

Note: NO CALCULATOR IS PERMITTED FOR THIS EXAM.

The following content can be found in the mathematics text for elementary education majors, *Reconceptualizing Mathematics* by Sowder, Sowder and Nickerson, Freeman Publishing, 2010.

Reasoning about quantities

Numeration systems

Understanding whole number operations

Using numbers in sensible ways

Meanings for fractions

Computing with fractions

Multiplicative comparisons and multiplicative reasoning

Ratios, rates, proportions, and percents

Expanding our number system

Number theory