EMPower Book Title	College & Career Readiness Standards		Math Practice Standards
	Standards introduced	**Standards addressed**	
EMPower Plus Everyday Number Sense: Mental Math and Visual Models*	1.NBT.2 2.NBT.1 2.NBT.4 4.0A.3 1.G.2 5.NBT.5 3.MD.6 3.MD.7.c 3.MD.6 6NS.6a 6.NS.7b 7NS.1a	1.NBT.4 1.NBT.5 1.NBT.6 2.NBT.3 2.NBT.6 2.NBT.7 2.NBT.8 2.NBT.9 3.NBT.1 3.NBT.2 3.NBT.3 4.NBT.1 4.NBT.2 4.NBT.3 4.NBT.5 5.NBT.2 5.NBT.3a 5.NBT.4 5.NBT.6 1.OA.3 1.OA.4 1.OA.6 1.OA.7 1.OA.8 2.OA.1 3.OA.3 3.OA.4 3.OA.5 3.OA.6 3.OA.7 3.OA.9 5.OA.1 6.EE.1 6.EE.2c 2.MD.6 3.MD.7a	**MP.2** MP.5 MP.6 **MP.7**
EMPower Plus Using Benchmarks: Fractions and Operations*	4.NF.6 6.NS.1 2.MD.4 3.MD.7.c	3.NF1 3.NF.2 3.NF.2a 3.NF.2b 3.NF.3 3.NF.3a 3.NF.3b 3.NF.3c 3.NF.3d 2.G.3 3.G.2 3.MD.7c 4.NF.1 4.NF.2 4.NF.3a 4.NF.3b 4.NF.3c 4.NF.3d 4.NF.4 4.NF.4a 4.NF.4b 4.NF.4c 5.NF.1 5.NF.2 5.NF.3 5.NF.4 5.NF.5 5.NF.6 5.NF.7 5.NF.7a 5.NF.7b 5.NF.7c	MP.3 MP.4 **MP.5** MP.6
EMPower Plus Split It Up: More Fractions, Decimals and Percents*	3.MD.7.c	4.NBT.1 5.NBT.1 5.NBT.2 5.NBT.3 5.NBT.3a 5.NBT.3b 5.NBT.4 5.NBT.7 4.NF.6 4.MD.2	MP.2 **MP.3** MP.6 MP.7 **MP.8**
Over, Around, and Within	3.G.1 4.G.1 5.G.3 6.G.1 6.G.4 2.MD.4 3.MD.4 4.MD.2 4.MD.3 4.MD.5 4.MD.7 5.MD.3 5.MD.4 7.G.1 7.G.6	K.G.4 1.G.2 1.MD.2 2.G.1 2.MD.2 3.MD.5 3.MD.6 3.MD.7 3.MD.8 4.MD.6	MP.2 MP.4 MP.5 MP.6
Many Points Make a Point	2.MD.6 6.SP.4 6.SP.5 7.SP.1 5.G.1	1.MD.4 2.MD.10 3.MD.3 6.SP.2 6.SP.3	**MP.1**
Keeping Things in Proportion	4.OA.2 5.NF.3 6.RP.3 7.RP.2	4.NF.1 6.RP.1 6.RP.2	MP.4 **MP.6** MP.7
Seeking Patterns, Building Rules	5.G.1 6.RP.3 6.EE.3 6.EE.4 6.EE.5 6.EE.6 6.EE.7 6.EE.9 7.RP.2 8.EE.5 8.EE.7 8.EE.8 8.SP.1 8.F.1 8.F.3 8.F.4 8.F.5	3.OA.9 4.OA.5 5.OA.1 5.OA.2 6.EE.2	MP.2 **MP.4** MP.7

Note that the original EMPower book *Operation Sense: Even More Fractions, Decimals, and Percents* has now been incorporated into the new EMPower Plus titles.

EMPower™ sample materials that exemplify the CCR Standards for Mathematical Practice

Pam Meader is a long-time adult educator, an EMPower™ user and contributor, and Adult Numeracy Network Board Member. She offered the following to illustrate how EMPower users will address the eight Mathematical Practices.

