# Essential Element, Linkage Levels, and Mini-Map

## Math: Grade 6

### M.EE.6.EE.1-2

<table>
<thead>
<tr>
<th>Grade-Level Standard</th>
<th>DLM Essential Element</th>
<th>Linkage Levels</th>
</tr>
</thead>
</table>
| **M.6.EE.1** Write and evaluate numerical expressions involving whole-number exponents; **M.6.EE.2** Write, read, and evaluate expressions in which letters stand for numbers | **M.EE.6.EE.1-2** Identify equivalent number sentences | **Initial Precursor:**  
- Combine sets  
- Compare sets

**Distal Precursor:**  
- Demonstrate the concept of addition  
- Demonstrate the concept of subtraction

**Proximal Precursor:**  
- Represent addition with equations  
- Represent the unknown in an equation  
- Represent subtraction with equations

**Target:**  
- Evaluate if equations are true or false  
- Recognize equivalent algebraic expressions

**Successor:**  
- Use properties of addition to create an equivalent algebraic expression

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A diagram showing the relationship of nodes in the mini-map appears below.

**Key to map codes in upper right corner of node boxes:**

<table>
<thead>
<tr>
<th>IP</th>
<th>Initial Precursor</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP</td>
<td>Distal Precursor</td>
</tr>
<tr>
<td>PP</td>
<td>Proximal Precursor</td>
</tr>
<tr>
<td>T</td>
<td>Target</td>
</tr>
</tbody>
</table>

IP | Initial Precursor  
SP | Supporting  
DP | Distal Precursor  
S  | Successor  
PP | Proximal Precursor  
UN | Untested  
T  | Target  

---
M.EE.6.EE.1-2 Identify equivalent number sentences
## Essential Element, Linkage Levels, and Mini-Map

**Math: Grade 6**

**M.EE.6.EE.3**

<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| M.6.EE.3 Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y | M.EE.6.EE.3 Apply the properties of addition to identify equivalent numerical expressions | **Initial Precursor:**
  - Compare sets
  - Combine sets

**Distal Precursor:**
  - Represent the unknown in an equation
  - Represent subtraction with equations
  - Represent addition with equations

**Proximal Precursor:**
  - Evaluate if equations are true or false
  - Apply associative property of addition
  - Apply commutative property of addition

**Target:**
  - Recognize equivalent algebraic expressions
  - Use properties of addition to create an equivalent algebraic expression

**Successor:**
  - Use properties of operations to generate equivalent expressions involving addition
  - Use properties of operations to generate equivalent expressions involving subtraction

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- DP Distal Precursor
- S Successor
- PP Proximal Precursor
- UN Untested
- T Target
M.EE.6.EE.3 Apply the properties of addition to identify equivalent numerical expressions
<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| M.6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true;  
M.6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set; M.6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which $p, q$ and $x$ are all nonnegative rational numbers | M.EE.6.EE.5-7 Match an equation to a real-world problem in which variables are used to represent numbers | Initial Precursor:  
- Partition sets  
- Combine sets  
Distal Precursor:  
- Represent subtraction with equations  
- Represent addition with equations  
Proximal Precursor:  
- Represent expressions with variables  
- Represent the unknown in an equation  
Target:  
- Represent real-world problems as equations  
Successor:  
- Solve real-world problems using equations with non-negative rational numbers |

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- T  Target
M.EE.6.EE.5-7 Match an equation to a real-world problem in which variables are used to represent numbers.
**Grade-Level Standard**  
M.6.G.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems

**DLM Essential Element**  
M.EE.6.G.1 Solve real-world and mathematical problems about area using unit squares

<table>
<thead>
<tr>
<th>Linkage Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Precursor:</strong></td>
</tr>
<tr>
<td>• Recognize some</td>
</tr>
<tr>
<td>• Recognize separateness</td>
</tr>
<tr>
<td><strong>Distal Precursor:</strong></td>
</tr>
<tr>
<td>• Explain unit square</td>
</tr>
<tr>
<td>• Explain area</td>
</tr>
<tr>
<td><strong>Proximal Precursor:</strong></td>
</tr>
<tr>
<td>• Calculate area by counting unit squares</td>
</tr>
<tr>
<td>• Calculate area of a rectangle with tiling</td>
</tr>
<tr>
<td><strong>Target:</strong></td>
</tr>
<tr>
<td>• Solve word problems involving area of rectangles</td>
</tr>
<tr>
<td><strong>Successor:</strong></td>
</tr>
<tr>
<td>• Relate tiling and formula as methods for calculating area of a rectangle</td>
</tr>
<tr>
<td>• Calculate area for rectangles with formula</td>
</tr>
</tbody>
</table>

