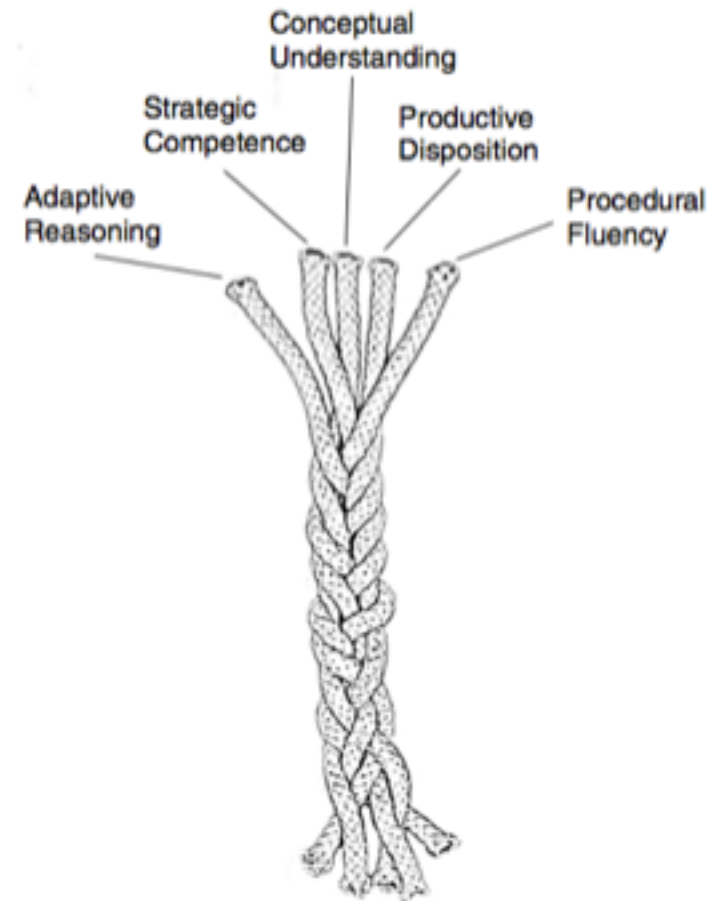


ESTAR/MSTAR Diagnostic Assessments

- Key algebra-related content
 - 1: Understanding Positive Rational Numbers, their Representations, and their Uses
 - 2: Understanding Variables, Expressions, and their Applications
- Content Outline on Learning Progressions
 - To better understand **why** students struggle, not **what** they struggle with
 - To provide a focus for instructional design
- Cognitive Engagement based on NRC *Adding It Up*

Cognitive Engagement

- 5 strands of mathematical proficiency:
 - Conceptual understanding
 - Procedural fluency
 - Strategic competence
 - Adaptive reasoning
 - Productive disposition
- “Interwoven and interdependent”



Intertwined Strands of Proficiency