

Just In Time Quick Check
Standard of Learning (SOL) 8.14b

Strand: Patterns, Functions, and Algebra

Standard of Learning (SOL) 8.14b

The student will simplify algebraic expressions in one variable.

Grade Level Skills:

- Simplify algebraic expressions in one variable. Expressions may need to be expanded (using the distributive property) or require combining like terms to simplify. Expressions will include only linear and numeric terms. Coefficients and numeric terms may be rational.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [8.14b - Simplifying Algebraic Expressions](#) (Word) / [PDF Version](#)
- VDOE Algebra Readiness Formative Assessments
 - [SOL 8.14b](#) (Word) / [PDF](#)
- VDOE Algebra Readiness Remediation Plans
 - [Modeling Algebraic Expressions](#) (Word) / [PDF](#)
- VDOE Word Wall Cards: Grade 8 ([Word](#)) | ([PDF](#))
 - Term
 - Constant
 - Like Terms
- VDOE Rich Mathematical Tasks: How Many Stones Will I Need?
 - [8.14 How Many Stones Will I Need Task Template](#) (Word) / [PDF Version](#)
- Desmos Activities
 - [Combine Like Terms](#)
 - [8.14b Equivalent Expressions and Algebra Tiles](#)

Supporting and Prerequisite SOL: [7.12](#), [6.6a](#), [6.6c](#), [6.13](#)

SOL 8.14b - Just in Time Quick Check

- 1.) Simplify the algebraic expression $5(2x - 3) + 7$.
- 2.) Simplify the algebraic expression $0.2(d + 10) - 0.9d + 3$.
- 3.) Rewrite the expression $(x - 2) - (3 - x)$ as an equivalent expression in its most simplified form.
- 4.) Simplify the algebraic expression $-\frac{2}{3}b + \frac{1}{4}\left(\frac{4}{5}b - \frac{5}{6}\right)$.

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Common Errors/Misconceptions and their Possible Indications

- 1.) Simplify the algebraic expression $5(2x - 3) + 7$

A common error is for students to multiply the first term, $2x$, by 5 but neglect to multiply the second term, -3 , by 5. These students will obtain a simplified expression that is not equivalent to the original: $10x + 4$. This indicates that students may not have a conceptual understanding of the distributive property. Modeling the original expression with a manipulative like algebra tiles will reinforce the fact that the quantity $2x - 3$ needs to be laid out using a set of tiles five times creating the equivalent expression $10x - 15 + 7$ which, in turn, simplifies to $10x - 8$.

- 2.) Simplify the algebraic expression $0.2(d + 10) - 0.9d + 3$

A common error some students will make is to combine like terms incorrectly to get $1.1d$. This may indicate that these students are not recognizing the $0.9d$ as a negative quantity. After distributing, these students could benefit from rewriting the expression as addition and applying the Commutative Property to reorder so that like terms are next to one another. Color-coding positive and negative values could also help make a connection to the modeling of integer operations.

- 3.) Rewrite the expression $(x - 2) - (3 - x)$ as an equivalent expression in its most simplified form.

A common error a student may make is obtaining an answer of -5 . This may indicate a student does not understand that -1 needs to be distributed to both terms in the quantity $3-x$. Students need to recognize that the factor being distributed to the quantity $3-x$ is negative 1 or that subtracting is the same as adding the opposite, so the expression could be rewritten as $(x-2)+-1(3-x)$. Modeling can help with this situation. After students model $x - 2$, they need to recognize that subtracting the quantity $3 - x$ is the same as adding the opposite of the quantity $3 - x$. The Desmos activity, [8.14b Equivalent Expressions and Algebra Tiles](#), could be used as a follow-up activity to make sure that these students have clarification with both the modeling and accurate simplification.

- 4.) Simplify the algebraic expression $-\frac{2}{3}b + \frac{1}{4}\left(\frac{4}{5}b - \frac{5}{6}\right)$.

One common student error occurs when $-\frac{2}{3}b$ and $\frac{1}{5}b$ are not combined to create $-\frac{7}{15}b$. This indicates that these students do not have a conceptual understanding of combining like terms. Using the like terms card from the VDOE Grade 8 Mathematics Word Wall Cards will help students recognize that like terms are terms that have the same variables and exponents, but they do not need to have the same coefficients. Students may also benefit from experiences where the coefficients of like terms are rational numbers that are not integers.