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- PP Proximal Precursor
- SP Supporting
- S Successor
- UN Untested
- T Target
M.EE.6.G.1 Solve real-world and mathematical problems about area using unit squares
**Grade-Level Standard** | **DLM Essential Element** | **Linkage Levels**
---|---|---
**M.6.G.2** Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism | **M.EE.6.G.2** Solve real-world and mathematical problems about volume using unit cubes | **Initial Precursor:**
- Recognize separateness
- Recognize enclosure

**Distal Precursor:**
- Explain volume
- Explain a unit cube
- Explain volume as a composition of cube units

**Proximal Precursor:**
- Calculate volume by counting unit cubes
- Calculate volume of a right rectangular prism by packing unit cubes

**Target:**
- Solve word problems involving volume of rectangular prisms

**Successor:**
- Calculate volume of right rectangular prisms with formula

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- **PP** Proximal Precursor
- **T** Target

- **SP** Supporting
- **S** Successor
- **UN** Untested

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**Math: Grade 6**

**M.EE.6.G.2**
M.EE.6.G.2 Solve real-world and mathematical problems about volume using unit cubes

- M-2434 explain volume as a composition of cube units
- M-946 explain a unit cube
- M-399 explain volume

- M-947 calculate volume by counting unit cubes
- M-962 calculate volume of a right rectangular prism by packing unit cubes
- M-968 solve word problems involving volume of rectangular prisms
- M-964 calculate volume of right rectangular prisms with formula
# Essential Element, Linkage Levels, and Mini-Map

**Math: Grade 6**

**M.EE.6.NS.1**

<table>
<thead>
<tr>
<th>Grade-Level Standard</th>
<th>DLM Essential Element</th>
<th>Linkage Levels</th>
</tr>
</thead>
</table>
| M.6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions, e.g., by using visual fraction models and equations to represent the problem | M.EE.6.NS.1 Compare the relationships between two unit fractions | Initial Precursor:  
- Recognize wholeness  
- Recognize a unit  
- Recognize parts of a given whole or unit  

Distal Precursor:  
- Model equal part  
- Partition any shape into equal parts  

Proximal Precursor:  
- Recognize fraction  
- Explain unit fraction  
- Recognize numerator  
- Recognize denominator  

Target:  
- Explain relationships between unit fractions  

Successor:  
- Explain numerator  
- Explain denominator  
- Compare fractions using models  
- Decompose a fraction into a sum of unit fractions with the same denominator  
- Add fractions with common denominators |

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- **DP** Distal Precursor  
- **S** Successor  
- **PP** Proximal Precursor  
- **UN** Untested  
- **T** Target
M.EE.6.NS.1 Compare the relationships between two unit fractions
### M.EE.6.NS.2
#### Grade-Level Standard

**M.6.NS.2** Fluently divide multi-digit numbers using the standard algorithm

#### DLM Essential Element

**M.EE.6.NS.2** Apply the concept of fair share and equal shares to divide

#### Linkage Levels

<table>
<thead>
<tr>
<th>Initial Precursor:</th>
<th>Distal Precursor:</th>
<th>Proximal Precursor:</th>
<th>Target:</th>
<th>Successor:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recognize separateness</td>
<td>• Partition sets</td>
<td>• Explain repeated subtraction</td>
<td>• Demonstrate the concept of division</td>
<td>• Divide by 1, 2, 3, 4, 5, or 10</td>
</tr>
<tr>
<td>• Recognize set</td>
<td>• Partition sets into equal subsets</td>
<td>• Represent repeated subtraction with an equation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Recognize subset</td>
<td></td>
<td>• Represent repeated subtraction with a model</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<tr>
<td>DP</td>
<td>Distal Precursor</td>
</tr>
<tr>
<td>PP</td>
<td>Proximal Precursor</td>
</tr>
<tr>
<td>T</td>
<td>Target</td>
</tr>
<tr>
<td>SP</td>
<td>Supporting</td>
</tr>
<tr>
<td>S</td>
<td>Successor</td>
</tr>
<tr>
<td>UN</td>
<td>Untested</td>
</tr>
</tbody>
</table>

