STAAR
FIELD GUIDE
FOR TEACHERS

GRADE 7 LEVEL

MATH

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STAAR

The State of Texas of Assessment of Academic Readiness (STAAR) is based on the Texas Essential Knowledge and Skills (TEKS). Most of the state standards, if they are eligible for assessment in a multiple choice/short answer format, will be assessed on STAAR.

STAAR is designed as a **vertical** system. Just as the TEKS are structured in a vertically aligned manner, so is STAAR. Learning from one grade level is aligned with learning at the next grade level. Some skills are developed over the course of a student's educational career from kindergarten through high school, while other skills and learning may begin at a particular grade level and serve as the foundation for later learning. STAAR is an assessment of **academic** readiness.

STAAR is designed to ensure that teachers answer these questions:

- Did students learn what they were supposed to learn in the current year's grade?
- Are students ready for the next grade?
- And are they also ready for the grade after that?

So what's the big deal about that shift? Fundamentally, it requires that teachers relook at curriculum and instruction in a very different way than they have under previous assessment systems (TABS, TEAMS, TAAS, TAKS). Not only are teachers required to have a deep understanding of the content of the grade level they are teaching, but they must also be firmly grounded in how the content of that current grade level prepares students for subsequent grade levels. Overemphasis on grade level attainment ONLY may create a context where teachers in subsequent grade levels have to reteach foundational skills to accommodate for the gap created by the lack of appropriate emphasis earlier. It may require students to "unlearn" previous ways of conceptualizing content and essentially start all over.

STAAR: focus, clarity, depth

[The TEKS] are designed to prepare students to succeed in college, in careers and to compete globally. However, consistent with a growing national consensus regarding the need to provide a more clearly articulated K 16 education program that focuses on fewer skills and addresses those skills in a deeper manner, TEA has further refined the TEKS organization as follows.

STAAR is designed around three concepts: focus, clarity, and depth:

Focus: STAAR will focus on grade level standards that are critical for that grade level and the ones to follow

Clarity: STAAR will assess the eligible TEKS at a level of specificity that allow students to demonstrate mastery

Depth: STAAR will assess the eligible TEKS at a higher cognitive level and in novel contexts

STAAR: the assessed curriculum – readiness, supporting, and process standards

A key concept that underpins the design of STAAR is that all standards (TEKS) do not play the same role in student learning. Simply stated, some standards (TEKS) have greater priority than others - they are so vital to the current grade level or content area that they must be learned to a level of mastery to ensure readiness (success) in the next grade levels. Other standards are important in helping to support learning, to maintain a previously learned standard, or to prepare students for a more complex standard taught at a later grade.

By assessing the TEKS that are most critical to the content area in more rigorous ways, STAAR will better measure the academic performance of students as they progress from elementary to middle to high school. Based on educator committee recommendations, for each grade level or course, TEA has identified a set of readiness standards - the TEKS which help students develop deep and enduring understanding of the concepts in each content area. The remaining knowledge and skills are considered supporting standards and will be assessed less frequently, but still play a very important role in learning.

Readiness standards have the following characteristics:

- They are essential for success in the current grade or course.
- They are important for preparedness for the next grade or course.
- They support college and career readiness.
- They necessitate in-depth instruction.
- They address broad and deep ideas.

Supporting standards have the following characteristics:

- Although introduced in the current grade or course, they may be emphasized in a subsequent year.
- Although reinforced in the current grade or course, they may be emphasized in a previous year.
- They play a role in preparing students for the next grade or course but not a central role.
- They address more narrowly defined ideas.

STAAR assesses the eligible TEKS at the level at which the TEKS were written.

STAAR is a more rigorous assessment than TAKS (and TAAS, TEAMS, TABS before that). The level of rigor is connected with the cognitive level identified in the TEKS themselves. Simply stated, STAAR will measure the eligible TEKS at the level at which they are written.

The rigor of items will be increased by

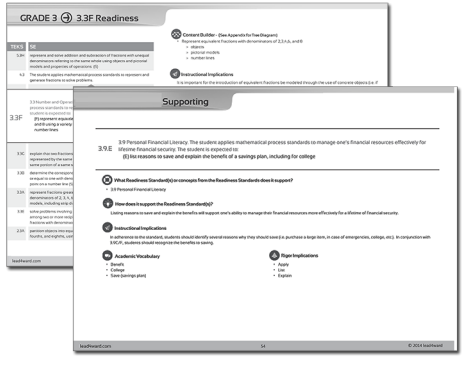
- assessing content and skills at a greater depth and higher level of cognitive complexity
- assessing more than one student expectation in a test item

The rigor of the tests will be increased by

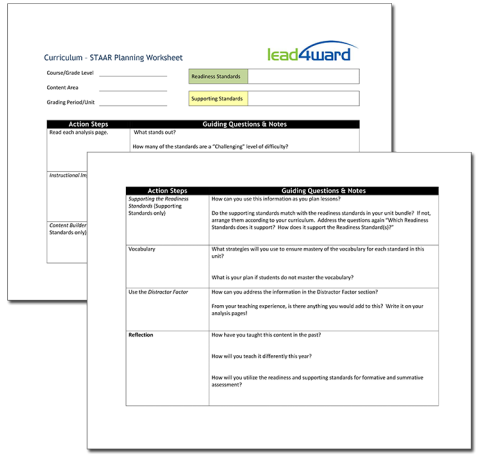
- assessing fewer, yet more focused, student expectations and assessing them multiple times and in more complex ways
- including a greater number of rigorous items on the test, thereby increasing the overall test difficulty

About the STAAR Field Guide for Teachers

The STAAR Field Guide for Teachers is designed as a tool to help teachers prepare for instruction. The tools and resources in this guide are designed to supplement local curriculum documents by helping teachers understand how the design and components of STAAR are connected to the scope and sequence of instruction. In order to help students attain even higher levels of learning as assessed on STAAR, teachers need to plan for increasing levels of rigor. This guide contains the following components:



STAAR Readiness and Supporting Standards Analysis Sheets - overviews of the nature of each readiness and supporting standard assessed on STAAR, designed to be used in planning to build teacher content knowledge and ensure that current grade level instruction reinforces previous learning and prepares students for future grade levels.



STAAR-Curriculum Planning Worksheet - a tool to organize the pages in this guide to be used in planning and professional development.

Steps to Success

1. Download the TEA Documents to add to your STAAR Teacher Field Guide
   - » STAAR Blueprint
   - » Assessed Curriculum Documents
   - » STAAR Test Design
   - » STAAR Reference Materials

2. Visit lead4ward.com/resources to download lead4ward resource materials to add to your STAAR Field Guide
   - » STAAR Snapshot
   - » TEKS Scaffold Documents
   - » IQ Released Tests
   - » Student Recording Sheets

3. Review the STAAR Snapshot for your course/grade level and content area
   - » Note the readiness standards
   - » With your team, explore why those TEKS are classified as readiness standards - and which criteria they meet
   - » Review the supporting standards and note any that may have played a larger role on TAKS

4. Review the components of the STAAR Readiness and Supporting Standards Analysis Sheets
   - » Use the samples on pages 6 and 7 to explore the analysis sheets
   - » Add additional information based on the discussion of the team

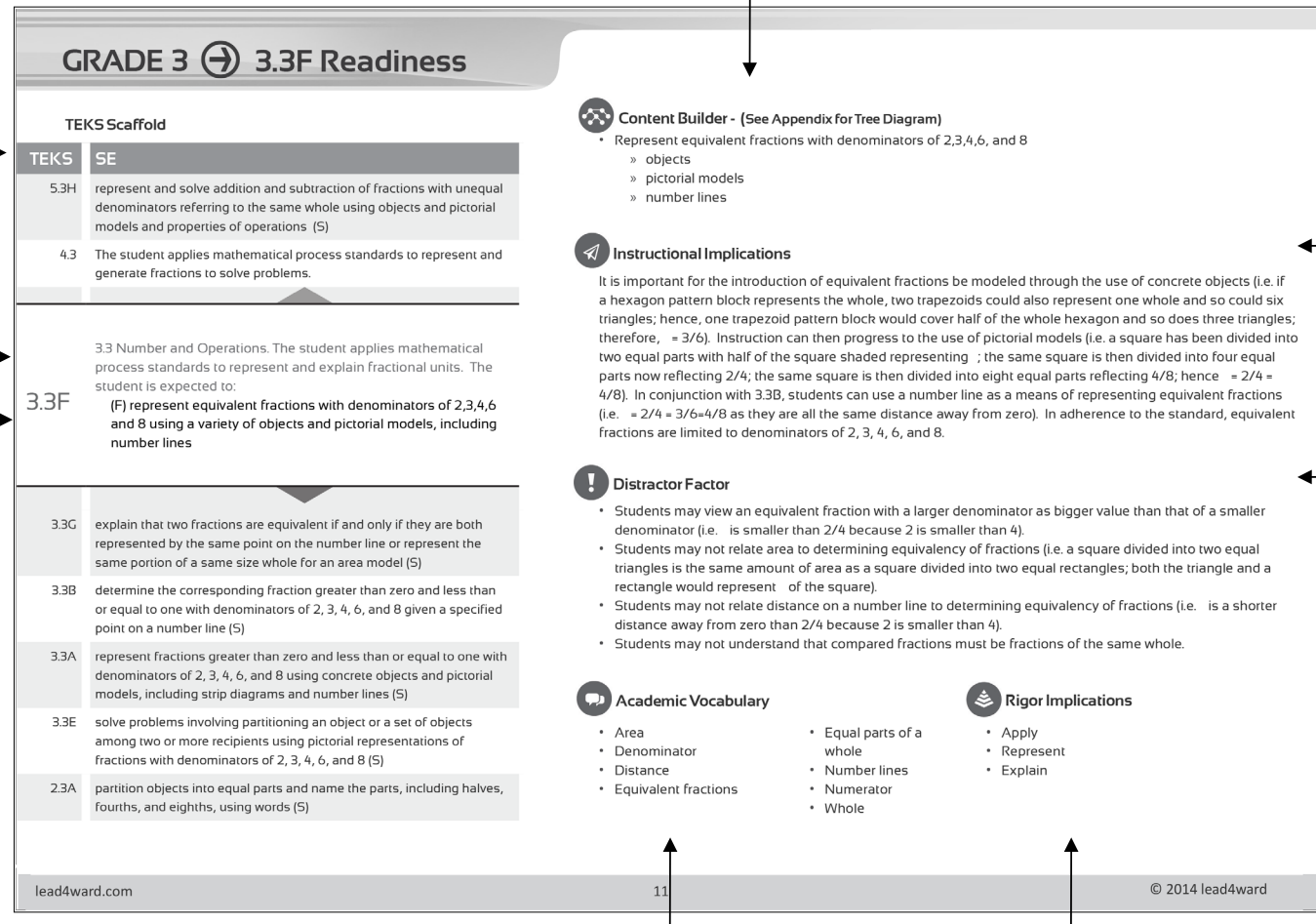
5. Create STAAR-Curriculum Planning Packets for each unit or grading period
   - » Collect either the Scope and Sequence document (if it includes the TEKS standards for each unit of instruction) OR Unit Plan documents (where the TEKS standards are bundled together into units of instruction)
   - » The STAAR Field Guide is arranged by standard type (readiness or supporting) in numeric order of the standards. You may need to photocopy certain pages/standards if they are repeated throughout multiple units
   - » Use the scope and sequence or unit plan documents to identify the TEKS taught in each unit/grading period
   - » Compile the STAAR Readiness and Supporting Standards Analysis Sheets that correspond to the TEKS in each unit/grading period
   - » After the pages/standards are sorted into their appropriate unit, create a method of organizing the documents (binder, folder, file, etc.).

6. Plan for instruction
   - » Collect the curriculum documents used for planning
   - » Use the STAAR - Curriculum Planning Worksheet as you plan each unit. The worksheet provides guiding questions and reflection opportunities to aid you in maximizing the material in the STAAR Field Guide
   - » Determine where the team needs additional learning
   - » Evaluate instructional materials
   - » Review the plan for appropriate levels of rigor

How to read STAAR Readiness Standards Analysis Pages

Standard and Indication of "Readiness" or "Supporting"

Content Builder
The basics of the content within the standard are extracted in a bulleted list. Describes multiple measurable parts in a standard - used to select and vary instructional materials.



