared for adoption by the State Board of Education in the 2020-21 school year. This original timeline included preparing for a state review of instructional materials in the summer of 2022 and district updating of materials in the 2022-23 school year. From the student perspective, statewide implantation in classrooms would occur by the fall of the 2023-24 school year. It is possible the school closures could delay this timeline, but no formal decisions have been made as of July 2020. Updated timelines will be reflected in any future guidance provided.

Pending future State Board of Education approval, the work completed to date includes a comprehensive review and revision of our high school math standards. The working assumption of the high school review was to shift to a new course pathway model with two credits of core content for all students, and create third credit pathway options that align to student interests and goals. This model is referred to as the 2+1 course model. Core content would be balanced between approximately one credit of algebra content, ½ credit of geometry, and ½ credit of data science and statistics. For third credit options, Oregon high school staff are invited to innovate by offering new specialized courses within three general paths: (1) a pathway to calculus; (2) a pathway to data science; (3) and a pathway to quantitative mathematics. Figure 2 helps visualize the long term goal of what high school math pathways in the 2+1 model could look like as early as the 2023-24 school year.

Figure 2: Long Term (2023-24) Course Pathway Options



1C: Centering on Equitable High School Mathematics

In June 2020, the Oregon Department of Education (ODE) released the first version of Ready Schools, Safe Learners with the goal of providing clear statewide requirements and recommendations for health, safety, equity, and instruction. Students in mathematics have inequitable access to grade level content; unfinished learning can accumulate over time, creating a system where students find themselves trapped in tracks repeating K-8 mathematics within high school courses.

The absence of in-person instruction in spring 2019 amplified the issue of access to grade level content in mathematics. Accelerating, rather than remediating, content from prior coursework is needed to achieve the central goal of maximizing access to grade level content for all students. ODE has published a math acceleration summary in support of the call to accelerate learning in mathematics, which is consistent with national guidance from the TNTP Acceleration Guide and the NCTM/NCSM COVID-19 Joint Position Statement.

Ensuring students have access to high school content will take innovation and creativity to reimagine what course experiences could look like for Oregon students. The intent of this document is to provide additional guidance specific to planning high school math courses for the next school year, as well as set up each and every Oregon student for equitable access to course options.

Additional information and examples can be found in the Oregon Math Project Practice Brief: Promoting Equity

1D: Detracking Mathematics and Creating Pathways in High School

ODE supports national calls to detrack math experiences for our students and teachers. Detracking the first two credits of core math content is a long-term goal for Oregon, and can begin as soon as this next school year. At the same time, ODE supports efforts to create grade 11-14 math pathways that could include specialized third credit course options, such as construction geometry or financial algebra, that align to student goals and aspirations. For the 2020-21 school year, it is likely that existing courses such as Algebra 1, Geometry, and Algebra 2 would still be provided, with a focus on prioritized content.

For the purposes of ODE guidance, the term "tracking" will refer to the practice of creating different levels of the same course that group students by perceived abilities. Detracking high school courses would ensure that all students have access to the same content and experiences for any given course.

The term "pathway" refers to a specialized math course sequence that leads to career and college readiness. This could include the traditional advanced algebra pathway to prepare for calculus that all students were locked into, but could also include a statistics pathway or quantitative applied pathway that leads to specific career and college options for students after high school graduation.

Further resources to understand this work in Oregon and nationally in support of grade 11-14 math pathways include Branching Out: Designing High School Math Pathways for Equity, Dana Center Launch Years Report, and CBMS High School to College Mathematics Pathways forum, at which our state was invited to share course pathway work described in this document. The time is right for Oregon educators to think innovatively and lead the nation in reimagining high school math.

- Additional information and examples can be found in the Oregon Math Project Practice Brief: Tracking

1E: Opportunity to Deepen Equity, Innovation, Care, and Connection

High school pathways described in the 2+1 course model are an innovation that high school faculty can use to create equitable opportunities that connect mathematics to students goals and interests and prioritize anti-racist mathematics instruction. Oregon schools and districts are therefore encouraged to use the 2020-21 and 2021-22 school years to plan a path to create math pathways options for students.

This includes leaning into new and innovative ways to incorporate instructional best practices, such as NCTM's Principles to Action, to create student-centered instructional experiences that continue beyond the current health crisis. Resources and courses created today can lay a strong foundation for high school experiences in the future.

