Core Content

Cluster Title: Compute fluently with multi-digit numbers and find common factors and multiples.

Standard 2: Fluently divide multi-digit numbers using the standard algorithm.

MASTERY Patterns of Reasoning:

Conceptual:
- Identify when it is appropriate to use the standard algorithm.

Procedural:
- Use the standard algorithm to compute multi-digit division problems with procedural fluency.
  
  Note: Procedural fluency is defined as skill in carrying out procedures flexibly, accurately, efficiently and appropriately (Adding It Up, National Research Council).

Representational:
- Divide multi-digit numbers using the standard algorithm.

Supports for Teachers

Critical Background Knowledge

Conceptual:
- Understand the meaning of division.
- Understand place value of multi-digit numbers.
- Know that division is the inverse of multiplication.
- Illustrate and explain the relationship between calculations and models for multiplying and dividing multi-digit numbers.

Procedural:
- Divide with single-digit numbers.
- Use compatible numbers to make an estimation to determine reasonableness of answers.
- Use the standard algorithm for division.
- Read division notation.

Representational:
- Model division with manipulatives, diagrams and story contexts.
### Academic Vocabulary and Notation
- dividend, division notation ÷, /, divisor, quotient, remainder

### Instructional Strategies Used
1. Think Aloud: Do the problem with a partner while explaining and telling what you are thinking and doing.
2. Have students identify in a problem set when they would use mental math and when they would use the standard algorithm.
3. Connect students’ existing strategies for division with the standard algorithm.
4. As a starter activity, use division problems that can reasonably be solved by using mental math (e.g., 105/25), estimation (e.g., 150 ÷ 12, 227 ÷ 30), and reasoning (e.g., when I think of 105 divided by 25, I think of 4 sets of 25 with 5 left over, the 5 left over is 5/25 which is 1/5, so the answer is 4 1/5). Model for the students your thinking as you work through the problem. (Note: This strategy would not apply to complex division problems for which the algorithm is most appropriate [e.g., 4567 ÷ 192]).

### Resources Used
- [http://nlvm.usu.edu/en/nav/frames_asid_197_g_2_t_1.html?open=activities&from=search.html?qt=division](http://nlvm.usu.edu/en/nav/frames_asid_197_g_2_t_1.html?open=activities&from=search.html?qt=division)

### Assessment Tasks Used
#### Skill-based Task:
248 divided by 18.

#### Problem Task:
I spent $504 on 28 tickets for a rock concert. How much did I spend on each ticket?

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