Mini-Map for M.EE.8.EE.1

Subject: Mathematics
Expressions and Equations (EE)
Grade: 8

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.8.EE.1 Identify the meaning of an exponent (limited to exponents of 2 and 3).	**M.8.EE.1** Know and apply the properties of integer exponents to generate equivalent numerical expressions.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Combine two or more sets of objects to create a new set. Combine two or more parts (e.g., toys, shapes) to form a new whole. Demonstrate an understanding of addition by combining the objects of two or more sets.	Communicate understanding that in repeated addition problems, a single numerical value is added repeatedly (e.g., 6 + 6 + 6) and that one way to add a number a given number of times is by using skip-counting as a strategy (e.g., 6 + 6 + 6 can be added as 6, 12, 18). Use models, such as mathematical equations (e.g., 5 + 5 + 5 = 15), sets of manipulatives, or number line diagrams to represent a repeated addition problem.	Demonstrate multiplication by combining multiple sets containing the same number of objects. Communicate understanding that the number of sets times the number of objects in each set equals the total number of objects. Communicate understanding that in multiplication, one factor represents the number of elements in a group, the second factor represents the number of groups, and the product is the	Recognize exponents [i.e., "*b*", in expressions a^b, where "*b*" indicates the number of times the base number ("*a*") is to be multiplied (e.g., $2^3 = 2 \times 2 \times 2$)].	Explain that when multiplying two base numbers raised to the same power, the problem equals the product of the base numbers with the same exponent, and that when multiplying (or dividing) two base numbers raised to different powers, the problem equals the product (or quotient) of the base numbers raised to the sum (or difference) of the exponents. Solve for when a nonzero number is raised to the

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		number obtained by multiplying two factors.		0 power, where the answer is always one.

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

Recognizing exponents requires a student to be able to recognize that two or more sets or groups of items exist. Educators can work on this skill using a variety of sets. Help students recognize when items are grouped together into a set and when they are separated out. The educator presents a set, labels it (e.g., two balls, one marker, three CDs), counts the items, labels it again, and encourages students to use numbers to label and count the separate sets. Then, combine the sets, give it a new label, and count the set.

How is the Distal Precursor related to the Target?

As students' understanding of labeling and counting sets develops, they will begin working on adding items to a set and combining sets to create a new set. Additionally, students will work on developing an understanding of equal shares by actively participating in one-to-one distribution of objects to person, objects to objects, and objects to available space (e.g., giving each person in the group a pencil; given four counters, they would line up four more counters in front of or on top of the first set; given three chairs at a table, the student would place a cup on the table for each available chair). As students learn to work with sets and connect their understanding of equal shares to sets, educators can provide students experience with combining multiple sets (e.g., 3 sets with 4 counters each) and represent the problem (e.g., 4 + 4 + 4 = ?). Students will also learn to represent the problem using a pencil or their communication system (e.g., the student is shown 4 equal sets each with 2 counters. The student counts the first set and writes a 2 or indicates 2, then writes or indicates the plus sign. The student repeats for all 4 sets and then indicates the equal sign and solves the problem.).

Instructional Resources

Released Testlets
See the Guide to Practice Activities and Released Testlets.
Using Untested (UN) Nodes
See the document Using Mini-Maps to Plan Instruction.

[Link to Text-Only Map]

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