- Additional information and examples can be found in the Oregon Math Project Practice Brief: Classroom Discourse

1F: Continued Focus on Math Practices and Modeling

Reimagining math pathway options that meet the needs of more students will require a focus on content rather than courses that students need for success. It will also require ensuring the Standards of Mathematical Practice are attended to as we accelerate learning. This includes finding new ways to infuse applications through mathematical modeling that supports the natural interconnectedness of math to other disciplines and to community-based problems. Modeling is an opportunity to see mathematics as relevant to students' lives and the questions confronting our world. Now more than ever, we need to find ways to increase student interest and enthusiasm in math by providing more opportunities to engage in interactive, student-centered problems that are based in applied mathematics. Examples of mathematical modeling lessons can be found below, with additional examples added over time to the Oregon Open Learning Mathematics Group.

- American Statistical Association - STatistics Education Web (STEW)
- Council for Economic Education - EconEdLink Lessons
- Modeling with Mathematics through Three-Act Tasks

Modeling is best interpreted not as a collection of isolated topics but in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout core content in this document as indicated by a star symbol (★).

- Additional information and examples can be found in the Oregon Math Project Practice Brief: Mathematical Modeling

1G: Connections to National Conversations

The ideas described in this document have been informed and aligned to the call for re-humanizing school mathematics. The National Council of Teachers of Mathematics (NCTM) recognizes the need to focus on high school mathematics in *Catalyzing Change in High School Mathematics: Initiating Critical Conversations,* which outlines the need for change as well as recommendations to focus math content that lead to specialized pathways in high school.

Additional national conversations are occurring within professional math organizations that recognize the need to create more options for students that are contextual and connected to a student's interest. *The Common Vision Project* is a joint effort of five national math organizations led by the Mathematical Association of America (MAA) calling for a shift in college math instruction to introduce contemporary topics and applications and employ a broad range of examples and applications to motivate students and illustrate how math is used.

1H: Overview of 2019-21 Math Standards Review and Revision

Phase 1 (April-September 2019)

Goal: Ensure the **Commitment of Shared Learning** of the standards and the Oregon Equity Lens for all panelists

- Primary Task: Participate in online learning opportunities in spring/summer 2019 and engage in conversations in a Canvas course set up for the content panel

The first phase of the project included grounding our work in a shared learning experience on the Canvas learning management system so that travel could be minimized by taking advantage of available technologies. Learning sessions were recorded and can be found on the Oregon Math Project YouTube channel.

Phase 2 (October 2019-March 2020)

Goal: Ensure the **Language** of the standards is accessible to a wide audience

- Primary Task: Review standards and draft content into (1) a standards statement, and (2) Clarifying Guidance(s)
- Additional HS Task: Propose core two credit content for all students

Work in Phase 2 was done primarily in grade level teams meeting virtually through video conferences, sharing documents online. Each team was tasked with creating a version 1.0 document by January 2020. This draft was then shared with all groups for feedback and use at the in-person co-chair meeting on March 2-3, 2020, in Portland, OR.

Additional guests at the March meeting included **Shebi Cole and Jason Zimba from Student Achievement Partners**, **Robert Berry from the National Council of Teachers of Mathematics**, and **Ted Coe from Achieve**. Guest speakers were on site to provide additional guidance to our panelists in drafting the version 2.0 document that is being shared now.

Phase 3 (November-December 2020)

Goal: Ensure the **Commitment to the Focus and Coherence** of the standards is maintained or improved

- Primary Task: Review the March 2020 draft (version 2.0) through the lens of focus (e.g., clarity, prioritization) and coherence (e.g., learning within established progressions)
- Create version 3.0 based on content panel feedback

The COVID-19 pandemic significantly disrupted all our lives in a number of ways, including statewide school closures starting mid-March, just after we were able to have our in-person content panel meeting. This impacted our work on math standards, which was put on hold. Work with math standards feedback will move to online only options starting in November 2020.

Phase 4 (January-February 2021)

Goal: Ensure the **Commitment to Expand the Conversation** beyond the content panel through a public review process

- Primary Task: Public review of version 3.0 - January 2021
- Coordinate with Oregon Education Service Districts (ESDs) to schedule virtual webinar options for feedback. Separate sessions for K-8 and High School standards will be provided and sign-ups should be done with the hosting ESDs. Dates, times, and registration links can be found on the ODE math standards page.