Mathematical Practice 1 **Make sense of problems and persevere in solving them.**	
Sample lesson recommendation:	***Many Points Make a Point, Closing the Unit, Activity 1: "Stock Picks"***
	Problem solving is everywhere and everyday, but a good problem to grapple with really gets at the core of perseverance. I like "Stock Picks", as it involves several choices by the students.
Mathematical Practice 2 **Reason abstractly and quantitatively.**	
Sample lesson recommendation:	***Split It Up, Lesson 9, Activity 1: "What Is the Story?"***
	Reasoning abstractly and quantitatively has much to do with contextualizing and decontextualizing. An elementary math teacher explained it well: **"***If students have a problem, they should be able to break it apart and show it symbolically, with pictures, or in any way other than the standard algorithm. Conversely, if students are working a problem, they should be able to apply the "math work" to the situation.*" (Everette, 2013). EMPower gives students many opportunities to draw representations of problems and to show situations with manipulatives. The point is to see how quantities, situations, or spaces are related. There are a variety of activities to choose from in the *EMPower™* series. In "What Is the Story?" students use drawings, situations, and equations to make sense of mathematical relationships.

EMPower™ sample materials that exemplify the CCR Standards for Mathematical Practice

Mathematical Practice 3 **Construct viable arguments and critique the reasoning of others.**	
Sample lesson recommendation:	***Split It Up, Lesson 8, Activity 1: "Watch Out!"***
	I believe this practice is meant to ensure that students have the opportunity to verbally critique mathematical reasoning or articulate their own mathematical reasoning. As teachers we can ask ourselves: Are students using mathematical language, to **support** or **oppose** the work of others." The EMPower series contains many examples. Consider "Watch Out!" as well as "Reasoning It Out" (found in *Using Benchmarks*). In both, the students have to figure out what is going on and explain whether the thinking is right or wrong. So first they are critiquing the work but second this could develop into a rich discussion in the classroom on how students go about explaining the reasoning for their critique.
Mathematical Practice 4 **Model with mathematics**	
Sample lesson recommendation:	***Seeking Patterns Building Rules, Lesson 8, Activity: "Job Offers"***
	Mathematical Practice 4 emphasizes that "mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life … They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions" (U.S. Department of Education, 2013). Students exploring "Job Offers" do just this: They create a graph and equation to model the financial implications of two job offers over time and then make a decision based on their model.

EMPower™ sample materials that exemplify the CCR Standards for Mathematical Practice

Mathematical Practice 5 **Use appropriate tools strategically**	
Sample lesson recommendation:	***Using Benchmarks: Lesson 6, Activity 1: "Fraction Strips and Rulers—Tools to Think With"***
	The key point here is that the activity must be one where the student decides on his or her own what tool to use. Everette (2013) explains: *"Students can select the appropriate math tool to use and use it correctly to solve problems. In the real world, no one tells you that it is time to use the meter stick instead of the protractor."* In this activity, students explore fraction equivalence using a variety of tools.
Mathematical Practice 6 **Attend to precision**	
Sample lesson recommendation:	***Keeping Things in Proportion, Lesson 4, Activity 1: "Part to Part versus Part to Whole"***
	Precision enables problem solvers to use the language of math to explain themselves clearly. Recognizing and acting on the importance of labeling correctly are key to clear communication. Beyond that, precision allows problem solvers to choose strategies and solutions that speak to the authentic needs of a situation, for example, rounding time to hours or days, letting go of fractions of hours or seconds, depending on the situation. The "precise" answer may not be the most useful answer. Fractions of cartons or rooms are not necessarily helpful in everyday contexts.
Mathematical Practice 7 **Look for and make use of structure.**	
Sample lesson recommendation:	***Everyday Number Sense, Lesson 10, Math Inspection: "Rectangles, Arrays, Area, and the Distributive Property"***
	One way to understand structure is as underlying principles that can be built upon over time. Structure speaks to how numbers and spaces are organized and put together as parts and wholes. I also think of structure when I think of the mathematical properties like

	commutativity, which allows certain changes within an equation. In particular, the Math Inspections in *Everyday Number Sense* get at these ideas.
Mathematical Practice 8 **Look for and express regularity in repeated reasoning.**	
Sample lesson recommendation:	***Everyday Number Sense, Lesson 9, Activity 4: "Shortcuts — Multiples of 10"***
	EMPower lessons include several activities where the students look for patterns and then come up with a rule or method. Linda Gojak of the National Council of Teachers of Mathematics has commented on the importance of engaging students in this way: *"One of the things that sometimes students don't figure out is that math makes sense; it's supposed to make sense. There's not much you do in math that doesn't make sense. And in our traditional show-and-tell type of instruction, we don't allow students to actually have the opportunity to make sense … We need to give students time to make and refine observations."*