

C  
D A

- Ensure the intended constructs are measured by the items written.
- Minimize the knowledge and skills that are required to respond to the items beyond what is intended to be assessed.
- Respect for the diversity of the assessment population is evident (Sensitivity to age, gender, ethnicity, etc. and avoids content that might unfairly advantage or disadvantage any subgroup(s)).
- Text for the items is concise and readable.
- Minimum use of unnecessary words.
- Vocabulary and sentence complexity are grade-level appropriate.
- The test has a clear and understandable format.
- The question to be answered is clearly identifiable.
- Visual used to support and enhance the content are clear and relevant.
- Changes can be made to the

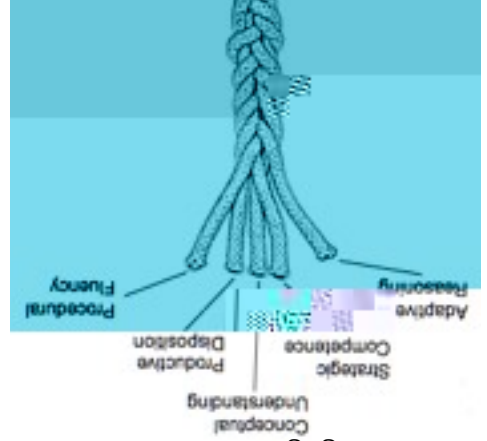




# Assessing Mathematical Proficiency

C E ?

According to Kilpatrick, Swa"ord, and Findell (2001), expertise, competence, knowledge and facility in mathematics is necessary to learn mathematics successfully. Cognitive engagement attempts to synthesize these components and refers to the level of cognitive processing through which students are expected to engage with the content.



All of the strands of mathematical

proficiency are interwoven and interdependent. Students' ability to be proficient in mathematics is dependent on each of these strands. However, if one of these strands is weak, it weakens the entire rope.

C a a a :

comprehension of mathematical concepts, operations, and relations  
**P a** : skill in carrying out procedures flexibly, accurately, efficiently, and appropriately  
**S a** : ability to formulate, represent, and solve mathematical problems

**A a a** : capacity for logical thought, reflection, explanation, and justification

**P** : habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy.

National Research Council. (2001). Adding it up: Helping children learn mathematics. J. Kilpatrick, J. Swa"ord, and B. Findell (Eds.). Mathematics Learning Study Committee, Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.

D E

- A.  $\frac{5}{2}$  cup
- B.  $\frac{1}{2}$  cup
- C.  $\frac{12}{5}$  cup
- D.  $\frac{3}{2}$  cup

**E a** :

Sarah is baking a cake and needs  $\frac{1}{2}$  cup of flour and  $\frac{1}{3}$  cup of sugar. How much flour and sugar does she need?

incorrectly.

Distractions are an important but often under-utilized component of multiple-choice questions. By considering the rationale for distractors and crafting them to target students' underlying misconceptions about the content being assessed you can obtain information beyond a simple understanding of whether a student responded correctly or