Phase 5 (March-April 2021)

Goal: Ensure the **Commitment to Incorporate Feedback** is collected to inform and improve the quality of the standards

- Primary Task: Review feedback from the winter public feedback sessions and incorporate changes as needed
- Connections will also be made to work happening nationally to inform standards work in Oregon. Significant potential changes will be shared with educators and the State Board for possible inclusion in our state standards work (version 4.0)

Phase 6 (Spring/Summer 2021)

Goal: Ensure the **Commitment to Alignment to the Vision** of mathematics education in Oregon and ensure standards support this vision

- Primary Task: Present standards to the State Board of Education for adoption, or update timeline if additional time is needed to incorporate feedback and alignment to national work in math education

1J: Acknowledgements

It is with tremendous gratitude that the staff at the Oregon Department of Education recognizes the work of the math content panel and the countless hours invested to produce this draft document. This work will continue to be reviewed in spring and summer 2020 with the goal of a public review in fall 2020. Please join us in thanking the content panelists and co-chairs (indicated in bold) for their efforts to support the review of our math standards.

High School Algebra Team

- **Maddy Ahearn, Lane ESD**
- **Tammy Anderson, Ashland School District**
- **Dev Sinha, University of Oregon**
- **Katie Weybright, Redmond School District**
- James Akers, La Grande School District
- Jacob Alburn, Woodburn School District
- Marla Baber, Portland Public Schools
- Barry Bowers, Imbler School District
- David Duncan, Wallowa School District
- Kristen Faust, North Clackamas School District
- Mark Gano, Woodburn School District
- Olivia Green, Gresham-Barlow School District
- Charlene Herron, Klamath Falls City Schools
- Jaclyn Herzog, Portland Public Schools
- Courtney Jentzsch, North Clackamas SD
- Laura Lethe, Salem-Keizer School District
- Shannon Mashinchi, Reynolds School District
- Joeal Mazurowski, Portland Christian HS
- Stephanie Partlow, Woodburn School District
- Erica Pifer, Springfield SD/Lane ESD
- Steve Rhine, Pacific University
- Sarah Savage, Reynolds School District
- Charles Slusher, Portland Public Schools
- Teresa Swake, Sherwood School District
- Clair Thiel, Reynolds School District
- Cynthia Townsend, Hermiston School District
- Lori Vandine, Molalla School District
- Jerry Young, Portland State University
- Kee Zublin, Bethel School District

High School Data Science & Statistics Team

- **Wendy Clark, Ontario School District**
- **Shaun Gross, Grants Pass School District**
- **Nancy Swarat, Umatilla School District**
- Chris Garrigues, Hermiston School District
- Susan Kaller, Portland Public Schools
- Andria Lindsey, Bend-LaPine School District
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- Brad Simmons, Gervais School District
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- Linda Adams, Jefferson County School District
- Corrie Aljian, Springfield School District
- Steve Boyce, Portland State University
- Alison Bryant, Albany School District
- Malika Gillette, Woodburn School District
- Doug Mella, Portland Public Schools
- Kayla Stolte, Portland Public Schools
- Michael Whalen, Klamath County SD
- Patrice Woods, Portland Public Schools
- Deanna Yule, Culver School District

Oregon Department of Education Staff

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- Jennifer Patterson, Assistant Superintendent of Teaching, Learning and Assessment
- Alexa Pearson, Director of Standards and Instructional Supports
- Mark Freed, Math Education Specialist
- Andy Byerley, Math Assessment Specialist
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- Aujalee Moore, Administrative Specialist

1K: How to Read the Document

Priority content identified in this document was done by a panel of Oregon educators as part of the scheduled review and revision of the adopted high school standards during the 2019-20 school year. The next stage of the review process will include a public comment period with the aim of presenting to the State Board of Education for adoption.

As a system, we need all high school teachers to commit to ensuring that students are given the opportunity to learn the identified content by the end of a three credit sequence.

Content identified in this document should be thought of approximately as 1 credit of algebra content, ½ credit of geometry, and ½ credit of data science. This would open up the opportunity of a full credit to accelerate unfinished learning across a three credit sequence.