GRADE 3 → 3.3F Readiness

TEKS Scaffold

TEKS	SE
5.3H	represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations (S)
4.3	The student applies mathematical process standards to represent and generate fractions to solve problems.
3.3F	3.3 Number and Operations. The student applies mathematical process standards to represent and explain fractional units. The student is expected to: (F) represent equivalent fractions with denominators of 2,3,4,6 and 8 using a variety of objects and pictorial models, including number lines
3.3G	explain that two fractions are equivalent if and only if they are both represented by the same point on the number line or represent the same portion of a same size whole for an area model (S)
3.3B	determine the corresponding fraction greater than zero and less than or equal to one with denominators of 2, 3, 4, 6, and 8 given a specified point on a number line (S)
3.3A	represent fractions greater than zero and less than or equal to one with denominators of 2, 3, 4, 6, and 8 using concrete objects and pictorial models, including strip diagrams and number lines (S)
3.3E	solve problems involving partitioning an object or a set of objects among two or more recipients using pictorial representations of fractions with denominators of 2, 3, 4, 6, and 8 (S)
2.3A	partition objects into equal parts and name the parts, including halves, fourths, and eighths, using words (S)

Texas Essential Knowledge and Skills Statement

Student Expectation

Content Builder - (See Appendix for Tree Diagram)
- Represent equivalent fractions with denominators of 2,3,4,6, and 8
  - » objects
  - » pictorial models
  - » number lines

Instructional Implications
It is important for the introduction of equivalent fractions be modeled through the use of concrete objects (i.e. if a hexagon pattern block represents the whole, two trapezoids could also represent one whole and so could six triangles; hence, one trapezoid pattern block would cover half of the whole hexagon and so does three triangles; therefore, = 3/6). Instruction can then progress to the use of pictorial models (i.e. a square has been divided into two equal parts with half of the square shaded representing ; the same square is then divided into four equal parts now reflecting 2/4; the same square is then divided into eight equal parts reflecting 4/8; hence = 2/4 = 4/8). In conjunction with 3.3B, students can use a number line as a means of representing equivalent fractions (i.e. = 2/4 = 3/6=4/8 as they are all the same distance away from zero). In adherence to the standard, equivalent fractions are limited to denominators of 2, 3, 4, 6, and 8.

Distractor Factor
- Students may view an equivalent fraction with a larger denominator as bigger value than that of a smaller denominator (i.e. is smaller than 2/4 because 2 is smaller than 4).
- Students may not relate area to determining equivalency of fractions (i.e. a square divided into two equal triangles is the same amount of area as a square divided into two equal rectangles; both the triangle and a rectangle would represent of the square).
- Students may not relate distance on a number line to determining equivalency of fractions (i.e. is a shorter distance away from zero than 2/4 because 2 is smaller than 4).
- Students may not understand that compared fractions must be fractions of the same whole.

Academic Vocabulary
- Area
- Denominator
- Distance
- Equivalent fractions
- Equal parts of a whole
- Number lines
- Numerator
- Whole

Rigor Implications
- Apply
- Represent
- Explain

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Instructional Implication
Suggestions to modify instruction that support effectively teaching this standard.

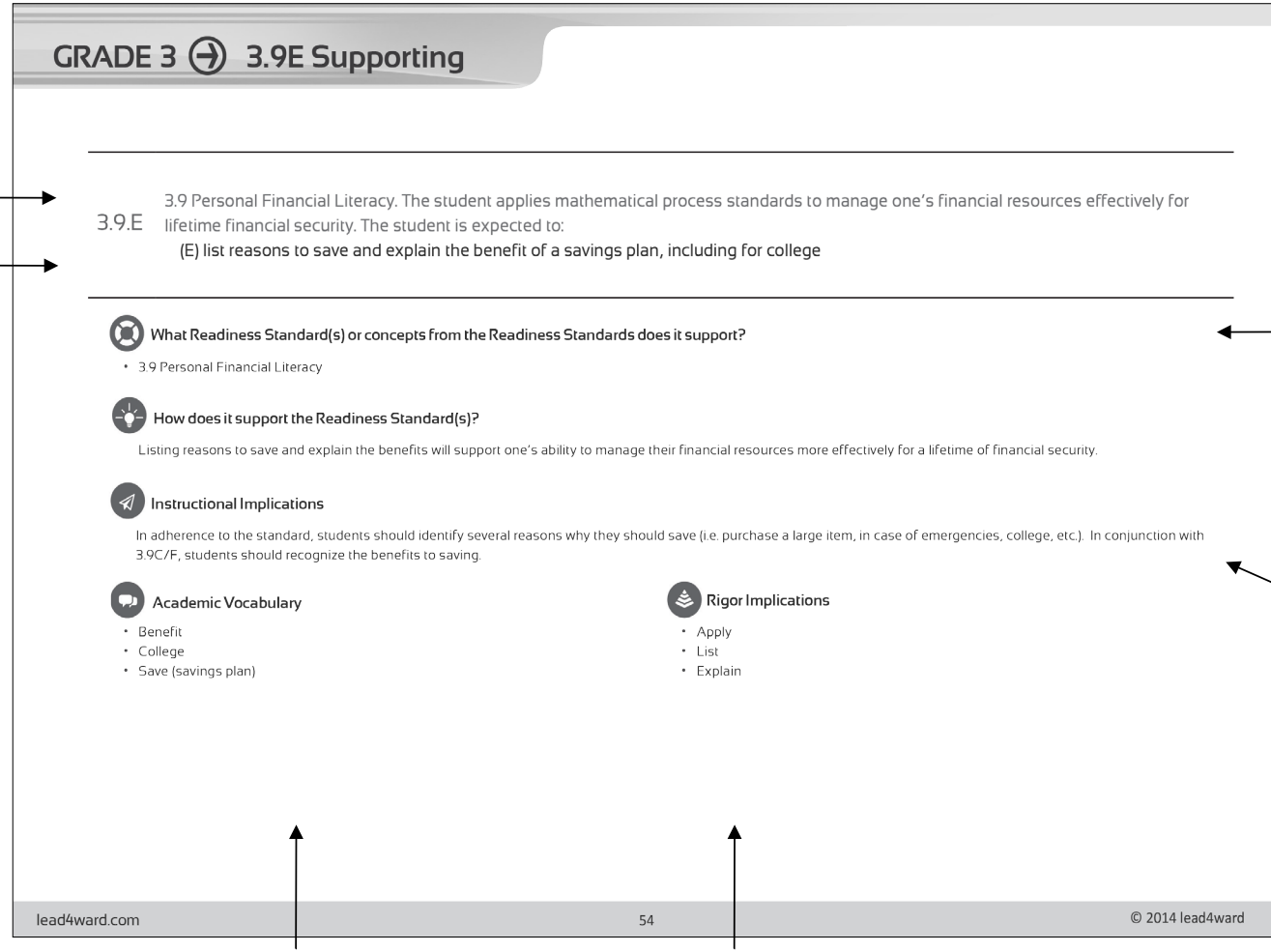
Distractor Factor
Alerts teachers to areas where students traditionally struggle, have misconceptions, or may need reinforcement. Common errors in learning.

Academic Vocabulary
Vocabulary words extracted directly from the standard and/or associated with the instruction of the content within the standard.

Rigor Implications
Uses the verb(s) from the Student Expectation to indicate the cognitive complexity of the standard.

How to read STAAR Supporting Standards Analysis Pages

Standard and Indication of "Readiness" or "Supporting"



GRADE 3 → 3.9E Supporting

Texas Essential Knowledge and Skills Statement

Student Expectation

3.9.E 3.9 Personal Financial Literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to:
(E) list reasons to save and explain the benefit of a savings plan, including for college

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 3.9 Personal Financial Literacy

How does it support the Readiness Standard(s)?

Listing reasons to save and explain the benefits will support one's ability to manage their financial resources more effectively for a lifetime of financial security.

Instructional Implications

In adherence to the standard, students should identify several reasons why they should save (i.e. purchase a large item, in case of emergencies, college, etc.). In conjunction with 3.9C/F, students should recognize the benefits to saving.

Academic Vocabulary

- Benefit
- College
- Save (savings plan)

Rigor Implications

- Apply
- List
- Explain

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Supporting the Readiness Standards - Most supporting standards support a readiness standard in the current grade level. This section discusses the relationships of the standards that are often taught together.

Instructional Implication
Suggestions to modify instruction that support effectively teaching this standard.

Academic Vocabulary
Vocabulary words extracted directly from the standard and/or associated with the instruction of the content within the standard.

Rigor Implications
Uses the verb(s) from the Student Expectation to indicate the cognitive complexity of the standard.

Curriculum - STAAR Planning Worksheet

Course/Grade Level _____

Content Area _____

Grading Period/Unit _____

Readiness Standards	

Supporting Standards	

Action Steps	Guiding Questions & Notes
Read each analysis page.	What stands out? Do you have data on any of the standards that suggest whether the standard is a strength or a concern? How many of the standards are at a high level of rigor?
Instructional Implications	How will these implications inform your planning? How can you use this information to modify instruction?
TEKS Scaffolding	What concepts did students learn in the previous grade to prepare them? Do you have students who may struggle with those concepts? Look at how the students will use that concept in subsequent grades - will the way you teach it still apply in those grades?

Curriculum - STAAR Planning Worksheet (continued)

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Action Steps	Guiding Questions & Notes
Content Builder (Readiness Standards only)	How many parts does this standard have? Which of the parts are new to your team or to the students? This content is important for students' future learning. How will you assess retention?
Supporting the Readiness Standards (Supporting Standards only)	How can you use this information as you plan lessons? Do the supporting standards match with the readiness standards in your unit bundle? If not, arrange them according to your curriculum. Address the questions again: "Which Readiness Standards does it support? How does it support the Readiness Standard(s)?"
Vocabulary	What strategies will you use to ensure mastery of the vocabulary for each standard in this unit? What is your plan if students do not master the vocabulary?
Use the *Distractor Factor*	How can you address the information in the Distractor Factor section? From your teaching experience, is there anything you would add to this? Write it on your analysis pages!
Reflection	How have you taught this content in the past? How will you teach it differently this year? How will you utilize the readiness and supporting standards for formative and summative assessment?

GRADE 7 → 7.3B Readiness

TEKS Scaffold

TEKS	SE
7.3B	**7.3 Number and Operations.** The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. The student is expected to: (B) apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers
7.3A	add, subtract, multiply, and divide rational numbers fluently (S)
6.3E	multiply and divide positive rational numbers fluently (R)
6.3D	add, subtract, multiply, and divide integers fluently (R)
6.3C	represent integer operations with concrete models and connect the actions with the models to standardized algorithms (S)
5.3L	divide whole numbers by unit fractions and unit fractions by whole numbers (R)
5.3G	solve for quotients of decimals to the hundredths, up to four-digit dividends and two-digit whole number divisors, using strategies and algorithms, including the standard algorithm (R)
5.3E	solve for products of decimals to the hundredths, including situations involving money, using strategies based on place-value understandings, properties of operations, and the relationship to the multiplication of whole numbers (R)
5.3K	add and subtract positive rational numbers fluently (R)
5.3H	represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations (S)

Content Builder - (See Appendix for Tree Diagram)

- solve problems using addition of rational numbers
- solve problems using subtraction of rational numbers
- solve problems using multiplication of rational numbers
- solve problems using division of rational numbers
- solve problems using all operations of rational numbers

Instructional Implications

In conjunction with 7.3A, as students begin calculating +/-/x/÷ of rational numbers fluently they will need to apply and extend their understanding of these calculations to solve problems. Instruction should include problems that require multiple steps, use of multiple operations, and real-world situations that involve the use of negative values.

Distractor Factor

- Students may have difficulty determining the sign (positive or negative) for the sum, difference, product, or quotient when performing the operations of addition, subtraction, multiplication, and division on rational numbers.
- Students may add the numerators and denominators when adding fractions.
- Students may find a common denominator to multiply fractions.
- Students may line up the decimal point to multiply decimals.
- Students may not relate division to multiplying by the reciprocal, such as 2/5 ÷ 3 as equivalent to 2/5 • 1/3.
- Students may misrepresent percents, such as 6% as 0.6.

Academic Vocabulary

- addends
- addition
- decimal
- denominator
- difference
- dividend
- division
- divisor
- factors
- fractions
- integers
- multiplication
- numerator
- percents
- product
- quotient
- rational numbers
- reciprocal
- subtraction
- whole numbers

Rigor Implications

- Apply
- Add
- Subtract
- Multiply
- Divide
- Extend
- Solve

GRADE 7 → 7.4A Readiness

TEKS Scaffold

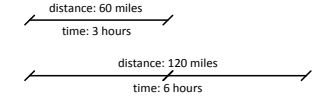
TEKS	SE
A.3B	calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems (R)
8.4C	use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems (R)
7.4A	**7.4 Proportionality.** The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to: (A) represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including d = rt
7.4C	determine the constant of proportionality (k = y/x) within mathematical and real-world problems (S)
6.6C	represent a given situation using verbal descriptions, tables, graphs, and equations in the form y = kx or y = x + b (R)
6.4A	apply qualitative and quantitative reasoning to solve prediction and comparison of realworld problems involving ratios and rates (R)
5.4C	generate a numerical pattern when given a rule in the form y = ax or y = x + a and graph (R)
5.4D	recognize the difference between additive and multiplicative numerical patterns given in a table or graph (S)

Content Builder - (See Appendix for Tree Diagram)

- represent constant rates of change in mathematical problems
- represent constant rates of change in real-world problems
- represent constant rates of change including d=rt
  - » pictorial
  - » tabular
  - » verbal
  - » numerical
  - » graphical
  - » algebraic

Instructional Implications

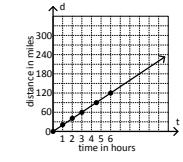
In accordance with this standard, students will use pictorial, tabular, verbal, numeric, graphical, and algebraic representations to represent constant rates of change, including d = rt. Through a pictorial representation, the student can create a visual image to form a connection between pictures that support multiplicative reasoning and develop an understanding of the constant rate of change (i.e. draw a picture of the rates, $^{60\text{ miles}}/_{3\text{ hours}}$ or $^{120\text{ miles}}/_{6\text{ hours}}$).



The tabular representation organizes numerical relationships and provides a means for students to observe patterns and identify new relationships by examining existing relationships like those shown in the table below.

