

# Vertical Coherence Challenge (6–8)

**Note:** These cards must be cut out and placed into an envelope (one envelope for every two participants).

<p><b>UnboundEd</b></p> <p><b>J.</b> Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>	<p><b>UnboundEd</b></p> <p><b>A.</b> Use similar triangles to explain why the slope <math>m</math> is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation <math>y = mx</math> for a line through the origin and the equation <math>y = mx + b</math> for a line intercepting the vertical axis at <math>b</math>.</p>
<p><b>UnboundEd</b></p> <p><b>H.</b> Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p>	<p><b>UnboundEd</b></p> <p><b>B.</b> Interpret a fraction as division of the numerator by the denominator (<math>a/b = a \div b</math>). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.</p>
<p><b>UnboundEd</b></p> <p><b>L.</b> Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.</p>	<p><b>UnboundEd</b></p> <p><b>M.</b> Use proportional relationships to solve multi-step ratio and percent problems.</p>

<p><b>UnboundEd</b></p> <p>K. Recognize and represent proportional relationships between quantities.</p>	<p><b>UnboundEd</b></p> <p>D. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks <math>\frac{1}{2}</math> mile in each <math>\frac{1}{4}</math> hour, compute the unit rate as the complex fraction <math>(\frac{1}{2})/(\frac{1}{4})</math> miles per hour, equivalently 2 miles per hour.</p>
<p><b>UnboundEd</b></p> <p>I. Analyze and solve pairs of simultaneous linear equations.</p>	<p><b>UnboundEd</b></p> <p>E. Write a function that describes a relationship between two quantities.</p>
<p><b>UnboundEd</b></p> <p>F. Understand the concept of a unit rate <math>a/b</math> associated with a ratio <math>a:b</math> with <math>b \neq 0</math>, and use rate language in the context of a ratio relationship.</p>	<p><b>UnboundEd</b></p> <p>G. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.</p>
<p><b>UnboundEd</b></p> <p>C. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).</p>	