

Mini-Map for M.EE.HS.F.BF.2

Subject: Mathematics Functions—Building Functions (F.BF) Grade: 11

Learning Outcome

| DLM Essential Element | Grade-Level Standard | |
|--|---|--|
| M.EE.HS.F.BF.2 Determine an arithmetic sequence with whole | M.F.BF.2 Write arithmetic and geometric sequences both | |
| numbers when provided a recursive rule. | recursively and with an explicit formula, use them to model | |
| | situations, and translate between the two forms. | |

Linkage Level Descriptions

| Initial Precursor | Distal Precursor | Proximal Precursor | Target | Successor |
|---------------------------|----------------------------|---------------------------|--------------------------|--|
| Group together objects | Recognize patterns (i.e., | Recognize an arithmetic | Communicate the next | Determine any term in |
| by attribute values such | repeating, growing, | sequence as an ordered | term in an arithmetic | an arithmetic sequence |
| as shape or size (e.g., | shrinking) involving | list of numbers, such | sequence by | when the first term (<i>a</i>), |
| group together a | numbers or letters (e.g., | that each term after the | determining how each | common difference (<i>d</i>), |
| square, a rectangle, and | a, b, b, a, b, b; 2, 5, 8, | first is determined by | term in a sequence is | and the <i>n</i> th term |
| a rhombus, as they all | 11). Identify a | adding or subtracting | obtained from the | formula for an |
| have four sides). | sequence as an ordered | the preceding term by a | previous term (e.g., the | arithmetic sequence are |
| Contrast or distinguish | list of numbers that | constant amount (e.g., | next term in the | given [e.g., when the |
| objects based on | adheres to a common | 2, 4, 8, 16). Recognize | sequence 2, 4, 6, 8 is | <i>n</i> th term formula is <i>a</i> + |
| attributes such as | rule between | the recursive rule in | 10). | d(n - 1), the first term is |
| shape, size, texture, and | corresponding numbers | arithmetic sequences | | 5, and the common |
| numerical pattern. | (e.g., 2, 4, 6, 8). | by determining how | | difference is 3, the 6th |
| Order objects by | | each term in the | | term equals 5 + 3(6 - 1) |
| following a specific rule | | sequence differs from | | = 20]. |
| (e.g., arrange three | | the preceding term | | |
| objects with different | | (e.g., the recursive rule | | |
| sizes from the smallest | | in the sequence 2, 4, 6, | | |
| to largest). | | 8 is "add 2"). | | |

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

sequence.

How is the Initial Precursor related to the Target? In order to determine an arithmetic sequence (e.g., 1, 4, 7, 10, 13), students begin by learning to notice what is new. The educator draws the students' attention to new objects or stimuli, labels them (e.g., "there are two cubes", "this is a circle", "this fidget is big and this fidget is small"), and the student observes, feels, or otherwise interacts with them. Educators encourage students to begin placing like objects together, drawing attention to the characteristics that make an item the same or different.

How is the Distal Precursor related to the Target? As students develop their understanding of attributes and work towards arithmetic sequences, educators provide interactive lessons around patterns using attributes like shape, size, and color. At this level, students are also expected to recognize symbolic (e.g. numbers) patterns. This also requires that students recognize numerals in order (i.e., 1, 2, 3...). Educators should take care to use number names while defining and demonstrating symbolic sequences. While students do not need to say these words, they do need to learn the meanings and the

Instructional Resources

Released Testlets

See the <u>Guide to Practice Activities and Released Testlets</u>.

Using Untested (UN) Nodes

See the document Using Mini-Maps to Plan Instruction.

Link to Text-Only Map

M.EE.HS.F.BF.2 Determine an arithmetic sequence with whole numbers when provided a recursive rule.