Time (hours)	Distance (miles)
0	0
1	20
2	40
3	60
4.5	90
6	120

Through verbal representations, students should articulate the constant rate of change in the proportional relationship (i.e. distance varies directly as time for the equation d = rt, where rate is the constant rate of change). The numeric representation is a means to show the constant rate of change as equal rates (i.e. in the case of d = rt, the constant rate of change r can be expressed as the rates $^{\text{distance}}/_{\text{time}}$, $^{60\text{ miles}}/_{3\text{ hours}} = {}^{90\text{ miles}}/_{4.5\text{ hours}}$). Through the graphical representation, students are able to see a visual model of the constant rate of change (i.e. in the graph of y = kx, the slope of the line represents the constant rate of change in that one quantity, y, is relative to the change of another quantity, x).



The algebraic representation (i.e. y = kx) will be a way to express the proportional relationship between the independent and dependent quantities using symbols.

Distractor Factor

- Students may not write equivalent rates correctly (i.e. $^{\text{distance}}/_{\text{time}} \neq {}^{\text{time}}/_{\text{distance}}$).

Academic Vocabulary

- algebraic
- constant rate of change
- graphical
- numeric
- pictorial
- proportional relationships
- tabular
- verbal

Rigor Implications

- Apply
- Represent
- Solve

GRADE 7 → 7.4D Readiness

TEKS Scaffold

TEKS	SE
7.13E	calculate and compare simple interest and compound interest earnings (S)
7.13F	analyze and compare monetary incentives, including sales, rebates, and coupons (S)
7.4D	**7.4 Proportionality.** The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to: (D) solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease and personal financial literacy problems
7.4B	calculate unit rates from rates in mathematical and real-world problems (S)
7.13A	calculate the sales tax for a given purchase and calculate income tax for earned wages (S)
6.5B	solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models (R)
6.5A	represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions (S)
6.4G	generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money (R)
6.4B	apply qualitative and quantitative reasoning to solve prediction and comparison of realworld problems involving ratios and rates (R)
6.4E	represent ratios and percents with concrete models, fractions, and decimals (S)

Content Builder - (See Appendix for Tree Diagram)

- solve problems involving ratios
- solve problems involving rates
- solve problems involving percents
- solve multi-step problems involving percent increase, percent decrease
- solve multi-step problems involving personal financial literacy

Instructional Implications

In conjunction with 7.3A/7.3B, instruction should have students solve a variety of problems involving ratio (i.e. 5 out of every 8 students live in college dorms, how many of the 30 students are likely to live in a college dorm?), rate (i.e 3 gallons of gas cost $10.62, what is the cost of 2 gallons of gas?), and percents (i.e. a used car costs $8950, a down payment of $2000 was made, what percent of the sale price was the down payment?). In adherence to the standard, multi-step problems involving percent increase, percent decrease, and personal financial literacy should also be included. A multi-step problem might involve the students calculating the discount, sales tax, cost and percent decrease from the original price of an item. Problems of this nature have multiple representations of rational numbers (i.e. $8\frac{1}{2}$ %, 0.085, 8.5%, etc.).

Distractor Factor

- Students may view the value of 20% as the whole number 20 instead of 0.20 or 20/100.
- Students may not distinguish between percent decrease and percent increase.
- Students may not recognize the difference between ratio and rate.
- Students may think that percent increase cannot extend beyond 100%.
- Students may view the cost of an item doubling as a 50% increase instead of a 100% increase (i.e. the original price of an item is $15 and is marked up to $30, the percent increase is 100% since 100% of $15 = $15 and 50% of $15 = $7.50).

Academic Vocabulary

- percent decrease
- percent increase
- percents
- proportional relationships
- rates
- ratios
- $y = kx$

Rigor Implications

- Apply
- Represent
- Solve

GRADE 7 → 7.5C Readiness

TEKS Scaffold

TEKS	SE
8.3A	generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation (S)
8.3B	compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane (S)
8.3C	use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation (R)
7.5C	**7.5 Proportionality.** The student applies mathematical process standards to use geometry to describe and solve problems involving proportional relationships. The student is expected to: (C) solve mathematical and real-world problems involving similar shape and scale drawings
7.5A	generalize the critical attributes of similarity, including ratios within and between similar shapes (S)
6.4C	give examples of ratios as multiplicative comparisons of two quantities describing the same attribute (S)
6.5A	represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions (S)

Content Builder - (See Appendix for Tree Diagram)

- solve mathematical and real-world problems involving similar shape and scale drawings

Instructional Implications

In adherence to the TEKS, students solve problems (i.e. mathematical and real-world) that involve similar shapes and scale drawings. In conjunction with 7.5A, it is important students understand that similar shapes have congruent corresponding angles and corresponding sides are proportional. Instruction should include problems from a variety of resources that involve similar shapes and scale drawings (i.e. polygons that are similar, maps, photocopiers, house plans, scale drawings of cars/airplanes, etc.). Students need to understand that depending on the scale factor (i.e. common ratio of corresponding lengths), the size of a reproduced similar shape or scale drawing will proportionally shrink (i.e. $0 < \text{scale factor} < 1$), proportionally become enlarged (i.e. $1 < \text{scale factor}$), or remain congruent (i.e. $\text{scale factor} = 1$). To solve problems involving similar shapes and scale drawings, students will need to be able to identify the scale factor and determine the dimensions of the reproduced product (i.e. the dimensions of a rectangle are 3 inches by 11 inches and a second similar rectangle has the dimensions 4.5 inches by x inches; determine the missing dimension). To reinforce the idea that similar shapes are proportional, instruction might include an activity that contrasts a proportional situation with an additive one. Students will draw a 2 centimeter by 3 centimeter rectangle on grid paper. The students will draw two rectangles that are larger than the original rectangle (i.e. 2 cm by 3 cm). The first rectangle will be enlarged by adding 2 centimeters to each dimension (i.e. $2 + 2 = 4$ and $3 + 2 = 5$, dimensions of enlarged rectangle are 4 cm by 5 cm). Next students will enlarge the original rectangle (i.e. 2 cm by 3 cm) by doubling each dimension (i.e. $2 \cdot 2 = 4$ and $3 \cdot 2 = 6$, dimensions of enlarged rectangle are 4 cm by 6 cm). Students should compare the three rectangles. Through their observations, students should be able to distinguish that although the first and second rectangles are larger than the original rectangle, the first rectangle is only a little longer than the original rectangle and does not appear to be the same shape as the original rectangle, whereas the second rectangle has grown proportionally from the original rectangle.

Distractor Factor

- Students may think of proportions as an additive relationship instead of a multiplicative relationship.
- Students may use an additive relationship to similar figures or scale drawings instead of using multiplicative reasoning.

Academic Vocabulary

- proportional relationship
- scale drawing
- scale factor
- similar shape

Rigor Implications

- Apply
- Use
- Describe
- Solve

GRADE 7 → 7.6G Readiness

TEKS Scaffold

TEKS	SE
7.6G	**7.6 Proportionality.** The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to: (G) solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to-whole and part-to-part comparisons and equivalents
6.13A	interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots (R)
6.12A	represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots (S)
5.9C	solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot (R)

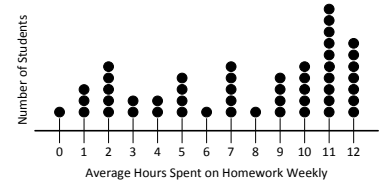
Content Builder - (See Appendix for Tree Diagram)

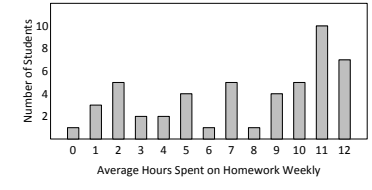
- solve problems using data represented in bar graphs including part-to-whole comparisons/equivalents
- solve problems using data represented in dot plots including part-to-whole comparisons/equivalents
- solve problems using data represented in circle graphs including part-to-whole comparisons/equivalents

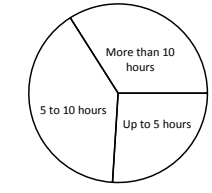
Instructional Implications

In adherence with the standard, the student will solve problems using data summarized in graphs (i.e. bar graphs, dot plots, and circle graphs). Instruction should include a variety of these graphs and allow students to use the visual image of the data (graph) to solve various problems.

Instruction should include part-to-whole (i.e. approximately what percent of the 7th grade students average less than 10 hours a week on homework?; justify your response) and part-to-part comparisons (approximately what percent of the 7th grade students average less than 10 hours a week on homework compared to the 7th grade students who average more than 10 hours a week on homework?; justify your response). It is important students understand the sum of the parts total the whole (i.e. 40% + 34% + 26% = 100%).







Distractor Factor

- Students may not distinguish between part-to-part and part-to-whole comparisons.
- Students may not understand that the same data may be represented in a bar graph, dot plot, and a circle graph.

Academic Vocabulary

- bar graph
- circle graph
- data
- dot plot
- part-to-part
- part-to-whole

Rigor Implications

- Apply
- Use
- Describe
- Solve

GRADE 7 → 7.6H Readiness

TEKS Scaffold

TEKS	SE
7.6I	determine experimental and theoretical probabilities related to simple and compound events using data and sample s paces (R)
7.6H	**7.6 Proportionality.** The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to: (H) solve problems using qualitative and quantitative predictions and comparisons from simple experiments
7.6G	solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to-whole and part-to-part comparisons and equivalents (R)
7.6F	use data from a random sample to make inferences about a population
7.6E	find the probabilities of a simple event and its complement and describe the relationship between the two (S)
7.6D	make predictions and determine solutions using theoretical probability for simple and compound events (S)
7.6C	make predictions and determine solutions using experimental data for simple and compound events (S)
7.6B	select and use different simulations to represent simple and compound events with and without technology
7.6A	represent sample spaces for simple and compound events using lists and tree diagrams (S)

Content Builder - (See Appendix for Tree Diagram)

- solve problems using qualitative predictions from simple experiments
- solve problems using qualitative comparisons from simple experiments
- solve problems using quantitative predictions from simple experiments
- solve problems using quantitative comparisons from simple experiments

Instructional Implications

In accordance with the standard, students will use qualitative (Which is better?) and quantitative (Which is more/less?) predictions and comparisons from simple experiments to solve problems. Students may use the responses to a question asked of a group of 7th grade students such as "How do you feel about the color of the walls in the cafeteria?" and based on the responses, predict how all the 7th grade students feel about the color of the cafeteria walls. The same question could be asked of a group of 8th grade students from the same school and the 7th grade student responses can be compared to the responses of the 8th grade students. This would be an example of a qualitative prediction and comparison. Instruction should also include problems using quantitative predictions and comparisons from simple experiments. The students may conduct a survey asking students to select a color they would like to see the cafeteria walls painted and then based on the results of the survey make predictions such as 75% of the 7th grade students prefer to have the walls painted blue, versus 85% of the 8th grade students.

Distractor Factor

- Students may not be able to distinguish between qualitative and quantitative.

Academic Vocabulary

- qualitative
- quantitative
- simple experiment

Rigor Implications

- Apply
- Use
- Describe
- Solve

GRADE 7 → 7.6I Readiness

TEKS Scaffold

TEKS	SE
7.6E	find the probabilities of a simple event and its complement and describe the relationship between the two (S)
7.6I	**7.6 Proportionality.** The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to: (I) determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces
7.6B	select and use different simulations to represent simple and compound events with and without technology (S)
7.6A	represent sample spaces for simple and compound events using lists and tree diagrams (S)

Content Builder - (See Appendix for Tree Diagram)

- determine experimental probability related to simple events
- determine experimental probability related to compound events
- determine theoretical probability related to simple events
- determine theoretical probability related to compound events

Instructional Implications

In adherence to the TEKS, students should use data and sample spaces to determine experimental probability (i.e. a ratio that measures the observed outcome to the attempts, number of observed occurrences of the event/total number of trials = 18/100, if the number 6 occurred 18 times after rolling a die 100 times) and theoretical probability (i.e. a ratio that measures what is wanted to all possible outcomes, number of favorable outcomes in the event/number of possible outcomes = 1/6 since there is one 6 on a die and there are six possible outcomes, 1, 2, 3, 4, 5, or 6). Instruction should include simple (i.e. a single outcome such as a "5 on the top face" when a single die is rolled) and compound (i.e. two simple events with more than one expected outcome such as rolling a di and getting the number "5 on the top face" and flipping a coin and it landing on "heads") events in many different settings (i.e. rolling number cubes, tossing cubes, drawing color tiles from a bag, or spinning a spinner). When using data collected from experiments, it is important the students understand that data collected from a large number of trials has greater credibility than data collected from a small number of trials (i.e. ten tosses of a coin made by one student may not reveal enough information, but if all students in a class toss the same coin ten times and then the class data is tallied, the class data has greater credibility than one student's data). It is important students understand that experimental probability with a large sample of an event should be closely related to the theoretical probability of the same event. If there is a significant discrepancy, then the collected data used to determine the experimental data and the sample space used to determine the theoretical probability may need to be reexamined. When working with probability, students need to be able to distinguish between independent events (i.e. the outcome of the first event does not affect the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and replacing the tile after the first draw) and dependent events (i.e. the outcome of the first event affects the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and not replacing a tile after the first draw).

Distractor Factor

- Students may not gather enough data from an event to determine an accurate experimental probability.
- Students may not distinguish between experimental and theoretical probability.