- Content not identified in this document could certainly be taught once teachers are confident students are proficient in the core content.
- Modeling is best interpreted not as a collection of isolated topics but in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout core content in this document as indicated by a star symbol (★).

Focus within high school courses could occur in two ways, including:

(1) identification of a subset of our standards on which to focus, and

(2) narrowing the focus within each standard themselves.

Attention should be paid to not only the named standards in this document, but to the specific content identified as a focus within each standard as well. Organization of specific units within a course will need to be determined at the local district and/or school level.

Part A – Draft Statements

The 2021 review and revision of high school math standards includes efforts to improve readability and access to a wide range of potential readers. The standards document itself is one of the most downloaded documents on the state website and provides an opportunity to share important information to not only educators, but additional audiences—such as parents and community members—as well.

Grade Level Overview

Following the critical areas for each grade will be an overview of the grade level domains and clusters. This content is presented unedited from the CCSS (2010), and is proposed to remain the same for the K-8 standards to assist in providing continuity to the Oregon draft 2021 math standards. In general, these terms refer to the following:

Standards define what students should understand and be able to do.

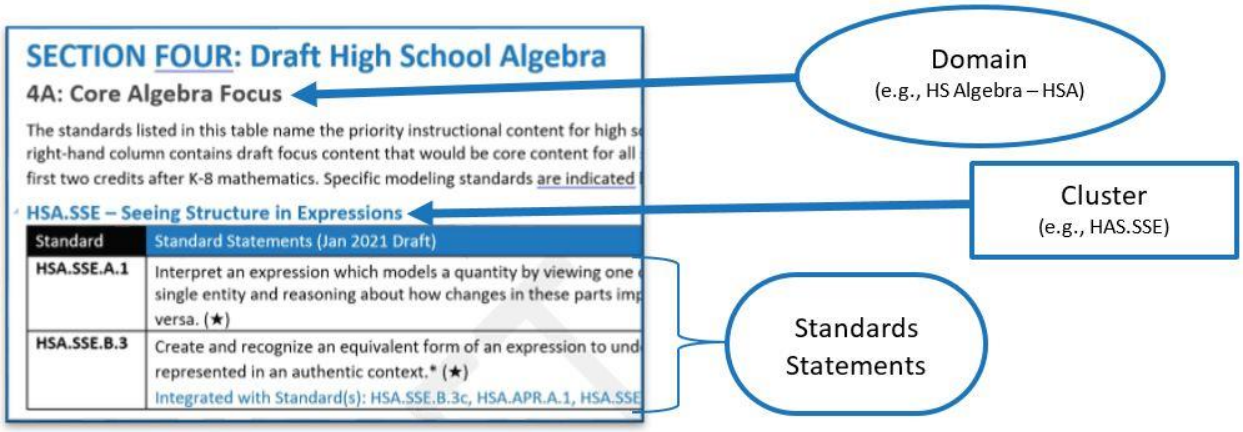
Clusters summarize groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.

Domains are larger groups of related standards. Standards from different domains may sometimes be closely related.

Note that the original CCSS (2010) included 147 high school standards, from which the 2019 content panel was directed to identify a subset that could reasonably be covered in a two-credit course sequence. The panel identified 55 standards, or approximately 37% of the original number of standards, as part of the core two credits. With this change, many of the original clusters did not make sense if they only included no standards, or just one. So for the purposes of this document, domains will refer to course level organization (e.g., Algebra – HSA), and clusters will be one level below this, such as "HAS.SSE – Seeing structures in equations."

Additional reorganization and naming of clusters may be needed, but is not included as part of the draft document at this time. Requested feedback would be on the appropriateness of the subset identified, and any wording to be found in the proposed draft document. References to these levels within section A can be found in Figure 2 below.

Figure 1: High School Domain, Clusters, and Standards Statements within Part B



Many of the CCSS (2010) standards were long and technical, and presented barriers to access for many readers interested in grade level expectations. For the 2021 review, the original standards were divided into two parts:

1. Standards statements that will be adopted by the State Board of Education
2. Clarifying guidance that will be used in supporting documents for use by educators to understand the boundaries and examples of a given standard

Table 2: Overview of Standards Statements

Audience	Everyone
Definition	A standard is a statement of what a student should know, understand, or do.
Description	Standards statements need to be written as stand-alone statement(s) in the final document. They could include more than one sentence, but overall word count needs to remain below approximately 40-50 words.

