What does it mean to "unpack" a standard?

"Unpacking" the Common Core State Standards is the process of taking the text of each standard and translating it into actual teaching strategies. This process involves setting long term teaching goals for each standard and identifying the major understanding students should reach—and the tasks they should complete—while mastering the standard. By unpacking standards, we place them in the broader context of a student's education. We take the language of the standard as written, which is often only a few sentences, and begin to create the framework on which the actual learning will take place.

The screenshot below shows a sample from the Arizona Department of Education website for the Math standard 8.NS.A.2.

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The Number System (NS)				
Know that there are numbers that are not rational, and approximate them by rational numbers.				
Students are expected to:	Mathematical Practices	Explanations and Examples		
8.NS.A.2. Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of V2, show that V2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. Connections: 8.G.7; 8.G.8; 6-8.RST.5; ETO8-S1C2-O1	8.MP.2. Reason abstractly and quantitatively. 8.MP.4. Model with mathematics. 8.MP.7. Look for and make use of structure. 8.MP.8. Look for and express regularity in repeated reasoning.	 Students can approximate square roots by iterative processes. Examples: Approximate the value of √5 to the nearest hundredth. Solution: Students start with a rough estimate based upon perfect squares. √5 falls between 2 and 3 because 5 falls between 2² = 4 and 3² = 9. The value will be closer to 2 than to 3. Students continue the iterative process with the tenths place value. √5 falls between 2.2 and 2.3 because 5 falls between 2.2² = 4.84 and 2.3² = 5.29. The value is closer to 2.2. Further iteration shows that the value of √5 is between 2.23 and 2.24 since 2.23² is 4.9729 and 2.24² is 5.0176. Compare √2 and √3 by estimating their values, plotting them on a number line, and making comparative statements. √2 √3 √3 √1.11.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 Solution: Statements for the comparison could include: √2 is approximately 0.3 less than √3 √2 is between the whole numbers 1 and 2 √3 is between 1.7 and 1.8 		

On the left, we see the full text of the standard as provided by Common Core. In the middle, we have the corresponding Mathematical Practices. These are the broader reasoning skills students develop across all grade levels to deepen their understanding of math concepts. Not every math practice applies to each standard, so the first step in unpacking a standard is identifying which of the Mathematical Practices are needed for a student's mastery of the standard. Finally, on the right, we have explanations and examples. Here, the text of the standard is expanded upon, and real-life examples of the standard in practice are provided. These examples model what the actual instruction of the standard might look like in the classroom.

The state of Arizona provides similar resources for all standards across subjects and grade levels on their website.

- Math Standards: http://www.azed.gov/standards-practices/mathematics-standards-2/
- ELA Standards: http://www.azed.gov/standards-practices/englishlanguageartsstandards/

Similar resources are provided by other states as well.

The screenshot below shows a sample of how the North Carolina Department of Education unpacks the Math 1 standard NC.M1.N-RN.2.

NC.M1.N-RN.2

Extend the properties of exponents.

Rewrite algebraic expressions with integer exponents using the properties of exponents.

Concepts and Skills	The Standards for Mathematical Practices
Pre-requisite	Connections
Using the properties of exponents to create equivalent numerical expressions (8.EE.1)	Generally, all SMPs can be applied in every standard. The following SMPs can be highlighted for this standard.
Connections	Disciplinary Literacy
Use operations to rewrite polynomial expressions (NC.M1.A-APR.1)	As stated in SMP 6, the precise use of mathematical vocabulary is the expectation in all oral and written communication. Students should be able to justify their steps in rewriting algebraic expressions.

This resource, like the one from Arizona, provides the text of the standard, as well as the standards for Mathematical Practices that apply to this standard. It also develops the standard further, by providing the pre-requisite skills students will need to learn the standard and connections to other standards to deepen understanding. North Carolina's resources go further in unpacking the standard, providing information for mastering the standard. The screenshot below comes from the same resource for the above Math 1 standard.

Mastering the Standard			
Comprehending the Standard	Assessing for Understanding		
Students extend the properties of integer	Students should be able to use the properties of exponents to write expression into equivalent forms.		
exponents learned in middle school to algebraic	Example: Rewrite the following with positive exponents:		
expressions.	a) $(8x^{-4}y^3)(-2x^5y^{-6})^2$		
In M2, students will extend the properties of exponents to rational exponents.	b) $\frac{(3m^2p^{-2}q)^3}{9m^{-3}q^3}$		
	Students should be able to use the new skills of applying the properties of exponents with skills learned in previous		
	courses.		
	Example: Simplify: $\sqrt{25m^{14}p^2t^4}$		
	In 8th grade, students learned to evaluate the square roots of perfect square and the cube root of perfect cubes. In Math 1, students can combine this previous skill with the algebraic expressions. When addressing a problem like this in Math 1, students should be taught to rewrite the expression using the properties of exponents and then using inverse operations to rewrite. For example, $\sqrt{m^{14}} = \sqrt{(m^7)^2} = m^7$.		
	In Math 1, the limitation from 8th grade, evaluating square roots of perfect square and cube root of perfect cubes still applies.		

The standard is further unpacked through a description of how students will develop their comprehension of the standard by expanding upon previously learned concepts. The resource also provides benchmarks to be used while assessing students on this standard.

The North Carolina State Board of Education provides similar resources for standards across all grade levels. In addition to unpacking the standards, North Carolina has also gathered additional resources to help teachers integrate the standards into their curriculum. In the following links will find paths to resources that inform the progression of the standards, the major work of each grade level, and many other helpful links.

- Elementary Math: http://maccss.ncdpi.wikispaces.net/Elementary
- Middle School Math: http://maccss.ncdpi.wikispaces.net/Middle+School
- High School Math: http://maccss.ncdpi.wikispaces.net/High+School
- Elementary ELA: http://elaccss.ncdpi.wikispaces.net/Elementary+School+Resources
- Middle School ELA: http://elaccss.ncdpi.wikispaces.net/Middle+School+Resources
- High School ELA: http://elaccss.ncdpi.wikispaces.net/High+School+Resources