Academic Vocabulary

- theoretical probability
- experimental probability
- simple event
- compound event
- data
- sample space
- experiment

Rigor Implications

- Apply
- Use
- Describe
- Solve
- Determine

GRADE 7 → 7.7A Readiness

TEKS Scaffold

TEKS	SE
A.2B	write linear equations in two variables in various forms, including y = mx + b, Ax + By = C, and y - y1 = m(x - x1), given one point and the slope and given two points (S)
A.2C	write linear equations in two variables given a table of values, a graph, and a verbal description (R)
8.5B	represent linear non-proportional situations with tables, graphs, and equations in the form of y = mx + b, where b ≠ 0 (S)
8.5I	write an equation in the form y = mx + b to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations (R)
8.5F	distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form y = kx or y = mx + b, where b ≠ 0 (S)
7.7A	**7.7 Expressions, Equations, and Relationships.** The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to: (A) represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form y = mx + b
6.6C	represent a given situation using verbal descriptions, tables, graphs, and equations in the form y = kx or y = x + b (R)
6.6B	write an equation that represents the relationship between independent and dependent quantities from a table (S)
6.6A	identify independent and dependent quantities from tables and graphs (S)
5.4C	generate a numerical pattern when given a rule in the form y = ax or y = x + a and graph (R)
5.4D	recognize the difference between additive and multiplicative numerical patterns given in a table or graph (S)

Content Builder - (See Appendix for Tree Diagram)

- represent linear relationships
  - » verbal description
  - » table
  - » graph
  - » equation - simplify to y = mx + b

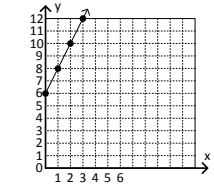
Instructional Implications

In accordance with the standard, students will represent linear relationships using verbal descriptions, tables, graphs, and equations (i.e. y = mx + b). Instruction should include meaningful situations to represent the linear relationship (i.e. there is a constant rate of change between two variables). It is important students develop an understanding that each representation is a different way to communicate the relationship between the independent and dependent quantities. Through verbal descriptions, students will articulate the relationship between the independent and dependent quantities as it relates to the given situation (i.e. in a walk-a-thon, a sponsor will donate $6 and $2 per mile the participant walks). The use of tables organizes data and provides a means for students to look for patterns and develop a rule that describes the way the independent and dependent quantities are related (i.e. the change in the dependent variable will remain the same over the range of values for the independent variable). The use of a process column identifying the rule can support students in representing the data using symbolic notation (i.e. y = 2x + 6).

Table

Number of miles walked (x)	Process Column	Amount of Donation (y)
0	0 • 2 + 6	6
1	1 • 2 + 6	8
2	2 • 2 + 6	10
3	3 • 2 + 6	12
x	x • 2 + 6	y

Graph



Through the use of graphs, students are able to visualize the relationship between the independent and dependent quantities. These graphical representations will allow students to observe that graphs of linear relationships have a constant rate of change (i.e. m in the equation y = mx + b) and a y-intercept (i.e. the point (0, b) where the y-coordinate is the b in the equation y = mx + b). When students recognize and understand the role of m and b in the equation y = mx + b (i.e. y = 2x + 6; the y-intercept represents the $6 donation and the m represents the $2 increase in donation for each mile that is walked), they will begin to develop an understanding of linear relationships. Students should be able to move fluidly from one representation (i.e. verbal descriptions, tables, graphs, and equations) to the next. Exploring these different representations will assist students as they develop a fuller understanding of linear relationships. Students need to be able to recognize that y = x • 2 + 6 maybe simplified to the y = mx + b form as y = 2x + 6.

Distractor Factor

- When simplifying equations to the form y = mx + b, students may not recognize y = 3(x + 2) and y = 3x + 6 as equivalent equations.
- Students may not be able to transition between the verbal description, table, graph, and equation (y = mx + b) of linear relationships.
- Students may not recognize y = 6 + 3x as equivalent to y = 3x + 6.

Academic Vocabulary

- dependent quantity
- equation
- graph
- independent quantity
- linear
- linear relationship
- table
- verbal description
- y = mx + b

Rigor Implications

- Apply
- Represent
- Use
- Simplify

GRADE 7 → 7.9A Readiness

TEKS Scaffold

TEKS	SE
8.7A	solve problems involving the volume of cylinders, cones, and spheres (R)
8.6A	describe the volume formula V = Bh of a cylinder in terms of its base area and its height (S)
8.6B	model the relationship between the volume of a cylinder and a cone having both congruent bases and heights and connect that relationship to the formulas (S)
7.9A	**7.9 Expressions, Equations, and Relationships.** The student applies mathematical process standards to solve geometric problems. The student is expected to: (A) solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids
7.8A	model the relationship between the volume of a rectangular prism and a rectangular pyramid having both congruent bases and heights and connect that relationship to the formulas
7.8B	explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to formulas
6.8D	determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers (R)
6.8C	write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers (S)
5.6B	determine the volume of a rectangular prism with whole number side lengths in problems related to the number of layers times the number of unit cubes in the area of the base (S)
5.4G	use concrete objects and pictorial models to develop the formulas for the volume of a rectangular prism, including the special form for a cube (V=l x w x h, V= s x s x s, and V=Bh)
5.6A	recognize a cube with side length of one unit as a unit cube having one cubic unit of volume and the volume of a three-dimensional figure as the number of unit cubes (n cubic units) needed to fill it with no gaps or overlaps if possible (S)

Content Builder - (See Appendix for Tree Diagram)

- solve volume problems involving
  - » rectangular prisms
  - » rectangular pyramids
  - » triangular prisms
  - » triangular pyramids

Instructional Implications

In conjunction with 7.8A/7.8B, students will determine the solution for problems involving the volume of rectangular and triangular prisms and rectangular and triangular pyramids. In alignment with 7.3B, problems should include positive rational numbers (decimals and fractions). Instruction should vary the context of the problems (i.e. given the lengths of the sides and/or heights, determine the volume; given the volume and one of the dimensions of the sides/edges and/or heights, determine the missing side/edge and/or height; given the area of the base, determine the missing height). It is important that students understand why length is represented in units, area is represented in square units and volume is presented in cubic units.

Distractor Factor

- The students may confuse the lateral height of a face with the height of the shape.
- The students may not understand the "B" in the formula represents the area of the base of the shape.

Academic Vocabulary

- area of the base
- height
- length
- rectangular prism
- rectangular pyramid
- triangular prism
- triangular pyramid
- volume
- width

Rigor Implications

- Apply
- Solve

GRADE 7 → 7.9B Readiness

TEKS Scaffold

TEKS	SE
7.9C	determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles (R)
7.9B	**7.9 Expressions, Equations, and Relationships.** The student applies mathematical process standards to solve geometric problems. The student is expected to: (B) determine the circumference and area of circles
7.8C	use models to determine the approximate formulas for the circumference and area of a circle and connect the models to the actual formulas (S)
7.5B	describe π as the ratio of the circumference of a circle to its diameter (S)

Content Builder - (See Appendix for Tree Diagram)

- determine the circumference of circles
- determine the area of circles

Instructional Implications

In conjunction with 7.8C, students will determine the solution for problems involving the circumference and area of circles. In alignment with 7.3B, problems should include positive rational numbers (decimals and fractions). Instruction should vary the context of the problems (i.e. given the lengths of the radius or diameter, determine the circumference and/or area; given the circumference, determine the radius/and/or diameter/and/or area; given the area, determine the radius/and/or diameter/and/or circumference). Instruction should also include situations where students represent solutions as an exact answer (i.e. use the symbol for pi in the solution) or approximate answer (i.e. use 3.14 as an approximation for pi). It is important that students understand why length is represented in units and area is represented in square units.

Distractor Factor

- The students may confuse the radius and diameter of a circle.
- The students may use the circumference formula when calculating the area of a circle.
- The students may use the area formula when calculating the circumference of a circle.
- The students may confuse squaring the radius and doubling the radius.
- The students may not understand the importance of the units (i.e. units for linear dimensions and square units for area).

Academic Vocabulary

- π (pi)
- area
- circle
- circumference
- diameter
- radius

Rigor Implications

- Apply
- Solve
- Determine

GRADE 7 → 7.9C Readiness

TEKS Scaffold

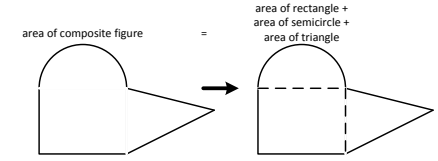
TEKS	SE
7.9C	**7.9 Expressions, Equations, and Relationships.** The student applies mathematical process standards to solve geometric problems. The student is expected to: (C) determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles
7.8B	explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to the formulas (S)
6.8D	determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers (R)
6.8C	write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers (S)
6.8B	model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes (S)
5.4H	represent and solve problems related to perimeter and/or area and related to volume (R)

Content Builder - (See Appendix for Tree Diagram)

- determine area of composite figures with combinations of
  - » rectangles
  - » squares
  - » parallelograms
  - » trapezoids
  - » triangles
  - » semicircles
  - » quarter circles

Instructional Implications

In adherence with the standard, students will determine the area of composite figures (i.e. figures composed of a combination of different shapes such as rectangles, squares, parallelograms, trapezoids, triangles, circles, semicircles, and/or quarter circles). In alignment with 7.3B, problems should include positive rational numbers (decimals and fractions). Since there may be numerous ways to decompose a composite figure in order to determine its area, it is important to have students draw lines showing how they visually saw the breakdown of the composite figure. Encourage students to find more than one way to decompose a composite figure.



Problems involving circles should have students represent solutions as an exact answer (i.e. use the symbol for pi in the solution) or approximate answer (i.e. use 3.14 as an approximation for pi). It is important that students understand why length is represented in units and area is represented in square units.

Distractor Factor

- The students may confuse the radius and diameter in a circle.
- The students may use the circumference formula when calculating the area of a circle.
- The students may use the area formula when calculating the circumference of a circle.
- The students may not understand the importance of the units (i.e. units for linear dimensions and square units for area).
- The students may not be able to decompose a composite figure into rectangles, squares, parallelograms, etc.

Academic Vocabulary

- π (pi)
- area
- circle
- composite figures
- diameter
- parallelogram
- quarter circle
- radius
- rectangle
- semicircle
- square
- trapezoid
- triangle

Rigor Implications

- Apply
- Solve
- Determine

GRADE 7 → 7.11A Readiness

TEKS Scaffold

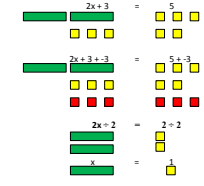
TEKS	SE
A.5A	solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides (R)
A.5B	solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides (S)
8.8C	model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants (R)
7.11A	**7.11 Expressions, Equations, and Relationships.** The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to: (A) model and solve one-variable, two-step equations and inequalities
7.11B	determine if the given value(s) make(s) one-variable, two-step equations and inequalities true (S)
7.10C	write a corresponding real-world problem given a one-variable, two-step equation or inequality (S)
7.10A	write one-variable, two-step equations and inequalities to represent constraints or conditions within problems (S)
6.10A	model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts (R)
6.9B	represent solutions for one-variable, one-step equations and inequalities on number lines (S)
6.9C	write corresponding real-world problems given one-variable, one-step equations or inequalities (S)
6.9A	write one-variable, one-step equations and inequalities to represent constraints or conditions within problems (S)
6.10B	determine if the given value(s) make(s) one-variable, one-step equations or inequalities true (S)
5.4B	represent and solve multi-step problems involving the four operations with whole numbers using equations with a letter standing for the unknown quantity (R)

Content Builder - (See Appendix for Tree Diagram)

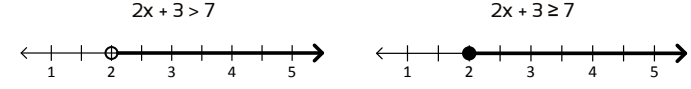
- model one-variable, two-step equations
- model one-variable, two-step inequalities
- solve one-variable, two-step equations
- solve one-variable, two-step inequalities

Instructional Implications

In accordance with the standard, students model and solve one-variable, two-step equations (i.e. 2x + 3 = 5) or inequalities (i.e. 2x + 3 > 5). One-variable, two-step equations should include exposure to all four operations (i.e. 2x + 3 = 5; 2x - 3 = 5; X/3 + 2 = 5; 1/3x + 2 = 5). Instruction should vary the position of the variable (i.e. 2x + 3 > 5; 3 + 2x > 5; 5 < 2x + 3). To model one-variable, two-step equations, instruction should include the use of concrete objects (i.e. algebra tiles). Students should associate the representation and manipulation of the concrete objects to the symbolic solving of the equation/inequality (i.e. 2x + 3 = 5; see below).



Number lines can be used to represent the solution of inequalities (i.e. 2x + 3 > 7 or 2x + 3 ≥ 7). Instruction should associate the use of open circles to represent the exclusion of the value as a solution (i.e. 2x + 3 > 7) or a filled circle to represent the inclusion of the value as a solution to the inequality (i.e. 2x + 3 ≥ 7).



As this standard addresses both equations and inequalities, students must understand that equations yield one solution; whereas inequalities yield more than one solution.

