THE DEVELOPMENT OF MATHEMATICAL REASONING

Counting Strategies
Additive Thinking
Multiplicative Reasoning
Proportional Reasoning
Functional Reasoning

Spatial Reasoning
Algebraic Reasoning

WHY NUMERACY?

Understanding numerical relationships gives students the freedom to choose a strategy, rather than being stuck with only one way to solve a problem ... They'll become more naturally inclined to use the strategies that make sense to them. Students become engaged, willing to think, and more confident in their justifications. When we give secondary students this numerical power, we also help them learn higher mathematics with more confidence and more success.

— Pamela Weber Harris
Building Powerful Numeracy, 2011

NOTES


Building Powerful Numeracy

WHAT IS A PROBLEM STRING?

A problem string is a purposeful sequence of related problems, designed to help students mentally construct mathematical relationships. It is a powerful lesson structure during which teachers and students interact to construct important mathematical strategies, models, and concepts. The power of a problem string lies in the carefully crafted conversation as students solve problems, one at a time, and the teacher models student thinking and draws out important connections and relationships.

— Pamela Weber Harris

Advanced Algebra Problem Strings, 2018

NOTES

Adapted from Pamela Weber Harris, Building Powerful Numeracy, 2011