

Topic 4 Framework

7th Grade Topic 4 : Generate Equivalent Expressions		Estimate Time For Planning Calendar
Essential Standards: 7.EE.1, 7.EE.2 Supporting Standards: 7.NS.3 Assessment Resource: End of Topic Common Assessment Folder and Pear Assessment Shortcut Link		
FCPS Supporting Links		Additional Supporting Links
Pacing Guide Unit / Lesson Internalization 7th Grade Topic 4 Standards Resource with Sample Formative Assessments enVision 7th Grade Topic 4 Standards Crosswalk Resource FCPS P-12 Mathematics Guidance Document SEL Standards		Kentucky Academic Standards KSA Blueprint Target of the Standards - conceptual, procedural & Three-Reads Routine Notice and Wonder Routine enVision Teacher Guide: page 190A to 190D for spe Focus-Coherence-Rigor
Big Ideas		Opportunities for Vibrant Learning and Writing
- Use properties of operations to generate equivalent expressions. - Solve real-life and mathematical problems using numerical and algebraic expressions.		Topic 4 Performance Assessment A Topic 4 Pick-a-Project - The Perfect Playground
Essential Questions		Common Preconceptions/Misconceptions
- How can properties of operations help to generate equivalent expressions used in solving problems? - When and how are equations applied to real-world situations? - What are some possible real-life situations to which there may be more than one solution?		Students apply the properties of rational numbers in expressions. Students must be precise when defining helpful for students to use letters closely representing stand for when assigning variable names. Students must be sure of the order of operations. When several steps in an expression, sometimes they forget operations such as in the example: $7+2(3x - 5) + 2x$. the 7 + 2 first or only multiply the 2 by the 3x and not the order of operations can help.
Standards for Mathematical Practices		Kentucky Interdisciplinary Literacy Practices (KILP)

[MP.1. Make sense of problems and persevere in solving them.](#)
[MP.2. Reason abstractly and quantitatively.](#)
[MP.3. Construct viable arguments and critique the reasoning of others.](#)
[MP.4. Model with mathematics.](#)
[MP.5. Use appropriate tools strategically.](#)
[MP.6. Attend to precision.](#)
[MP.7. Look for and make use of structure.](#)
[MP.8. Look for and express regularity in repeated reasoning.](#)

enVision Teacher Guide: page 190E for specific Topic 4 Math Practice suggestions

1. Recognize that text is anything that communicates.
2. Employ, develop, and refine schema to understand.
3. View literacy experiences as transactional, interactive, and transformational.
4. Utilize receptive and expressive language arts to communicate with others, and the world.
5. Apply strategic practices, with scaffolding and modeling, to approach new literacy tasks.
6. Collaborate with others to create new meaning.
7. Utilize digital resources to learn and share with others.
8. Engage in specialized, discipline-specific literacy practices.
9. Apply high level cognitive processes to think deeply about text.
10. Develop a literacy identity that promotes lifelong learning.

Incorporating texts into math instruction fosters interest and a more engaging educational experience.

Essential Standards

Sample Learning Intentions & Success Criteria

HQIR/Resource

! Indicates a
Kentucky Academic
Standard
◆ Indicates a
planning and
assessment

Cluster: Use properties of operations to generate equivalent expressions.

[KY.7.EE.1](#) Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

☐ Conceptual ☐ Procedural ☐ Application

Clarifications: Students demonstrate understanding of applying the order of operations to an expression involving multiple operations, including using the distributive property and variables in the expression. Students apply the properties of commutative, associative and distributive fluently.

Coherence KY.6.EE.3 → KY.7.EE.1 → KY.8.EE.7

MP.2, MP.3, KILP.6, KILP.8

Supporting Standard: [KY.7.NS.3](#)

We are learning to generate equivalent expressions.

- I can use the Distributive Property and area models to expand expressions.
- I can use the Distributive Property and area models to factor expressions.
- I can use the Commutative and Associative properties to add expressions.
- I can apply my understanding of adding and subtracting rational numbers to the constants and coefficients when combining like terms.
- I can combine like terms and apply the properties of operations to subtract expressions.

