

Seventh Grade Kansas College & Career Readiness Standards for MATH

Record keeping of implementation: PINK= WEEKLY (Once or Twice/Week) BLUE=DAILY (3 or MORE X/Week) ALL OTHERS=Dates Listed

Ratios and Proportional Relationships: Reasoning with Ratios																			
<p>RP1 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 (interpreting a complex fraction as division of fractions), equivalently 2 miles per hour.</i></p>																			
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<p>RP2 Recognize and represent proportional relationships between quantities:</p>																			
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<p>RP2a Determine whether two quantities are in a proportional relationship, <i>e.g. by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin</i></p>																			
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<p>RP2b Analyze a table or graph and recognize that, in a proportional relationship, every pair of numbers has the same unit rate (referred to as the “m”).</p>																			
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<p>RP2c Represent proportional relationships by equations. <i>For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</i></p>																			
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<p>RP2d Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.</p>																			
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<p>RP3 Use proportional relationships to solve multistep ratio and percent problems. <i>Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i></p>																			
dates ---->																			
Number System: Four operations with rational numbers																			
<p>NS1 Represent addition and subtraction on a horizontal or vertical number line diagram.</p>																			
dates ---->																			
<p>NS1a Describe situations in which opposite quantities combine to make 0. Show that a number and its opposite have a sum of 0 (are additive inverses). <i>For example, show zero-pairs with two-color counters</i></p>																			
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<p>NS1b Show $p+q$ as the number located a distance q from p, in the positive or negative direction depending on whether q is positive or negative.</p>																			
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<p>NS1c Model subtraction of rational numbers as adding the additive inverse, $p-q=p+(-q)$.</p>																			
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<p>NS1d Model subtraction as the distance between two rational numbers on the number line where the distance is the absolute value of their difference.</p>																			
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NS1e	Apply properties of operations as strategies to add and subtract rational numbers.
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NS2	Apply and extend previous understandings of multiplication and division of positive rational numbers to multiply and divide all rational numbers.
dates ---->	
NS2a	Describe how multiplication is extended from positive rational numbers to all 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.
dates ---->	
NS2b	Explain 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. Leading to situations such that if p and q are integers, then $-(p/q)=(-p)/q=p/(-q)$.
dates ---->	
NS2c	Apply properties of operations as strategies to multiply and divide rational numbers.
dates ---->	
NS2d	Convert a rational number in the form of a fraction to its decimal equivalent using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
dates ---->	
NS3	Solve and interpret real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)
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<i>Expressions and Equations: Equivalent Expressions</i>	
EE1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. Note: factoring is limited to integer coefficients. For example: apply the distributive property to the expression $24x+18y$ to produce the equivalent expression $6(4x+3y)$.
dates ---->	
EE2	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. For example, $a+0.05a=1.05a$ means that "increase by 5%" is the same as "multiply by 1.05."
dates ---->	
<i>Expressions and Equations: Problems involving numerical and algebraic expressions and equations</i>	
EE3	Solve multi-step real-life and mathematical problems with rational numbers. 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. 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.
dates ---->	
EE4	Use variables to represent quantities in a real-world or mathematical problem, and construct two-step equations and inequalities to solve problems by reasoning about the quantities.
dates ---->	

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 (efficiently, accurately, and flexibly). Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?

EE4a
dates ---->

Solve word problems leading to inequalities of the form $px+q>r$ or $px+q<r$ where p , q , and r are specific rational numbers and $p>0$. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid \$50 per week plus \$3 per sale. This week you want your pay to be at least \$100. Write an inequality for the number of sales you need to make, and describe the solutions.

EE4b
dates ---->

Geometry: Geometrical Figures

Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

G1
dates ---->

Identify three-dimensional objects generated by rotating a two-dimensional (rectangular or triangular) object around one edge.

G2
dates ---->

Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right cylinder

G3
dates ---->

Geometry: Angle measure, area, surface area, and volume problems

Use the formulas for the area and circumference of a circle and solve problems; give an **informal derivation** of the relationship between the circumference and area of a circle.

G4
dates ---->

Investigate the relationship between three-dimensional geometric shapes;

G5
dates ---->

Generalize the volume formula for prisms and cylinders ($V=Bh$ where B is the area of the base and h is the height).

G5a
dates ---->

Generalize the surface area formula for prisms and cylinders ($SA=2B+Ph$ where B is the area of the base, P is the perimeter of the base, and h is the height (in the case of a cylinder, perimeter is replaced by circumference)).

G5b
dates ---->

Solve real-world and mathematical problems involving area of two-dimensional objects and volume and surface area of three-dimensional objects including cylinders and right prisms. (Solutions should not require students to take square roots or cube roots. For example, given the volume of a cylinder and the area of the base, students would identify the height.)

G6
dates ---->

Statistics and Probability: Statistical variability

Use statistics to gain information about a population by examining a sample of the population;

SP1
dates ---->

Know that generalizations about a population from a sample are valid only if the sample is representative of that population and generate a valid representative sample of a population.

SP1a