Distractor Factor

- Students may disregard the equality/inequality symbol when solving equations and only perform an operation on one side of the equation.
- Students may not change the direction of the inequality symbol when multiplying or dividing by a negative value.
- Students may focus on the direction of the inequality sign to determine its representation on the number line instead of relying on what the symbol is communicating (i.e. 2 > x; student will shade all values to the right of 2 on the number line since that is the direction the inequality symbol is pointing).
- Students may ignore the inclusion or exclusion of solutions to inequalities and not correctly apply the use of filled or open circles.

Academic Vocabulary

- equations
- inequalities
- solution

Rigor Implications

- Apply
- Solve
- Model

GRADE 7 → 7.12A Readiness

TEKS Scaffold

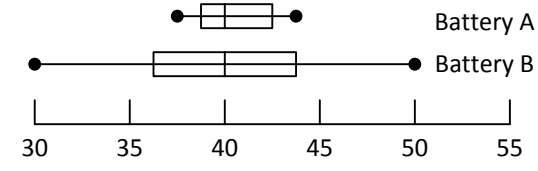
TEKS	SE
7.12A	**7.12 Expressions, Equations, and Relationships.** The student applies mathematical process standards to use statistical representations to analyze data. The student is expected to: (A) compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads
6.12B	use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution (S)
6.12D	summarize categorical data with numerical and graphical summaries, including the mode, the percent of values in each category (relative frequency table), and the percent bar graph, and use these summaries to describe the data distribution (R)
6.12C	summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution (R)
6.13B	distinguish between situations that yield data with and without variability (S)
6.13A	interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots (R)
5.9C	solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot (R)

Content Builder - (See Appendix for Tree Diagram)

- compare two groups of numeric data using dot plots
  - » shape
  - » centers
  - » spreads
- compare two groups of numeric data using box plots
  - » shape
  - » centers
  - » spreads

Instructional Implications

In adherence with the standard, the student will compare two groups of numeric data using comparative graphical representations (i.e. dot plot or box plot) and compare the centers, spreads, and shapes of the distribution (i.e. is the data heavily weighted to the left of the center, to the right of the center, or is it symmetrical to the center). To use comparative graphs students need to understand that all graphs convey information but different types of graphs highlight different features of the data (i.e. dot plots provide a graphic display used to compare frequency counts within groups; box plots display the median and information about the range and distribution of the data). Instruction should include comparisons of real-world situations such as the example shown below (i.e. the battery life on two types of batteries, Battery A and Battery B) using box plots. The two box plots below have the same center (i.e. median is 40 hours of battery life for Battery A and Battery B), the spread for Battery B has a greater range than the spread for Battery A, and the shape of the distribution for Battery B is symmetrical to the center and the shape of the distribution for Battery A is slightly skewed to the left.



Distractor Factor

- The students may confuse the frequency of a category as the mode of the category.
- Some students may not realize two box plots have the same median if the data for one box plot is more spread out than the data for the other box plot (i.e. consider the example of the box plots shown above).

Academic Vocabulary

- box plot
- center
- distribution
- dot plot
- interquartile range (IQR)
- mean
- median
- mode
- numeric data
- range
- shape
- spread

Rigor Implications

- Apply
- Use
- Compare

STAAR
SUPPORTING
STANDARDS

7.2A 7.2 Number and Operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to:

(A) extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

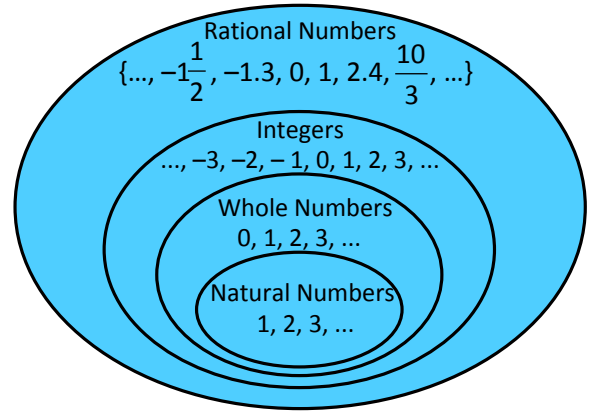
- 7.3B apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers.

How does it support the Readiness Standard(s)?

Describing and understanding the relationship between whole numbers, integers, and rational numbers will support its application to the operations of rational numbers.

Instructional Implications

In accordance with the standard, students will use a visual representation (i.e. Venn Diagram) to describe relationships between sets of rational numbers. Instruction should be an extension of the student's previous knowledge of sets and subsets (i.e. natural numbers are a subset of whole numbers and integers; natural numbers, whole numbers and integers are subsets of rational numbers).



The use of a number line may support students with this understanding (i.e. begin with a number line marked 0, 1, 2, 3... to reflect all whole numbers; extend the number line to include the opposites of these numbers -1, -2, -3... to reflect integers; discuss fractional and decimal values in between integers -2.5, -0.05, 0, $1\frac{1}{2}$, $\frac{5}{4}$ to reflect rational numbers).

Academic Vocabulary

- integers
- negative
- nonnegative
- nonpositive
- positive
- rational numbers
- sets
- subsets
- Venn diagram
- whole numbers

Rigor Implications

- Apply
- Represent
- Use
- Extend
- Describe

7.3A 7.3 Number and Operations. The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. The student is expected to:

(A) add, subtract, multiply, and divide rational numbers fluently

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.3B apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers.

How does it support the Readiness Standard(s)?

It is critical for students to add, subtract, multiply, and divide rational numbers fluently so they can apply and extend this understanding to solving problems involving rational numbers.

Instructional Implications

In accordance to the standard, students should add, subtract, multiply, and divide rational numbers fluently in order to solve problems. Rational numbers include integers, whole numbers, fractions, mixed numbers, decimals, and percentages. In conjunction with 7.2A, instruction should include addition, subtraction, multiplication, and division of rational numbers in various forms (i.e. 2/5 + 0.6, 2/5 - 0.6, 2/5 (0.6), 2/5 ÷ 0.6) and sums/ differences/ products/quotients represented in various forms (i.e. 2/5 - 0.6 = -1/5 ; 2/5 - 0.6 = -0.2; 2/5 - 0.6 = -20%). An emphasis on solving problems and justifying solutions may support students in the development of fluency.

Academic Vocabulary

- addends
- addition
- denominator
- difference
- dividend
- division
- divisor
- factors
- fractions
- integers
- multiplication
- numerator
- product
- quotient
- rational numbers
- subtraction
- whole numbers

Rigor Implications

- Apply
- Add
- Subtract
- Multiply
- Divide
- Solve
- Justify

7.4B 7.4 Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to:

(B) calculate unit rates from rates in mathematical and real-world problems

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.4D solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease and personal financial literacy problems

How does it support the Readiness Standard(s)?

Calculating unit rates from rates will be the foundation for students to be able to solve multi-step ratios, rates, and percents problems in terms of percent increase/decrease and application to personal financial literacy problems.

Instructional Implications

In accordance with this standard, instruction should include a variety of mathematical and real-world problems where students calculate unit rates from rates (i.e. A traveler paid $17.50 for 5 gallons of gasoline. As a unit rate, this can be described as $17.50/5 gallons = $3.50 per gallon, or as 5 gallons/$17.50 = 0.286 gallons per dollar). Unit rates can also be used to determine related information (i.e. If 5 gallons of gasoline cost $17.50, how much would you expect to pay for 3 gallons?).

Academic Vocabulary

- proportional relationships
- rates
- unit rates

Rigor Implications

- Apply
- Represent
- Solve
- Calculate

7.4C 7.4 Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to:

(C) determine the constant of proportionality (k = y/x) within mathematical and real-world problems

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- A.3B calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems
- 8.4B graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship
- 7.4A represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including d = rt

How does it support the Readiness Standard(s)?

Determining the constant of proportionality within mathematical and real-world problems will support students in being able to associate the constant of proportionality through the lens of verbal, numeric, graphical, or symbolic representation, and interpreting the unit rate in proportional relationships as the slope of a line.

Instructional Implications

In accordance with this standard, instruction should include a variety of mathematical and real-world problems where students determine the constant of proportionality (i.e. k = y/x) within the problems. The student should be able to articulate that as y varies, x varies (i.e. the number of miles represented on a map is directly proportional to the number of centimeters measured on the map where the scale is represented by 2 cm = 15 miles and the constant of proportionality, k = y/x, is 15 miles/2 centimeters or k = 7.5). In conjunction with 7.4A, the student should be able to determine the constant of proportionality using different representations (i.e. pictorial, tabular, verbal, numeric, graphical, and algebraic).

Academic Vocabulary

- constant of proportionality
- proportional relationships
- y = kx

Rigor Implications

- Apply
- Represent
- Solve
- Determine

7.4E 7.4 Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to:

(E) convert between measurement systems, including the use of proportions and unit rates

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.5C solve mathematical and real-world problems involving similar shape and scale drawings
- 7.9A solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids
- 7.9B determine the circumference and area of circles
- 7.9C determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles

How does it support the Readiness Standard(s)?

In solving real-world problems of scaled drawings and/or length/area/volume, it may be necessary to convert between measurement systems. The standard provides the measurement conversion support structure to apply to such situations.

Instructional Implications

In adherence to the TEKS and in conjunction with 7.4C/7.4D, students should convert a variety of units for various forms of measurement (i.e. temperature, time, length, capacity, weight, etc.). Instruction should include a variety of conversion problems between measurement systems (i.e. centimeters to inches, Celsius to Fahrenheit, meters to yards, liters to quarts, and vice versa). With the use of proportions, students can use knowledge of one ratio to determine a value in the other ratio (i.e. determine the number of inches equivalent to 30.48 centimeters if 5.08 centimeters is equivalent to 2 inches, 5.08 centimeters/2 inches • 6/6 = 33.48 centimeters/12 inches). The use of unit rates should also be used to convert between measurement systems (i.e. if 5.08 centimeters/2 inches, then determine the number of centimeters equivalent to 11 inches; calculate the unit rate by 5.08 ÷ 2 = 2.54, 2.54 centimeters/1 inch • 11/11 = 7.94 centimeters/11 inches). For any given problem, students will need to decide which method (i.e. proportions or unit rates) is the most efficient to convert units between measurement systems.

Academic Vocabulary

- convert
- customary measurement
- measurement systems
- metric measurement
- proportion
- proportional relationships
- unit rate

Rigor Implications

- Apply
- Represent
- Solve
- Convert

7.5A 7.5 Proportionality. The student applies mathematical process standards to use geometry to describe and solve problems involving proportional relationships. The student is expected to:

(A) generalize the critical attributes of similarity, including ratios within and between similar shapes

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

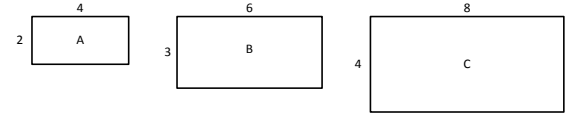
- 8.3C use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation
- 7.5C solve mathematical and real-world problems involving similar shape and scale drawings

How does it support the Readiness Standard(s)?

Generalizing the critical attributes of similarity, including ratios within and between similar shapes, will be the foundation for students to be able to solve mathematical and real-world problems and use an algebraic representation to explain the effects of a scale factor applied to two-dimensional figures on a coordinate plane.

Instructional Implications

In adherence to the TEKS, students should generalize the critical attributes of similarity (i.e. for shapes, the corresponding sides are proportional and the corresponding angles are congruent). The students should recognize the symbol to denote similarity is ~. Instruction should include within ratios (i.e. a ratio of two measures in the same setting) and between ratios (i.e. a ratio of two corresponding measures in different situations) for similar shapes. Consider the diagram below:



For rectangles A, B, and C, the corresponding within ratios are equal; rectangle A width/length = 2/4, rectangle B, width/lenght = 3/6 , and rectangle C, width/length = 4/8 (i.e. for all similar shapes, corresponding within ratios will be equal). The between ratios for rectangles A, B, and C shown in the table below (i.e. for two similar shapes, all of the between ratios will be equal, however, the between ratios for each pair of similar shapes will be different).

Between Ratio A and B	Between Ratio A and C	Between Ratio B and C
width A/width B = length A/length B	width A/width C = length A/length C	width B/width C = length B/length C
2/3 = 4/6	2/4 = 4/8	3/4 = 6/8

For any given problem, students will need to be able to set up proportions correctly.

Academic Vocabulary

- attributes
- between ratio
- proportional relationships
- ratio
- similarity
- within ratio

Rigor Implications

- Apply
- Use
- Describe
- Solve
- Generalize

7.5B 7.5 Proportionality. The student applies mathematical process standards to use geometry to describe and solve problems involving proportional relationships. The student is expected to:

(B) describe π as the ratio of the circumference of a circle to its diameter

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- A.2D write and solve equations involving direct variation
- 7.9B determine the circumference and area of circles

How does it support the Readiness Standard(s)?

Understanding the relationship between ∏ and the diameter of a circle will provide the concrete understanding for determining the circumference and area of a circle. Describing the ratio of the circumference and diameter of a circle (i.e. the constant of proportionality) will support students being able to write and solve equations involving direct variation.

Instructional Implications

In adherence to the TEKS, students should describe the ratio of a circle to its diameter (i.e. the relationship between the circumference of a circle and its diameter is represented by the ratio, C/d, where the constant of proportionality is pi represented by the symbol π). Instruction should include activities where students investigate this ratio between the circumference and the diameter by measuring the circumference of various circular objects with a string and then comparing this length to the diameter of the circular object. Investigations should also include the relationship between the radius and diameter of a circle (i.e. radius = 1/2 • diameter or diameter = 2 • radius). It is important students understand that 3.14 is an approximation for π.