Considerations	• Lead with clarity
	  ○ Start with key ideas
	  ○ First Sentence approximately 10-20 words
	  ○ Minimize use of conjunctions (and/or)
	• Include information from CCSSM
	  ○ Total word count approximately 40-50 words
	• No Parentheticals
	  ○ Examples moved to clarifying statements
	• Technical Considerations
	  ○ Size (word count, character count, number of paragraphs)
	  ○ Complexity (words per sentence, characters per word)
	  ○ Readability (Flesch Reading Ease, Flesh-Kincaid Grade Level)

Part B – Remaining Content Considerations

As part of the high school standards review, the 2019 panel was directed to identify a subset that could be reasonably covered in a two-credit course sequence. A total of 92 standards were identified for removal, including 37 advanced (+) standards, nine standards to be merged, and 46 non-advanced standards for removal from the core two credit requirement. Totals for core standards identified in comparison to the original CCSS (2010) can be found below in Table 3.

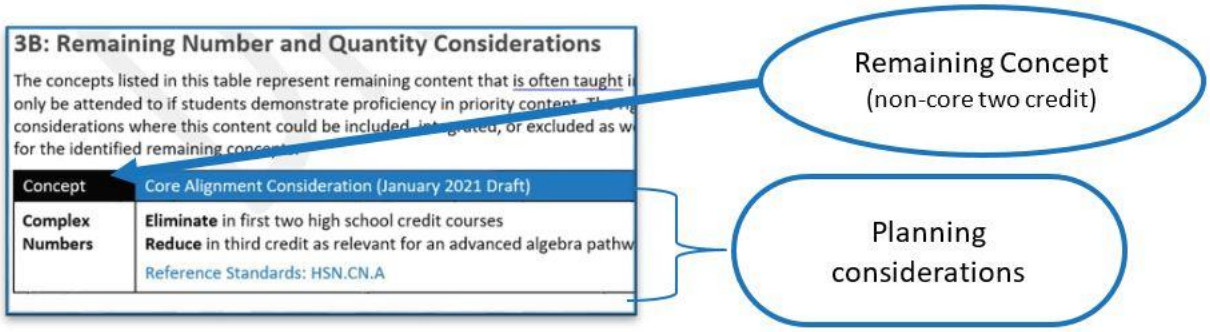
Table 3: Total count of core high school standards in January 2021 draft

High School Domain	Original number of standards [CCSS, 2010]	Number of core standards [Jan 2021 Draft]	Advanced (+) standards removed [Jan 2021 draft]	Non-advanced standards removed [Jan 2021 draft]	Proposed merged standards [Jan 2021 draft]
HS Algebra (HSA)	27	11	4	12	0
HS Functions (HSF)	28	10	7	11	0
HS Number (HSN)	27	4	18	5	0
HS Geometry	41	14	6	12	9
HS Data Science & Statistics (HSS)	24	16	2	6	0
TOTAL COUNT	147	55	37	46	9

A part of the high standards work will be to understand what topics may be considered in the past as core content for all students, but are not considered core in the January 2021 draft. To support conversations during this review period, topics have been identified in part B for each domain with guidance in terms of how to plan. Many of the topics can still be included in specialized third or fourth credits of high school, such as in an algebra path to prepare for calculus, but not required for all students. An example of the tables found in part B can be found in Figure 2 below.

This guidance was originally provided in the high school 2020-21 planning guidance published in August 2020, and would still apply to future course planning. Feedback on the boundaries of core and non-core content would be welcome during this feedback phase.

Figure 2: Example of additional considerations found in part B



Part C – Crosswalk with Clarifying Guidance

A crosswalk between the CCSS (2010) text and the draft Oregon 2021 standards statements is provided in section C for each grade level. Additionally, clarifying guidance is provided that will be included in supporting documents, but not presented to the State Board for adoption. This will allow guidance to be revised and updated as needed without board adoption. Guidance is provided for educators to better understand the scope and boundaries of a given content standard.

