

NYS Grade 6 to Grade 8 Mathematics Learning Standards

Grade 7

Ratios and Proportional Relationships

| | | Standard Code | Current Standard | Revised Standard Recommendation for 2018-19 | Additional Information/Notes |
|----------|--|---------------|---|---|------------------------------|
| Clusters | A. Analyze proportional relationships and use them to solve real-world problems. | 7.RP.A.1 | 1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction (1/2)/(1/4) miles per hour, equivalently 2 miles per hour.</i> | 1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>For example, if a person walks 1/2 mile in each 1/4 hour, compute the rate as the complex fraction (1/2)/(1/4) miles per hour, equivalently 2 miles per hour with 2 being the unit rate.</i> | Clarification |
| | | 7.RP.A.2 | 2. Recognize and represent proportional relationships between quantities. | 2. No Change | |

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The Number System

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|----------|---|---------------|---|--|------------------------------|
| Clusters | A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. | 7.NS.A.1 | 1. Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. | 1. No Change | |
| | | 7.NS.A.1a | 1a. Describe situations in which opposite quantities combine to make 0. <i>For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</i> | 1a. Describe situations in which opposite quantities combine to make 0. <i>For example, a hydrogen atom has 0 charge because it has one negatively charged electron and one positively charged proton.</i> | Clarification |

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7.NS.A.1b

1b. Understand $p + q$ as the number located a



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| | | | | |
|--|-----------|---|---------------|--|
| Clusters A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. | 7.NS.A.2a | 2a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. | 2a. No Change | |
| | 7.NS.A.2b | 2b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts. | 2b. No Change | |
| | 7.NS.A.2c | 2c. Apply properties of operations as strategies to multiply and divide rational numbers. | 2c. No Change | |

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Expressions and Equations (Inequalities)

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| | A. Use properties of operations to generate equivalent expressions. | 7.EE.A.1 | 1. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. | 1. No Change | |
| | | 7.EE.A.2 | 2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. <i>For example, $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."</i> | 2. Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. <i>For example, $a + 0.05a$ and $1.05a$ are equivalent expressions meaning that "increase by 5%" is the same as "multiply by 1.05."</i> | Clarification |
| Clusters | B. Solve real-life and mathematical problems using numerical and algebraic expressions and equations (inequalities). | 7.EE.B.3 | 3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. <i>For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.</i> | 3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in | |

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| Clusters | B. Solve real-life and mathematical problems using numerical and algebraic expressions and equations (inequalities). | 7.EE.B.4 | 4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. | 4. No Change | |
| | | 7.EE.B.4a | 4a. Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. <i>For example, The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i> | 4a. Fluently solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are rational numbers and x represents the unknown quantity. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. <i>For example, The perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?</i> | |

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Geometry

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| Clusters | A. Draw, construct and describe geometrical figures and describe the relationships between them. | 7.G.A.1 | 1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. | 1. No Change | |
| | | 7.G.A.2 | 2. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. | 2. Explore geometric shapes through the use of freehand drawings, rulers, protractors, and/or technology. Focus on constructing triangles with given conditions from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. | Clarification |
| | | 7.G.A.3 | 3. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. | 3. Explore and describe the two-dimensional figures that result from slicing three-dimensional figures parallel or perpendicular to a base, as in plane sections of right rectangular prisms and right rectangular pyramids. | Clarification, limiting the slices to those that are parallel or perpendicular to a base, though students could explore askew slices that will arise in in the discussion of plane sections at the high school level. |

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Statistics and Probability



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| Clusters | C. Investigate chance processes and develop, use and evaluate probability models. | 7.SP.C.8a | 8a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. | 8a. No Change | |
| | | 7.SP.C.8b | 8b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. | 8b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language, identify the outcomes in the sample space which compose the event. <i>For example, "rolling double sixes".</i> | |