Academic Vocabulary

- circumference
- diameter
- pi (π)
- radius
- ratio

Rigor Implications

- Apply
- Use
- Describe
- Solve

7.6A 7.6 Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to:

(A) represent sample spaces for simple and compound events using lists and tree diagrams

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

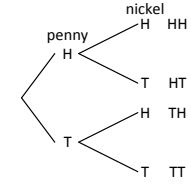
- 7.6I determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces

How does it support the Readiness Standard(s)?

It is critical for students to develop the conceptual understanding of representing sample spaces for simple and compound events as students move toward determining experimental and theoretical probabilities. This supporting standard provides that developmental progression.

Instructional Implications

In adherence to the TEKS, students use lists or tree diagrams to represent sample spaces (i.e. the set of all possible outcomes in a situation such as drawing a card from a standard deck of cards). Instruction should include sample spaces for a simple event (i.e. a single outcome such as the outcome of a 6 on the top face when rolling a single die where the {6} is the favorable outcome and {1, 2, 3, 4, 5, 6} is the set of all possible outcomes or sample space) or a compound event (i.e. an event that consists of more than one outcome such as the outcome of a prime number 2, 3, 5 on the top face when rolling a single die where {2, 3, 5} are the favorable outcomes and {1, 2, 3, 4, 5, 6} is the set of all possible outcomes or sample space). Since representing sample spaces for compound events may be confusing for some students, instruction might include a situation of tossing two coins where the two coins are different (i.e. a penny and a nickel). The sample spaces may be represented in the form of a list or a tree diagram similar to the ones shown below:

List	Tree Diagram
Head penny; Head nickel Head penny; Tail nickel Tail penny; Head nickel Tail penny; Tail nickel	

The sample space (i.e. set of all possible outcomes) would be the set {TT, TH, HT, HH}. When working with probability, students need to be able to distinguish between independent events (i.e. the outcome of the first event does not affect the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and replacing the tile after the first draw) and dependent events (i.e. the outcome of the first event affects the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and not replacing a tile after the first draw).

Academic Vocabulary

- compound event
- list
- probability
- proportional relationship
- sample space
- simple event
- tree diagram

Rigor Implications

- Apply
- Use
- Describe
- Solve
- Represent

7.6B 7.6 Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to:

(B) select and use different simulations to represent simple and compound events with and without technology

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.6I determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces

How does it support the Readiness Standard(s)?

It is critical for students to select and use different simulations for simple and compound events as students move toward determining experimental and theoretical probabilities. This supporting standard provides that developmental progression.

Instructional Implications

In adherence to the TEKS, instruction should include a variety of situations where students select and use different simulations (i.e. a technique used for making decisions where an element of chance is involved) to represent simple and compound events. Different random devices (i.e. tossing a die, flipping a coin, and spinning a spinner) that have outcomes with the same probability as the real situation must be used to model the simulation (i.e. the probability of getting 7 out of 10 questions on a true or false test by guessing may be represented by flipping a coin to model if the guess is true or false). The use of technology (i.e. random number generators, online simulations of tossing a die or spinning a spinner, or a graphing calculator) provides the opportunity to help students generate large numbers of trials. Prior to the use of technology, students should generate trials with hands on materials so they can experience how an experiment (i.e. a situation involving probability that leads to results called outcomes) really works. When working with probability, students need to be able to distinguish between independent events (i.e. the outcome of the first event does not affect the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and replacing the tile after the first draw) and dependent events (i.e. the outcome of the first event affects the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and not replacing a tile after the first draw).

Academic Vocabulary

- compound event
- experiment
- probability
- sample space
- simple event
- simulation

Rigor Implications

- Apply
- Use
- Describe
- Solve
- Select

7.6C 7.6 Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to:

(C) make predictions and determine solutions using experimental data for simple and compound events

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.6H solve problems using qualitative and quantitative predictions and comparisons from simple experiments

How does it support the Readiness Standard(s)?

It is critical for students to make predictions and determine solutions for simple and compound events as students move toward solving problems from simple experiments. This supporting standard provides that developmental progression.

Instructional Implications

In adherence to the TEKS, instruction should emphasize that the experimental data (i.e. number of *observed* occurrences of the event/total number of trials) collected from a simple event or compound event can be used as an estimate of the exact probability of an event (i.e. number of outcomes in the event/number of possible outcomes) and that the larger number of trials, the better the estimate will be. Consider the situation where a cereal manufacturer packs a toy in each cereal box. Suppose there are a total of three different toys you can get. Experimental data may be collected (i.e. collecting data from spinning a spinner divided into three equal sized sections a large number of times) to make a prediction on the number of boxes of cereal that someone would have to purchase in order to receive all three toys. When working with probability, students need to be able to distinguish between independent events (i.e. the outcome of the first event does not affect the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and replacing the tile after the first draw) and dependent events (i.e. the outcome of the first event affects the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and not replacing a tile after the first draw).

Academic Vocabulary

- compound event
- experimental data
- simple event

Rigor Implications

- Apply
- Use
- Describe
- Solve
- Make
- Determine

7.6D 7.6 Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to:

(D) make predictions and determine solutions using theoretical probability for simple and compound events

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.6H solve problems using qualitative and quantitative predictions and comparisons from simple experiments

How does it support the Readiness Standard(s)?

It is critical for students to select and use different simulations for simple and compound events as students move toward determining experimental and theoretical probabilities. This supporting standard provides that developmental progression.

Instructional Implications

In adherence to the TEKS, instruction should emphasize using theoretical probability (i.e. the exact probability is based on a logical analysis of the experiment itself, not on experimental results, when all possible outcomes of an experiment are equally likely, number of outcomes in the event/number of possible outcomes) for simple or compound events to make predictions and determine solutions to various problems. It is important students understand probability is a number between 0 and 1 that measures the likelihood of an event (i.e. for a simple event the probability of rolling a die and getting a 3 is 1/6 since there is one 3 out of six possible outcomes (1, 2, 3, 4, 5, 6) or, the probability of rolling a die and getting a prime number is 3/6 since there are three prime numbers {2, 3, 5} out of six possible outcomes {1, 2, 3, 4, 5, 6}).

It is also important for students to understand that probability for compound events requires the multiplication of each separate probability. For example the probability of rolling two dice and having each die land on 3 would be the product of 1/6 and 1/6 (or, 1/36).

When working with probability, students need to be able to distinguish between independent events (i.e. the outcome of the first event does not affect the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and replacing the tile after the first draw) and dependent events (i.e. the outcome of the first event affects the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and not replacing a tile after the first draw).

Academic Vocabulary

- compound event
- experiment
- simple event
- theoretical probability

Rigor Implications

- Apply
- Use
- Describe
- Solve
- Make
- Determine

7.6E 7.6 Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to:

(E) find the probabilities of a simple event and its complement and describe the relationship between the two

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.6H solve problems using qualitative and quantitative predictions and comparisons from simple experiments
- 7.6I determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces

How does it support the Readiness Standard(s)?

It is critical for students to find probabilities and their complements as students move toward solving problems from simple experiments in order to make comparisons and predications. This standard also supports the developmental progression as students determine the experimental and theoretical probabilities using data and sample spaces.

Instructional Implications

In adherence to the TEKS, students will find the probability of a simple event and its complement (i.e. the probability of "not that event"). Instruction should include opportunities for students to describe the relationship between the probability of a simple event and its complement. Complementary events are events that cannot happen at the same time and together comprise the entire sample space (i.e. getting a 3 and not getting a 3: 1, 2, 4, 5, or 6, are complementary events for rolling a die). Since the sample space specifies all the outcomes that can occur in a simple event, the sum of the probabilities of all the outcomes in a sample space equals to 1. Therefore, the relationship between the probability of a simple event and its complement is: 1 - the probability of the simple event = its complement (i.e. the probability of rolling a 3 on a die is 1/6 and its complement is 1 - 1/6 or 5/6). Instruction should include the outcomes for a probability and its complement to be shown as a decimal or a percent (i.e. the probability of 1/5 could be represented as the decimal 0.2 or the percent 20%). When working with probability, students need to be able to distinguish between independent events (i.e. the outcome of the first event does not affect the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and replacing the tile after the first draw) and dependent events (i.e. the outcome of the first event affects the outcome of the second event such as determining the probability of drawing a red tile from a bag of color tiles and not replacing a tile after the first draw).

Academic Vocabulary

- complement
- experimental probability
- simple event
- theoretical probability

Rigor Implications

- Apply
- Use
- Describe
- Solve
- Find

7.6F 7.6 Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to:

(F) use data from a random sample to make inferences about a population

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.6H solve problems using qualitative and quantitative predictions and comparisons from simple experiments

How does it support the Readiness Standard(s)?

It is critical for students to select and use different simulations for simple and compound events as students move toward determining experimental and theoretical probabilities. This supporting standard provides that developmental progression.

Instructional Implications

In adherence to the TEKS, instruction should focus on the use of data from random samples (i.e. data collected from a selected group representative of the data from the whole group such as asking 50% of the 7th grade students from each school in a Texas county to respond to a survey) to make inferences about a population (i.e. the whole group such as all 7th grade students from each school in a Texas county). It is important students understand that it is sometimes impossible to gather data from an entire population so the purpose of gathering and using data from random samples of the population is to make inferences and predictions that apply beyond the available set of data (i.e. of 300 seventh graders surveyed, 265 of them stated that pizza was their favorite lunch selection; as almost 70% of 7th graders preferred pizza, one would infer that pizza is a popular lunch choice). When gathering data for a sample it is imperative to incorporate randomness into the sample selection process in order to produce samples that are representative of the population (i.e. taking a survey of one 7th grade class at one campus would not yield random sampling for all of Texas county schools).

Academic Vocabulary

- data
- inference
- population
- random sample

Rigor Implications

- Apply
- Use
- Describe
- Solve
- Make (infer)

7.8A 7.8 Expressions, Equations, and Relationships. The student applies mathematical process standards to develop geometric relationships with volume. The student is expected to:

(A) model the relationship between the volume of a rectangular prism and a rectangular pyramid having both congruent bases and heights and connect that relationship to formulas

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

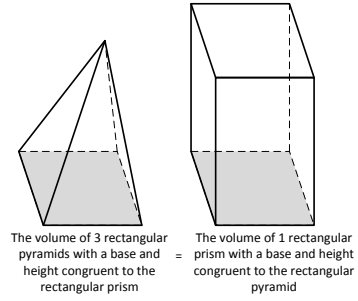
- 7.9A solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids

How does it support the Readiness Standard(s)?

This standard provides the concrete experience of being able to physically model the relationship between the volume of a rectangular prism and a rectangular pyramid in order to develop formulas. This foundational understanding will allow students to better apply the use of various formulas in problem situations.

Instructional Implications

In adherence with the standard, students will model the relationship of the volume of a rectangular prism and a rectangular pyramid with a base and height congruent to the base and height of the rectangular prism and connect this relationship to formulas (i.e. V = 1/3 Bh the volume formula for a rectangular prism where B represents the area of the base and V = Bh the volume formula for a rectangular pyramid where B represents the area of the base). Instruction should include experiences where students use nets of these shapes and assemble the nets to form a rectangular prism whose volume formula can be related to the volume formula of a rectangular pyramid with a base and height congruent to the rectangular prism (i.e. the volume of a rectangular prism is three times the volume of a rectangular pyramid with a base and height congruent to the rectangular prism or the volume of the rectangular pyramid is one-third the volume of a rectangular prism). Once the volume formula of a rectangular prism is verified, the students may use rice to fill the assembled net of the rectangular pyramid and pour into the rectangular prism until it is filled (i.e. it will take 3 of the rectangular pyramids to fill the rectangular prism).



This process should be repeated for several different rectangular prisms and rectangular pyramids.

Academic Vocabulary

- base
- congruent
- formula
- height
- rectangular prism
- rectangular pyramid
- volume

Rigor Implications

- Apply
- Develop
- Model
- Connect

7.8B	7.8 Expressions, Equations, and Relationships. The student applies mathematical process standards to develop geometric relationships with volume. The student is expected to: (B) explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to the formulas

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.9A solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids

How does it support the Readiness Standard(s)?

This standard provides the experience of being able to communicate, verbally and symbolically, the relationship between the volume of a triangular prism and a triangular pyramid in order to develop formulas. This foundational understanding will allow students to better apply the use of various formulas in problem situations.

Instructional Implications

In conjunction with 7.8A, as students experience the relationship of the volume of a triangular prism and a triangular pyramid with a base and height congruent to the base and height of the triangular prism, they should connect this relationship to formulas (i.e. $V = Bh$ the volume formula for a triangular prism where B represents the area of the base and $V = 1/3\ Bh$ the volume formula for a triangular pyramid where B represents the area of the base). Instruction should also include experiences where students verbally state this relationship (i.e. the volume of a triangular prism is three times the volume of a triangular pyramid with a base and height congruent to the triangular prism or the volume of the triangular pyramid is one-third the volume of a triangular prism). This process should be repeated for several different triangular prisms and triangular pyramids.