- Possible 1
FA_7M

- ! Option
(review of)
- [Brainiacs](#)
"Patio Exp"
- Topic 4 Le
- [Topic 4: L](#)
[Game \(be](#)
- [Brainiacs](#)
[Number 7](#)
- [Brainiacs](#)
"Pool Pat
- Topic 4 Le
- [Topic 4: L](#)
[Expandab](#)
- Topic 4 Le
- [Brainiacs](#)
"Manipula
- Topic 4 Le

		• Brainiac • “Factor F • 3-Act Ma • Covered • Topic 4 Le • Topic 4 Le • Brainiac • “Adding t • enVision • Handboo
KY.7.EE.2 Understand that rewriting an expression in different forms in a problem context can clarify the problem and how the quantities in it are related. ☐ Conceptual ☐ Procedural ☐ Application Clarifications: Students apply mathematical properties in order to rewrite expressions and clarify the relationship of quantities in a problem. For Example: If Tom and Jim both get paid a wage of \$11 per hour, but Tom was paid an additional \$55 for overtime, the expression $11(T + J) + 55$ may be more clearly interpreted as $11T + 55 + 11J$ for purposes of understanding Tom’s pay separated from Jim’s pay. Coherence $KY.6.EE.4 \rightarrow KY.7.EE.2 \rightarrow KY.8.EE.8c$ MP.7, MP.8, KILP.1, KILP.4, KILP.9 Supporting Standard: KY.7.NS.3	We are learning how rewriting expressions of a real-world scenario clarify the problem and understand how the quantities are related. • I can write an expression to represent a real-world situation. • I can write equivalent expressions by combining like terms, using the Distributive Property, and applying properties of operations. • I can use equivalent expressions to determine relationships between quantities and interpret information in real-world problems. • I can tell how the rewritten expressions helps clarify the context of the problem.	• Possible t • FA_7M • Topic 4 Le • enVision • Handboo

Attending to the Standards for Mathematical Practice

Students who fluently use the strategies of the properties of rational numbers to reason through the standard or applying these properties in a structured way. Students recognize the repeated use of the distributive property as expressions (MP.7). When given an example problem involving multiple operations containing a mistake, students “Where did the mistake occur and how do I know?” (MP.3). Students bring mathematical context to real-life situations. Multiple representations of quantities may exist. For example, adding 5% to quantity a leads to an expression of $a + 0.05a$, which clarifies the problem. Students access previous knowledge of working with percents to use the same structure to expressions exist, even when taken out of the context of the real-world situation (MP.7). Students extend this reasoning to situations (MP.8).

Supporting Standards

[KY.7.NS.3](#) Solve real-world and mathematical problems involving the four operations with rational numbers. **MP.1**

Emphasis is on **applying** mathematical operations to rational numbers that occur in real real-world context.

☐ Conceptual ☐ Procedural ☐ Application

Vocabulary

coefficient - A constant that multiplies a variable.

constant - A value that does not change.

distributive property of multiplication over addition - $a(b + c) = a * b + a * c$

evaluate - To calculate the value of. Evaluate $x^2 + 5$ when $x = 3$; Answer $3^2 + 5 = 9 + 5 = 14$.

expression - A finite combination of symbols that are well-formed according to the rules applicable in the context.

like terms - Terms whose variables (such as x or y) with any exponents (such as the 2 in the x^2) are the same.

term - A single number or a variable, or numbers and variables multiplied together. A term is typically separated by a plus or minus sign.

unlike terms - When the variables and/or their exponents are different ($2x$, $2x^2$, $2y$, $2xy$ are all unlike terms).

variable - A letter used to represent a number value in an expression or an equation. EX: " x " in $x+2=4$.

*Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. This example is not comprehensive.

** Mathematical Practices (A.MP. 1- 8) should be evidenced at some point throughout each unit, depending on the explored tasks. It is important to note that MP. 2 should support learning in every lesson.

*** Modeling Standards: Modeling is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards indicated by a star symbol (★). The star symbol sometimes appears on the heading for a group of standards; in that case, it should be understood to apply to *all* standards in that group.

Visual Vocabulary

- coefficient** - A constant that multiplies a variable.
- constant** - A value that does not change.
- distributive property of multiplication over addition** - $a(b + c) = a * b + a * c$
- evaluate** - To calculate the value of. Evaluate $x^2 + 5$ when $x = 3$; Answer $3^2 + 5 = 9 + 5 = 14$.
- expression** - A finite combination of symbols that are well-formed according to the rules applicable in the context.
- like terms** - Terms whose variables (such as x or y) with any exponents (such as the 2 in the x^2) are the same.
- term** - A single number or a variable, or numbers and variables multiplied together. A term is typically separated by addition/subtraction.
- unlike terms** - When the variables and/or their exponents are different ($2x$, $2x^2$, $2y$, $2xy$ are all unlike terms).
- variable** - A letter used to represent a number value in an expression or an equation. EX: " x " in $x+2=4$.