Figure 3: Domain and cluster headings within Part C: Crosswalk with Clarifying Guidance

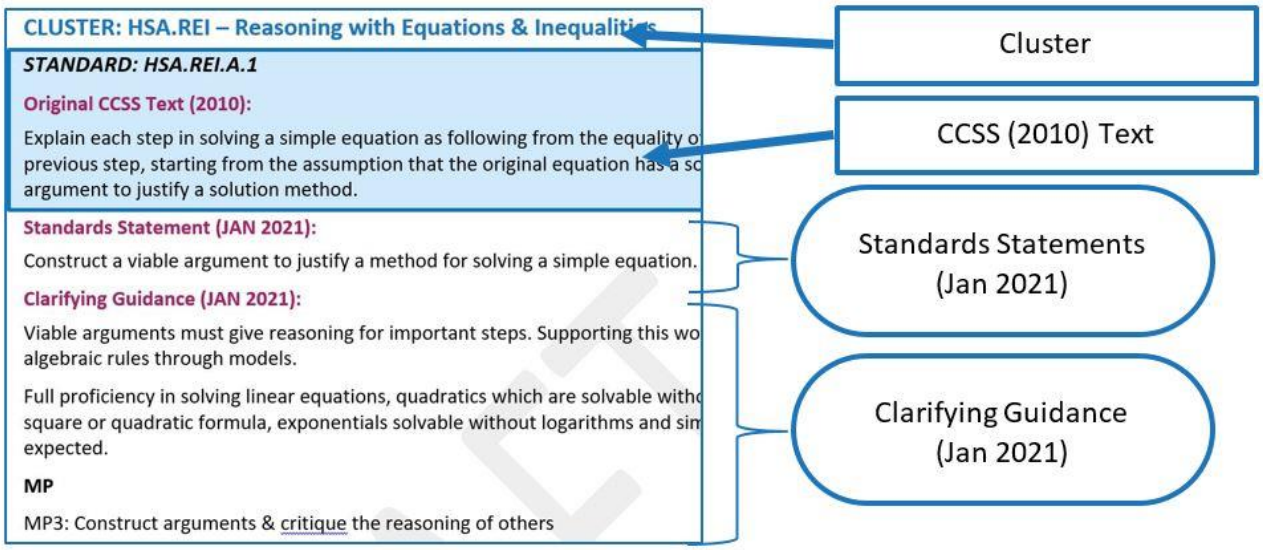


Table 3: Overview of Clarifying Guidance

Audience	Teachers, Administrators, Test & Curriculum Developers
Definition	Clarifying statements extend expectations within standards to decrease possible confusion or ambiguity.
Description	The intent of clarifying statements is to provide additional guidance for educators to communicate the intent of the standard as supporting resources are developed. Clarifying statements can be in the form of succinct sentences or paragraphs that attend to one of four types of clarifications: (1) Student Experiences; (2) Examples; (3) Boundaries; and (4) Connection to Math Practices.
Considerations	Clarifying statements are encouraged to draft, but are optional, so they could potentially be left blank. The use of sentence frames and titles is also encouraged to indicate the type of clarifying statement. Information could be used in the development of assessments and instructional materials, but it is not a requirement in that all students have the identical experience. They are guideposts that help reduce potential confusion and increase fidelity as educators implement the standards. • Examples found within the current CCSS document in the form of "i.e." or "e.g." statements should be moved to clarifying statements or removed. • Standards with an additional level, such as a "4a", "4b", or "4c" statement, should include relevant content in the standards statement, incorporate into the clarifying paragraphs, or be removed.

Example sentence frames for clarifying statements could include, but are not limited to:

- Student Experiences
  - "Students should have the opportunity to ____"
  - "Build conceptual understanding by ____"
- Examples
  - "Some examples include ____"
- Boundary Statements
  - "Students are not expected to _____"
  - "Expectations of the standard include ____"
- Math Practices
  - "Opportunities to engage in math practices include ____"

Future work of the clarifying guidance could pull from additional sources outside of Oregon to create supporting documents to guide implementation of the adopted standards.

At this time, please provide feedback on the balance between adopted content standards and clarifying guidance using the provided forms on the Oregon Department of Education mathematics standards webpage, or contact Mark Freed, ODE Math Education Specialist, if you have additional questions or comments about the 2021 draft standards document.