Academic Vocabulary

- base
- congruent
- formula
- height
- triangular prism
- triangular pyramid
- volume

Rigor Implications

- Apply
- Develop
- Explain
- Connect

7.8C

7.8 Expressions, Equations, and Relationships. The student applies mathematical process standards to develop geometric relationships with volume. The student is expected to:

(C) use models to determine the approximate formulas for the circumference and area of a circle and connect the models to the actual formulas

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

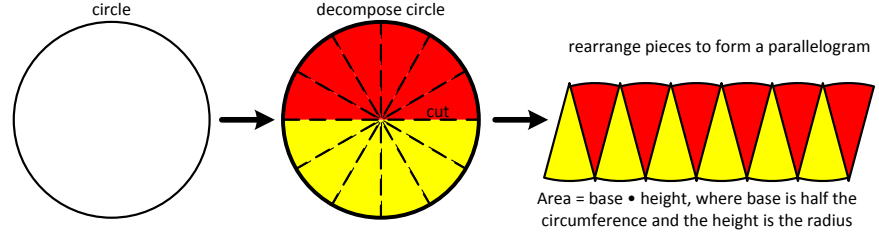
- 7.9B determine the circumference and area of circles

How does it support the Readiness Standard(s)?

This standard provides the concrete experience of determining circumference and area of a circle before introducing the abstract use of its formula.

Instructional Implications

In adherence with the standard, students will use models to determine the approximate area and circumference formulas of a circle. Use a string to model the circumference of a circle and its relationship to the diameter or radius of the circle (i.e. wrap a string around the circumference of a circle and compare this length to the diameter of the circle where the circumference of the circle is equal in length to a little more than three diameters of the circle which is representative of the value pi, π). Instruction should also include experiences where students decompose a circle and rearrange the parts to form a parallelogram so the area formula of a parallelogram can be associated to the decomposed circle's area formula (i.e. decompose a circle and rearrange the parts to form a parallelogram and connect the area formula for a parallelogram, Area = bh, to the area formula for a circle, $A = \pi r^2$).



In the concrete model above, the base of the parallelogram created by the decomposed circle is half the circumference of the circle (i.e. base of parallelogram = 1/2 • circumference of the circle which translates to 1/2 • 2 π r and this simplifies to π r). The height of the parallelogram is represented as the radius of the decomposed circle (i.e. height of parallelogram = radius of the circle). By substituting the parts of the decomposed circle into the area formula of a parallelogram, the formula for the area of a circle is represented as Area = π r • r which simplifies to πr^2.

Academic Vocabulary

- π (pi)
- area
- circle
- circumference
- diameter
- formula
- radius

Rigor Implications

- Apply
- Develop
- Use
- Determine
- Connect

7.9D

7.9 Expressions, Equations, and Relationships. The student applies mathematical process standards to solve geometric problems. The student is expected to:

(D) solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

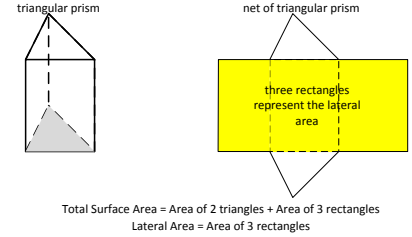
- 8.7B use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders

How does it support the Readiness Standard(s)?

It is important for students to solve problems involving lateral and total surface area by determining the area of the shape's net as students move toward solving problems and making connections to the formulas for the lateral and total surface area of shapes. This supporting standard provides that developmental progression.

Instructional Implications

In conjunction with 7.9C, students will solve problems involving the lateral and total surface area of shapes (i.e. rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid) by determining the area of the shape's net. The net of a shape can be viewed as a composite figure containing combinations of rectangles, squares, and triangles (i.e. refer to the diagram below:



The formula for the lateral area of the triangular prism may be calculated using the formula: Lateral Area = Perimeter of Base • height of triangular prism (i.e. A = Ph, since each side of the base of the triangular prism is the width of each rectangular lateral face and the height of the triangular prism is the length of each rectangular lateral face). Instruction should include real world examples of when to apply total surface area (i.e. amount of wrapping paper to cover a gift box) vs. lateral surface area (i.e. painting the exterior of a home). In conjunction with 7.3B, instruction should include a variety of problem situations that include positive rational numbers (i.e. decimals and fractions). Instruction should also vary the context of the problems (i.e. given the dimensions, determine the lateral area and/or total surface area; given the lateral area and one of the dimensions of the sides/edges and/or heights, determine the missing side/edge and/or height). It is important that students understand why the dimensions are represented in units and area is represented in square units.

Academic Vocabulary

- area
- composite figures
- lateral area
- net
- rectangle
- rectangular prism
- rectangular pyramid
- square
- total surface area
- triangle
- triangular prism
- triangular pyramid

Rigor Implications

- Apply
- Solve
- Determine

GRADE 7 → 7.10A Supporting

7.10A 7.10 Expressions, Equations, and Relationships. The student applies mathematical process standards to use one-variable equations and inequalities to represent situations. The student is expected to:

(A) write one-variable, two-step equations and inequalities to represent constraints or conditions within problems

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 8.8C model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants
- 7.11A model and solve one-variable, two-step equations and inequalities

How does it support the Readiness Standard(s)?

Writing an equation/inequality based on constraints or conditions within a problem will serve as a foundation as students solve such algebraic situations.

Instructional Implications

In accordance with the standard, students are limited to writing one-variable, two-step equations (i.e. $3x + 5 = 6$) and one-variable, two-step inequalities ($3x + 5 < 6$). Instruction will model examples of equations identifying conditions (i.e. a hamburger costs $7 which is $1.25 more than twice the price of a soda; $7 = 2x + 1.25$) and inequalities representing constraints (i.e. a repairman charges $45 an hour plus a one-time consulting fee of $20 and wants to earn at least $438.75; $45x + 20 \geq 438.75$). Emphasis needs to be placed on real-world examples of applying greater than/less than (i.e. the temperature must be warmer than 75° for the air conditioner to turn on; $x > 75$) vs. greater than or equal to/less than or equal to (i.e. maximum capacity of a ballroom is 300 people; $x \leq 300$). Instruction should address how equations yield one solution (i.e. $3x + 5 = 11$, $x = 2$); whereas, inequalities yield several possible solutions (i.e. $3x + 5 < 11$, $x < 2$).

Academic Vocabulary

- equation
- inequality
- variable

Rigor Implications

- Apply
- Use
- Represent
- Write

7.10B 7.10 Expressions, Equations, and Relationships. The student applies mathematical process standards to use one-variable equations and inequalities to represent situations. The student is expected to:

(B) represent solutions for one-variable, two-step equations and inequalities on a number line

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

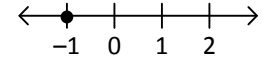
- 7.11A model and solve one-variable, two-step equations and inequalities

How does it support the Readiness Standard(s)?

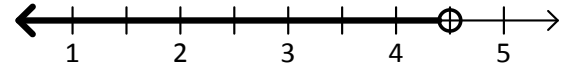
Representing solutions for an equation/inequality on a number line will be foundation as students solve such algebraic situations.

Instructional Implications

In accordance with the standard, students represent solutions for one-variable, two-step equations and inequalities on number lines (i.e. the solution for -1 = -2x - 3 on a number line:



the solution for 0 > 2x - 9 on a number line:



Instruction on inequalities should address the use of the open circle (value is not included in the set of possible solutions, x > 2) and a filled circle (value is included in the set of possible solutions, x ≥ 2). In conjunction with 7.10A, as students begin representing solutions to real-world inequalities, it will be imperative for them to relate the appropriate use of an open circle (i.e. Sandra must make more than a 75 on her exam to make an A average for the semester; x > 75) vs. filled circles (i.e. the room capacity of the cafeteria is no more than 300 people; x ≤ 300).

Academic Vocabulary

- equation
- inequality
- number line
- solution
- variable

Rigor Implications

- Apply
- Use
- Represent

GRADE 7 → 7.10C Supporting

7.10C 7.10 Expressions, Equations, and Relationships. The student applies mathematical process standards to use one-variable equations and inequalities to represent situations. The student is expected to:

(C) write a corresponding real-world problem given a one-variable, two-step equation or inequality

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.11A model and solve one-variable, two-step equations and inequalities

How does it support the Readiness Standard(s)?

Writing a corresponding real-world problem from a given equation/inequality will be the foundation to understanding the representation of such algebraic situations. This supporting standard will enable students to better interpret solutions to equation/inequalities.

Instructional Implications

In accordance with the standard, students write corresponding real-world problems given one-variable, two-step equations (i.e. 6x + 4 = 46; John has 46 sodas for the picnic, how many six-packs of soda did he buy if he already had 4 sodas?) or inequalities (i.e. 6x + 4 ≥ 43; John needs at least 43 sodas for the picnic to serve everyone, what would be a reasonable number of six-pack of sodas he should buy if he already has 4 sodas?). Be sure to vary the representation of the given equations/inequalities (i.e. 6x + 4 = 46; 46 = 6x + 4; 4 + 6x = 46; 46 = 4 + 6x). Instruction should ensure that students have experience writing inequalities scenarios for both inclusive (≥) and exclusive values (>). In alignment with 7.3B, instruction should include problems involving rational numbers (decimals and fractions).

Academic Vocabulary

- equation
- inequality
- variable

Rigor Implications

- Apply
- Use
- Represent
- Write

7.11B

7.11 Expressions, Equations, and Relationships. The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to:

(B) determine if the given value(s) make(s) one-variable, two-step equations and inequalities true

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.11A model and solve one-variable, two-step equations and inequalities

How does it support the Readiness Standard(s)?

Determining if a given value makes an equation/inequality true will allow students to justify solutions to solving such algebraic situations.

Instructional Implications

In accordance with the standard, students determine if a given value makes an equation (i.e. substitute the value -3 for x in the equation $2x + 4 = 7$ to determine if $x = -3$ will make a true statement: $2(-3) + 4 = -2$, since $-2 \neq 7$, -3 is not a solution for the equation) or inequality (i.e. substitute the value 3/4 for x in the inequality $8x + 3 < 9$ to determine if $x = 3/4$ will make a true statement: $8(3/4) + 3 < 9$, since $9 < 9$ is not true,3/4 is not a solution for the inequality). As students become comfortable with determining if a given value yields a true statement, students can begin applying this process to determine if their solution is correct when solving equations (see 7.11A).

Academic Vocabulary

- equation
- inequality
- solution
- variable

Rigor Implications

- Apply
- Solve
- Determine

7.11C 7.11 Expressions, Equations, and Relationships. The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to:

(C) write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

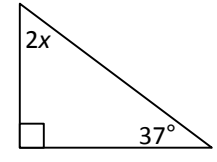
- 7.11A model and solve one-variable, two-step equations and inequalities

How does it support the Readiness Standard(s)?

Students will apply their knowledge of the sums of triangles and angle relationships to writing and solving such problems algebraically. This supporting standard will bridge the concept of geometry and algebra.

Instructional Implications

In adherence to the standard, geometric concepts should be applied to the representation and solving of two-step, one-variable problems (i.e. if the perimeter of a rectangle is 56.5 cm, the length measures 5 cm more than the width, what is the length and width of the rectangle? would be represented by the equation 4w + 10 = 56.5). Instruction should also include one-variable, two-step equations that involve the sum of the angles in a triangle and angle relationships. The equation to determine the value of x in the diagram below would be 2x + (90 + 37) = 180 or 2x + 127 = 180.



Academic Vocabulary

- angles
- area
- circumference
- equation
- perimeter
- sum
- surface area
- variable
- volume

Rigor Implications

- Apply
- Solve
- Write

7.12B 7.12 Expressions, Equations, and Relationships. The student applies mathematical process standards to use statistical representations to analyze data. The student is expected to:

(B) use data from a random sample to make inferences about a population

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.6I determine experimental and theoretical probabilities related to simple and compound events using data and samples spaces
- 7.6G solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to-whole and part-to-part comparisons and equivalents

How does it support the Readiness Standard(s)?

As data from random samplings can be displayed in bar graph, dot plots, and circle graphs, students will need to be able to make inferences about various populations in order to solve related problems.

Instructional Implications

In adherence to the TEKS, instruction should focus on the use of data from random samples (i.e. data collected from a selected group representative of the data from the whole group such as asking 50% of the 7th grade students from each school in a Texas county to respond to a survey) to make inferences about a population (i.e. the whole group such as all 7th grade students from each school in a Texas county). It is important students understand that it is sometimes impossible to gather data from an entire population so the purpose of gathering and using data from random samples of the population is to make inferences and predictions that apply beyond the available set of data. When gathering data for a sample it is imperative to incorporate randomness into the sample selection process in order to produce samples that are representative of the population.

Academic Vocabulary

- data
- inference
- population
- random sample

Rigor Implications

- Apply
- Use
- Analyze
- Make (infer)

7.12C

7.12 Expressions, Equations, and Relationships. The student applies mathematical process standards to use statistical representations to analyze data. The student is expected to:

(C) compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.12A compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads

How does it support the Readiness Standard(s)?

Informally comparing random sample populations provide the foundation to more formal comparisons of the shape, center, and spread of data.

Instructional Implications

In conjunction with 7.12A, instruction should focus on the comparison of data in random samples (i.e. data collected from a selected group representative of the data from the whole group such as asking 60% of the 7th grade girls/boys from a school to respond to a survey) to make informal comparative inferences about differences between two populations (i.e. the whole group such as all 7th grade girls/boys from a school). It is important students begin to understand that all populations may not be the same (i.e. the favorite sport of 7th grade girls may not be the same as the favorite sport of 7th grade boys in a school). It is also important students understand that it is sometimes impossible to gather data from an entire population so the purpose of gathering and using data from random samples of the population is to make inferences that apply beyond the available set of data. When gathering data for a sample it is imperative to incorporate randomness into the sample selection process in order to produce samples that are representative of the population (i.e. a sample in which there are distinct subsets of the population that are proportionally representative of the populations). Students need to realize the sample size needs to be big enough in order to be confident that the statistics for the sample is essentially the same as for the entire population.