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M.EE.6.NS.2 Apply the concept of fair share and equal shares to divide
# Essential Element, Linkage Levels, and Mini-Map

## Math: Grade 6

### M.EE.6.NS.3

<table>
<thead>
<tr>
<th>Grade-Level Standard</th>
<th>DLM Essential Element</th>
<th>Linkage Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.6.NS.3</td>
<td>Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation</td>
<td>M.EE.6.NS.3 Solve two factor multiplication problems with products up to 50 using concrete objects and/or a calculator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Initial Precursor:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recognize separateness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recognize set</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recognize subset</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Distal Precursor:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Explain repeated addition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Represent repeated addition with an equation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Solve repeated addition problems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Proximal Precursor:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Demonstrate the concept of multiplication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Target:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Multiply by 1, 2, 3, 4, and/or 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Successor:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Apply the relationship between multiplication and division</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Divide by 1, 2, 3, 4, and/or 5</td>
</tr>
</tbody>
</table>

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- S   Successor
- UN  Untested
Solve two factor multiplication problems with products up to 50 using concrete objects and/or a calculator.
# Essential Element, Linkage Levels, and Mini-Map

## Math: Grade 6

### M.EE.6.NS.5-8

<table>
<thead>
<tr>
<th>Grade-Level Standard</th>
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</tr>
</thead>
</table>
| M.6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation; M.6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates; M.6.NS.7 Understand ordering and absolute value of rational numbers; M.6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate | M.EE.6.NS.5-8 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero) | **Initial Precursor:**
- Recognize separateness
- Recognize set

**Distal Precursor:**
- Count all objects in a set or subset
- Recognize different number of
- Recognize same number of
- Recognize fewer number of
- Recognize more number of

**Proximal Precursor:**
- recognize opposite numbers

**Target:**
- Use positive and negative numbers in real-world contexts

**Successor:**
- Relate the meaning of 0 to positive and negative numbers in real-world contexts
- Explain inequalities from real-world contexts

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- **SP** Supporting
- **S** Successor
- **T** Target
- **UN** Untested
M.EE.6.NS.5-8 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero)
## Grade-Level Standard

**M.6.RP.1**

Understand the concept of a ratio, and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak."

"For every vote candidate A received, candidate C received nearly three votes."

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## DLM Essential Element

**M.EE.6.RP.1**

Demonstrate a simple ratio relationship

## Linkage Levels

### Initial Precursor:
- Recognize wholeness
- Recognize a unit
- Recognize parts of a given whole or a unit

### Distal Precursor:
- Model equal part

### Proximal Precursor:
- Partition any shape into equal parts
- Explain unit fraction
- Recognize fraction

### Target:
- Recognize many to 1 ratio
- Represent many to 1 ratio

### Successor:
- Recognize many to many ratio

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- **T** Target

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M.EE.6.RP.1 Demonstrate the simple ratio relationship
### Grade-Level Standard

**M.6.SP.5**

Summarize numerical data sets in relation to their context, such as by:
- Reporting the number of observations;
- Describing the nature of the attribute under investigation, including how it was measured and its units of measurement;
- Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered;
- Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

### DLM Essential Element

**M.EE.6.SP.5**

Summarize data distributions shown in graphs or tables.

### Linkage Levels

**Initial Precursor:**
- Classify
- Order objects

**Distal Precursor:**
- Recognize that distribution of data can be described by overall shape of a graph
- Recognize the structure of a line plot (dot plot)

**Proximal Precursor:**
- Recognize outliers
- Recognize peaks in data distribution
- Recognize symmetric distribution
- Analyze the overall shape of the data distribution

**Target:**
- Summarize data by overall shape

**Successor:**
- Use the overall shape of data distribution to recognize appropriate measures of center or spread
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- **S**: Successor
- **PP**: Proximal Precursor
- **UN**: Untested
- **T**: Target

**M.EE.6.SP.5** Summarize data distributions shown in graphs or tables