

Unpacked South Dakota State Mathematics Standards

Purpose: In order for students to have the best chance of success, standards, assessment, curriculum resources, and instruction must be aligned in focus, coherence, and rigor. Unpacked standards documents are intended to help align instruction to the focus, coherence, and rigor of the South Dakota State Mathematics Standards. The standards have been organized in clusters as they are not so much built from topics, but rather woven out of progressions. Not all content in a given grade is emphasized equally in the mathematics standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. To say that some things have greater emphasis is not to say that anything in the standards can safely be neglected in instruction. Neglecting standards will leave gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

Domain: Seeing Structure in Expression		Grade Level: Algebra I
A1.A.SSE.A Cluster: Interpret the structure of expressions.		
Identify the different parts of the expression and explain their meaning within the context of a problem. Recognize equivalent expressions and ways to rewrite them.		
<p>**This is a MAJOR cluster. Students should spend the large majority of their time (65-85%) on the major work of the grade. Supporting work and, where appropriate, additional work should be connected to and engage students in the major work of the grade.</p> <p>A.SSE.A.1 (i) Interpret expressions that represent a quantity in terms of its context. *</p> <p>a. Interpret parts of an expression, such as terms, factors, and coefficients.</p> <p>b. Interpret complicated expressions by viewing one or more of their parts as a single entity in context.</p> <p>A.SSE.A.2 (i) Recognize and use the structure of an expression to identify ways to rewrite it.</p>		
Aspects of Rigor for Student Learning: (Conceptual, Procedural, and/or Application)		
<p>A.SSE.A.1 (i) Interpret expressions that represent a quantity in terms of its context. *</p> <p>a. Interpret parts of an expression, such as terms, factors, and coefficients.</p> <p>b. Interpret complicated expressions by viewing one or more of their parts as a single entity in context.</p>		
Conceptual Understanding	Procedural Fluency	Application
<p>Understand what a term, factor, and coefficient is in linear, polynomial, and exponential expressions.</p> <p>Understand that parts of an equation or formula have meaning individually and in combination when related to the context it represents.</p>	<p>Identify the terms, factors, and coefficients of linear, polynomial, and exponential expressions.</p>	<p>Identify the meaning of the terms, factors, and coefficients of linear, polynomial, and exponential expressions in context.</p> <p>Identify and interpret the parts of the expression that combine and recognize their importance in a contextual situation.</p>
A.SSE.A.2 (i) Recognize and use the structure of an expression to identify ways to rewrite it.		
Conceptual Understanding	Procedural Fluency	Application
<p>Understand expressions written in different forms can be equivalent.</p> <p>Understand the benefits of rewriting an expression.</p>	<p>Identify equivalent expressions.</p> <p>Write equivalent expressions.</p> <p>Note: This standard pairs with F.IF.8a.b.</p>	

Enacting the Mathematical Practices - Evidence of Students Engaging in the Practices

1. **Make sense of problems and persevere in solving them.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others**
 - Explain whether expressions are equivalent using mathematical justifications.
4. **Model with mathematics.**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
7. **Look for and make use of structure**
 - Use the structure of an expression to identify ways to rewrite it.
8. **Look for and express regularity in repeated reasoning.**
 - Utilize the properties of mathematics to rewrite expressions.

Vertical and Horizontal Coherence and Learning Progressions

<u>Previous Learning Connections</u>	<u>Current Learning Connections</u>	<u>Future Learning Connections</u>
In middle school, learners: <ol style="list-style-type: none"> 1. Identify and interpret slope and y-intercept for linear representations 2. rewrite standard linear equation to slope-intercept form for systems of equations. 	In Algebra 1, learners: <ol style="list-style-type: none"> 1. rewrite quadratic functions to find specific key features 2. rewrite formulas to highlight quantities of interest. 	In future math courses, learners: <ol style="list-style-type: none"> 1. work with expressions of all function types.

Vocabulary (Key Terms Used by Teachers and Students in this Cluster):

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|---|--|
| <ul style="list-style-type: none"> • expression • factor • coefficient • term • constant | <ul style="list-style-type: none"> • degree of expression • polynomial |
|---|--|

Relevance, Explanations, and Examples:

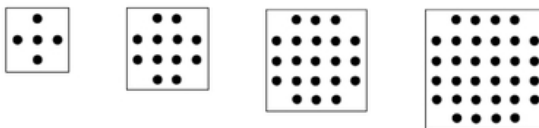
A.SSE.2. (i)
Example

Consider the algebraic expressions below:

$$(n + 2)^2 - 4 \quad \text{and} \quad n^2 + 4n.$$

a.

Use the figures below to illustrate why the expressions are equivalent:



b. Find some ways to algebraically verify the same result.

Achievement Level Descriptors	
<i>Cluster: Interpret the structure of expressions.</i>	
Concepts and Procedures	Level 1: Students should be able to identify parts of an expression, such as terms, factors, coefficients, exponents, etc.
	Level 2: Students should be able to interpret parts of an expression, such as terms, factors, coefficients, exponents, etc., and interpret simple compound expressions by viewing one or more of their parts as a single entity. They should also be able to recognize equivalent forms of linear expressions.
	Level 3: Students should be able to recognize equivalent forms of expressions and use the structure of an expression to identify ways to rewrite it. They should be able to interpret complicated expressions by viewing one or more of their parts as a single entity.
	Level 4: Students should be able to look for and use structure and repeated reasoning to make generalizations about the possible equivalent forms expressions can have, e.g., a quadratic expression can always be represented as the product of two factors containing its roots.