Academic Vocabulary

- data
- inference
- population
- random sample

Rigor Implications

- Apply
- Use
- Compare

7.13A 7.13 Personal Financial Literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:
(A) calculate sales tax for a given purchase and calculate income tax for earned wages

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.4D solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems

How does it support the Readiness Standard(s)?

Calculating sales tax for a given purchase and income tax for earned wages will directly support students in solving ratio, rate, and percent problems.

Instructional Implications

In conjunction with 7.4D, this standard addresses financial literacy problems where students are expected to calculate sales tax for a given purchase and calculate income tax for earned wages. Instruction should include a variety of problems where students calculate the sales tax on real-life purchases (i.e. use the sales receipt from a local store). It is important students are able to distinguish between the sales tax (i.e. the dollar amount added to the purchase calculated using the sales tax rate) and the sales tax rate (i.e. the percent of the purchase used to calculate the sales tax, 8% sales tax translates to 0.08 x purchase price = sales tax). It is also important students understand that the calculated sales tax (i.e. sales tax rate + purchase price = sales tax) is not the total price (i.e. purchase price + sales tax = total price). Calculating income tax on earned wages has many variables involved (i.e. employee's income, tax deductions, filing status, number of dependents, etc.). To calculate income tax on earned wages, two resources such as a sample employee W-4 Form and the Internal Revenue Service's Circular E (i.e. Employer's Tax Guide for the year) may be used. The two most common methods of calculating income tax on earned wages are the wage bracket method and the percentage method. Problems should involve the use of both methods. It is important to note Texans pay federal income taxes, but not state income taxes.

Academic Vocabulary

- income tax
- original price
- sales tax
- sales tax rate
- total price
- wages

Rigor Implications

- Apply
- Develop
- Calculate

7.13B

7.13 Personal Financial Literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:

(B) identify the components of a personal budget, including income; planned savings for college, retirement, and emergencies; taxes; and fixed and variable expenses, and calculate what percentage each category comprises of the total budget

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.4D solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems

How does it support the Readiness Standard(s)?

Calculating components of a personal budget will directly support students in solving ratio, rate, and percent problems.

Instructional Implications

In conjunction with 7.4D, this standard addresses financial literacy problems where students are expected to identify components (i.e. income; planned savings for college, retirement, and emergencies; taxes; fixed and variable expenses) of a personal budget and calculate the percentage each category comprises of the total budget. Instruction may include students researching various online personal budget templates and using the information from the template to calculate the percentages of each category. In conjunction with 7.6G, students can use this data and represent it in a circle graph.

Academic Vocabulary

- budget
- expenses (fixed and variable)
- income
- savings
- taxes

Rigor Implications

- Apply
- Develop
- Identify
- Calculate

7.13C 7.13 Personal Financial Literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:
(C) create and organize a financial assets and liabilities record and construct a net worth statement

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.3B apply and extend previous understanding of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers

How does it support the Readiness Standard(s)?

Creating and organizing a financial asset and liability record and constructing a net worth statement will support the application of using all operations with rational numbers.

Instructional Implications

In adherence with the standard, the student will create and organize a financial asset (i.e. "what you own" -cash, bank deposits, cash equivalent such as stocks or bonds, etc.) record and a financial liability (i.e. "what you owe" -money you owe on credit cards or have agreed to pay such as long/short term loans) record. Instruction should include a balance sheet (i.e. a financial statement that shows financial assets and financial liabilities) where students can determine the net worth (i.e. the value of all assets minus the total of all liabilities: what is owned - what is owed = net worth). In conjunction with 7.3B, students will apply their understanding of operations of rational numbers as they construct net worth statements.

Academic Vocabulary

- financial asset
- financial liability
- net worth statement

Rigor Implications

- Apply
- Develop
- Create
- Organize
- Construct

7.13D

7.13 Personal Financial Literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:

(D) use a family budget estimator to determine the minimum household budget and average hourly wage needed for a family to meet its basic needs in the student's city or another city nearby

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.3B apply and extend previous understanding of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers

How does it support the Readiness Standard(s)?

Determining the minimum household budget and average hourly wage needed for a family will support the application of using all operations with rational numbers.

Instructional Implications

In adherence with the standard, instruction should include online research by students for a family budget estimator (i.e. a calculator that measures the income a family needs in order to attain a secure yet modest living standard by estimating community-specific costs of housing, food, child care, transportation, health care, other necessities, and taxes). This online resource will allow students to determine the minimum household budget and average hourly wage to meet the basic needs of a family. The student will also need to do online research of the average hourly wage and living expenses in their city or another city nearby. In conjunction with 7.3B, students will apply their understanding of operations of rational numbers as they use a family budget estimator.

Academic Vocabulary

- basic needs
- budget
- hourly wage

Rigor Implications

- Apply
- Develop
- Use
- Determine

7.13E 7.13 Personal Financial Literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:

(E) calculate and compare simple interest and compound interest earnings

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 8.12D calculate and compare simple interest and compound interest earnings

How does it support the Readiness Standard(s)?

The foundation to calculate and compare simple interest and compound interest earnings begins at this grade level and continues to grade 8.

Instructional Implications

In conjunction with 7.3B/7.4D, students will apply their understanding of operations of rational numbers and solve problems involving percents as they calculate simple interest (i.e. formula: $I = Prt$, where interest = principal times interest rate times length of time) and compound interest (i.e. formula: $M = P(1 + i)^n$, where final amount including the principal = principal times (1 + rate of interest per year)$^{(\text{number of years invested})}$). In order to compare simple interest and compound interest, it is important students understand the difference between simple interest (i.e. interest that is calculated once per period on the principal and not on any interest) and compound interest (i.e. interest that is paid on both the principal and also on any interest from past months or years). Students will need to understand the initial money invested is called principal, the additional money earned from the principal is called interest, and the total amount which is earned at the end of a specified time is known as the amount.

Academic Vocabulary

- compound interest
- earnings
- interest
- interest rate
- principal
- simple interest
- time

Rigor Implications

- Apply
- Develop
- Calculate
- Compare

7.13F 7.13 Personal Financial Literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:

(F) analyze and compare monetary incentives, including sales, rebates, and coupons

What Readiness Standard(s) or concepts from the Readiness Standards does it support?

- 7.3B apply and extend previous understanding of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers
- 7.4D solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems

How does it support the Readiness Standard(s)?

Calculating monetary incentives such as sales, rebates, and coupons will support the application of using all operations with rational numbers and solving of percent problems.

Instructional Implications

In conjunction with 7.3B/7.4D, students will apply their understanding of operations of rational numbers and solve problems involving percent decrease and personal financial literacy in order to analyze and compare monetary incentives (i.e. sales, rebates, and coupons). Instruction should include online research by students for discounts, sale prices, and rebates on various items (i.e. clothing, autos, food, etc.). Problems should include situations where students compare discounts, rebates, and sales from various competitors.

Academic Vocabulary

- coupon
- discount
- percent decrease
- rebate
- sale

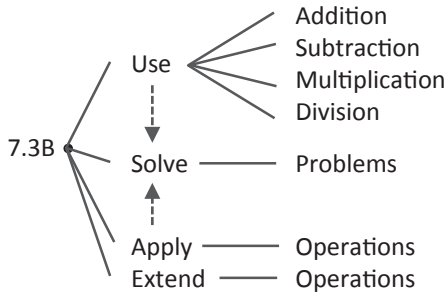
Rigor Implications

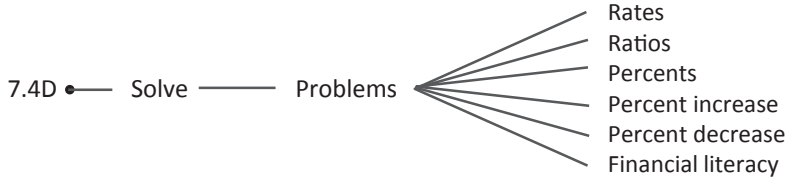
- Apply
- Develop
- Analyze
- Compare

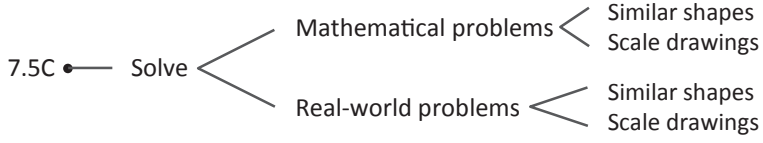
APPENDIX

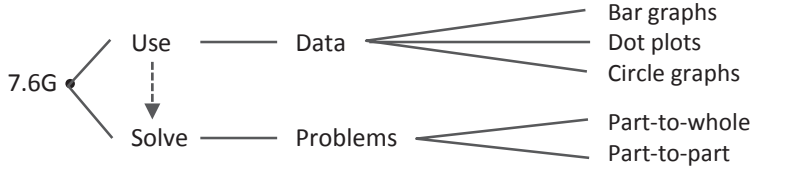
TREE DIAGRAM

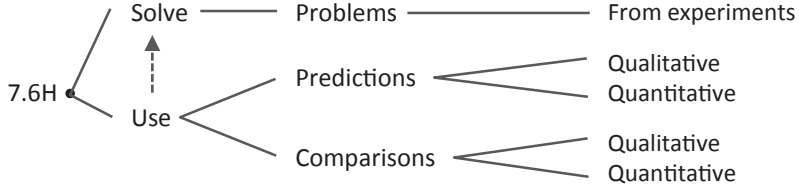
Grade 7 Math TEKS Tree - Readiness Standards

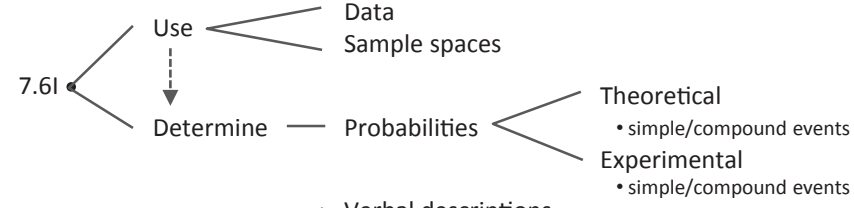


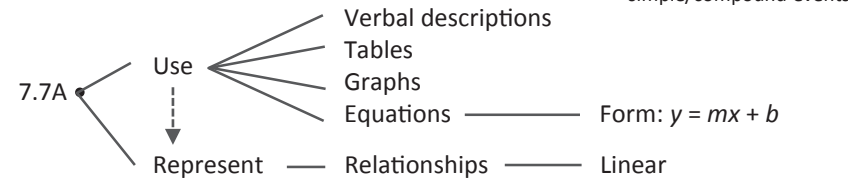


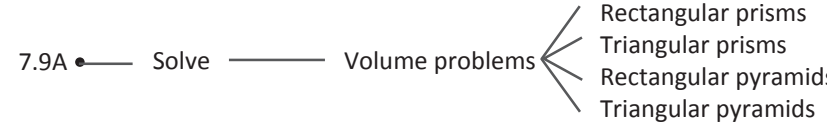


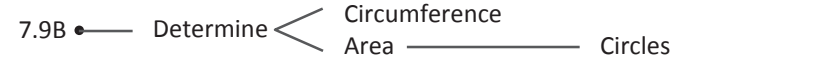


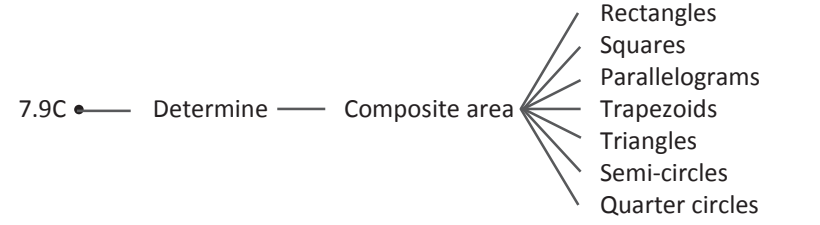


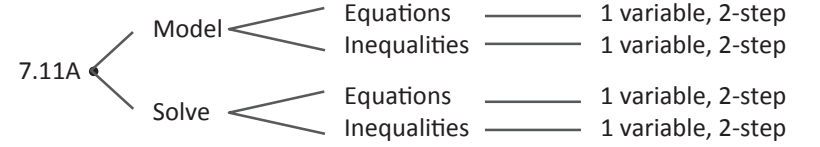


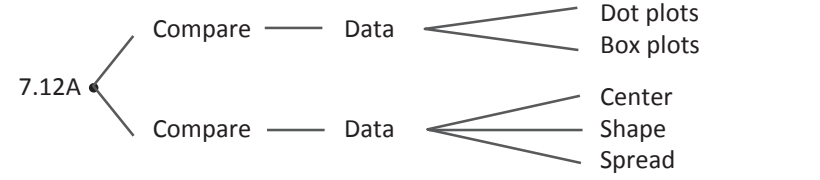












TEKS Student Expectations for implementation beginning 2014-2015.