

Multiplication and Division of Whole Numbers

The difference in sequence for multiplication and division topics in the Singapore syllabus and in U.S. standards makes this topic particularly challenging for transitioning students. There is some review in Dimensions Math® 3, but less in Dimensions Math 4. At the start of Dimensions Math 4A, students need to use the division algorithm and/or mental math strategies to find all factors of numbers within 100. This topic precedes multi-digit multiplication and division.

Students learn the following concepts in Dimensions Math 2 through 4:

Dimensions Math 2

- Multiplication involves finding the total, given the number of equal groups and the quantity in each group.
- Multiplication is commutative (3 groups of 5 = 5 groups of 3).
- Division involves either sharing (finding the quantity in each group, given the total and the number of groups) or grouping (finding the number of groups, given the total and the quantity in each group).
- The answers to division problems can be found by thinking of the corresponding multiplication problem ($27 \div 3 = ? \rightarrow 3 \times ? = 27$).
- The multiplication and division facts for 2, 3, 4, 5, and 10.

Dimensions Math 3A

- Multiply 0 and divide 0 (and that we cannot divide by 0).
- Multiply and divide two-digit and three-digit numbers by 2, 3, 4, or 5. (This allows students to focus on learning the multiplication and division algorithms using the facts they already know.)

Dimensions Math 3B

- The 16 remaining multiplication facts (where both of the factors are 6, 7, 8, or 9) and the division facts for 6, 7, 8, and 9.
- Practice multiplying or dividing two-digit and three-digit numbers by a one-digit number using these facts.

Dimensions Math 4

- Multiply and divide four-digit or five-digit numbers by a one-digit number.
- Multiply numbers of up to three digits by a two-digit number.

Along the way, students learn mental math strategies for multiplying a two-digit number by a one-digit number and dividing those products by the one-digit factor.