SMP 2 - Reason Abstractly and Quantitatively
Dr. Cindy Aossey, Kentucky Center for Mathematics

1 SMP 2—Reason Abstractly and Quantitatively— is an essential avenue for mathematical thinking,

2 through which students analyze problem situations and make sense of how quantities relate to one

3 other. This practice requires students to move fluidly between contextualized and decontextualized

4 versions of a problem in order to make sense and solve.

5 A student reasoning abstractly and quantitatively might ask the following questions while solving a

6 problem:

7 • What can I count or measure in this problem situation?

8 • How do the quantities in this problem relate to one other?

9 • How might I represent the quantities and relationships in this problem?

10 • How could I represent this problem situation abstractly, perhaps with an equation or an

11   expression?

12 In this third grade standard, students are expected to interpret and demonstrate products of whole

13 numbers. In order to make sense of this content standard, teachers and students can engage in SMP2

14 and reason abstractly and quantitatively about a given situation. For example, students should

15 recognize the numbers and symbols in an equation such as 5 x 8 = 40 are related to a context using

16 groups or arrays, possibly telling a story about walking 8 blocks round-trip to and from school each day,

17 connecting to the equation by saying: 5 days x 8 blocks each day is 40 total blocks walked.

18 To provide students with opportunities to engage in SMP2, teachers might provide opportunities to

19 contextualize problems by using situations or stories that allow students to focus on the meaning of the

20 numbers, think deeply about the units involved, and decide how to represent quantitative relationships

21 through diagrams, drawings, or equations.

22 Ultimately, SMP 2 is about using reasoning to contextualize and decontextualize quantities and their

23 relationships.This practice is a cornerstone of the Kentucky Academic Standards for Mathematics and

24 essential for developing fluency across mathematical domains.