Just In Time Quick Check
Standard of Learning (SOL) A.1b

Strand: Expressions and Operations

Standard of Learning (SOL) A.1b *The student will evaluate algebraic expressions for given replacement values of the variables.*

Grade Level Skills: ● Evaluate algebraic expressions, using the order of operations, which include absolute value, square roots, and cube roots for given replacement values to include rational numbers, without rationalizing the denominator.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:
● VDOE Mathematics Instructional Plans (MIPS)
   o A.1ab - Translate and Evaluate Expressions (Word) / PDF Version
   o A.1ab - Evaluating Expressions Using Algebra Tiles (Word) / PDF Version
● VDOE Algebra Readiness Formative Assessments
   o A.1a,b (Word) / PDF
● VDOE Word Wall Cards: Algebra I (Word)
	(PDF)
	   o Real Numbers
	   o Absolute Value
	   o Order of Operations
	   o Expression
	● Desmos Activity
	   o Pentomino Puzzles

Supporting and Prerequisite SOL: A.3a, A.3b, 8.14a, 7.1e, 7.11

SOL A.1b - Just in Time Quick Check

1. Evaluate the expression $\sqrt{a^2 - b^2}$ if a = - 8 and b = 6. Show your work/thinking.

2. What is the value of the expression $x^2 \cdot |y + 5| + \sqrt[3]{-z}$ when $x = \frac{1}{3}$, y = -14, and z = 125? Show your work/thinking.

3. What is the value of the expression shown when $m = 4, n = 8$, and $p = -6$? Show your work/thinking.
$$6\sqrt[3]{n} - p\sqrt{m} + 1$$

4. Evaluate the expression shown if $x = \frac{1}{2}$ and $y = -1$. Show your work/thinking.
$$\frac{16x + 2y}{y - 3}$$

1. Evaluate the expression $\sqrt{a^2 - b^2}$ if a = - 8 and b = 6. Show your work/thinking.

   A common error a student may make is to square -8 incorrectly resulting in $\sqrt{-64 - 36}$ indicating a misunderstanding of what it means to square a negative number. Teachers may want to review integer operations and how exponents are applied. It may also help the student to place parenthesis around the variable before inserting the replacement set so that they can see what value is being squared. The use of sliders in Desmos may help to demonstrate this concept.

2. What is the value of the expression $x^2 \cdot |y + 5| + \sqrt[3]{-z}$ when $x = \frac{1}{3}$, y = -14, and z = 125? Show your work/thinking.

   A common error a student may make is to neglect the absolute value signs altogether, writing $|-14 + 5| = -9$. This indicates a misunderstanding of what absolute value is and how to apply it to a problem or scenario. Reviewing the meaning of absolute value using a number line may help the student to visualize that $|-14 + 5| = 9$. The student may see the absolute value signs as parenthesis, and it may help to provide highlighters to distinguish between symbols.

3. What is the value of the expression shown when $m = 4, n = 8$, and $p = -6$? Show your work/thinking.
   $$6\sqrt[3]{n} - p\sqrt{m} + 1$$

   A common error a student may make is to use the minus in front of the p as the negative for the substitution value. Teachers should review integer operations and use manipulatives to demonstrate the use of the substitution property to show that both signs are necessary. Desmos can be used to check the answer step-by-step to reinforce correct application of the substitution property.

4. Evaluate the expression shown if $x = \frac{1}{2}$ and $y = -1$. Show your work/thinking.
   $$\frac{16x + 2y}{y - 3}$$

   A common error a student may make is to incorrectly apply the order of operations by dividing the first terms and the second terms before completing the addition and subtraction. Teachers should demonstrate how the numerator and denominator are grouped together and should be simplified individually before reducing the fraction with division. Desmos can be used to check the answer step-by-step to reinforce correct application of the grouping symbols.