MATH 402 QUESTIONS FOR REFLECTION:

What is involved in teaching elementary school mathematics? What are your experiences with mathematics? What are your beliefs about how mathematics should be learned and taught? What are the recent reforms in mathematics education? What are the key dimensions of a learning environment that helps students to understand mathematics? How can the learning environment help all students become mathematical thinkers? What can teachers do to convey the value of students' ideas? What classroom structures encourage and support collaboration between students?

What is conceptual knowledge? What is procedural knowledge? What does it mean to understand mathematics? What does it mean to say, "we construct our own" knowledge as opposed to "we absorb" knowledge? What are the benefits of relational understanding? What are mathematical tasks? What are worthwhile mathematical tasks? What tasks have potential to facilitate significant mathematical discourse? How do we learn to use textbooks and other resource materials to create worthwhile tasks? How do we help students make mathematical connections by the tasks that we use?

How do we assess children's mathematical thinking? How do we gather information from students about what students understand? What does a teacher do with knowledge of what they understand? How does assessment relate to teaching?

What is the teacher's purpose in each of the three parts of a lesson—before, during, and after—when teaching for problem solving?

What is number sense? What is a number? What is conservation of number? What is a numeral? What is place value? How can you help children understand place value?

How do children learn addition and subtraction? What are the types of addition and subtraction problems? What solution strategies do they use to solve these different types of problems? What are the relationships among addition, subtraction, multiplication, and division? What is its importance in all these operations?

How do children think about multiplication and division? What are the different types of multiplication and division problems? What solution strategies do they use to solve these different types of problems? What are the relationships among addition, subtraction, multiplication, and division? What is its importance in all these operations?

What is the importance of estimation and prediction to mathematical thinking? What are estimation strategies that children use? When should students estimate or predict? What is the importance of the calculator to estimation? When should technology be introduced to students?

What is a fraction? How do children learn fractions? What solution strategies do children use to solve these types of problems? What are fractional parts? What are fractional models? What is the importance of word problems in teaching fractions? Explain how real-life situations help in understanding fractions? What are fractions in the elementary curriculum? What are possible representations to use with fractions? What conceptual understandings of fractions are illustrated with particular representations? What are the advantages and limitations of particular representations? How do we connect multiple representations to fraction algorithms? How does estimation help students to evaluate answers from fraction algorithms?

What is the relationship between fractions and decimals? What is the relationship between decimals and percents? What are ways of representing decimal concepts and computations? What should be emphasized in if you want children to have good number sense with decimals?

What concepts of measurement should elementary students understand? How do children learn measurement concepts?

What does it mean to think geometrically? What are the van Hiele levels for geometric learning? Why are the van Hiele levels important for learning and teaching geometry? Why is important to study geometry? What is a mathematical representation? Why are multiple representations important in learning geometry?

What kinds of tasks help students understand probability and statistics? What are some first ideas that students should develop about the concept of chance? What are ways to communicate ideas about probability?

What are beginning algebraic concepts? What is the role of patterns in learning algebra? How does algebra relate to the real world? How can students learn to use algebra in their everyday mathematics? What is a mathematical pattern? What are ways we can help students generalize patterns? What are ways we can help students understand variables?

What is the teacher's role in the discourse in the classroom? How does a teacher pose questions that elicit students' responses? How does a teacher pose questions that challenge students to learn? How does a teacher engage all students in the discourse? How does a teacher make decisions about when and how long to ask students to struggle for answers? How does a teacher decide which students' ideas to pursue?

How do students learn to perform their roles? How do students communicate their mathematical understandings? What is a mathematical argument? How do students learn to respect each other's ideas? How do students learn mathematics through discourse?