

# Proportional Reasoning: Grade 7

| Stage 1 Desired Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p><b>ESTABLISHED GOALS: Competencies:</b></p> <ul style="list-style-type: none"> <li>Students will demonstrate the ability to reason with quantities by recognizing, analyzing, and applying proportional relationships.</li> <li>Students will demonstrate the ability to simplify numeric and algebraic expressions by applying the properties of operations and the arithmetic of real numbers.</li> <li>Students will demonstrate the ability to solve equations and inequalities by applying the properties of equality, inequality, and rational expressions.</li> <li>Students will demonstrate the ability to model real world problems by building and analyzing the appropriate expression, equation, or function.</li> <li>Students will demonstrate the ability to analyze and summarize text and integrate knowledge to make meaning of discipline-specific materials.</li> <li>Students will demonstrate the ability to produce coherent and supported writing in order to communicate effectively for a range of discipline-specific tasks, purposes, and audiences.</li> <li>Students will demonstrate the ability to speak purposefully and effectively by strategically making decisions about content, language use, and discourse style.</li> </ul> <p><b>Content Standards:</b></p> <ul style="list-style-type: none"> <li>7.RP.A.1- Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.</li> <li>7.RP.A.2 - Recognize and represent proportional relationships between quantities. <ul style="list-style-type: none"> <li>7.RP.A.2.a - Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</li> <li>7.RP.A.2.b - Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</li> <li>7.RP.A.2.c - Represent proportional relationships by equations. For example, if total cost (t) is proportional to the number (n) of items purchased at a constant price (p), the relationship between the total cost and the number of items can be expressed as <math>t = pn</math>.</li> <li>7.RP.A.2.d - Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.</li> </ul> </li> <li>7.RP.A.3 - Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and</li> </ul> | <b>Transfer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| decrease, percent error.<br>• 7.G.A.1 - 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.<br>•<br>• MP1 Make sense of problems and persevere in solving them.<br>• MP2 Reason abstractly and quantitatively.<br>• MP6 Attend to precision.<br>• MP7 Look for and make use of structure.<br>• MP8 Look for and express regularity in repeated reasoning.                                                                                                                                                                                                     |  |                                                                                                                                                                            |
| <b>Content Area Literacy Standards</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | <b>21<sup>st</sup> Century Skills</b>                                                                                                                                      |
| • RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.<br>• RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 6-8 texts and topics</i> .<br>• RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.<br>• RST.6-8.9 Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. |  | • <i>reason effectively</i><br>• <i>use systems thinking</i><br>• <i>solve problems</i><br>• <i>use and manage information</i><br>• <i>access and evaluate information</i> |

| Stage 2 - Evidence         |                            |
|----------------------------|----------------------------|
| <i>Evaluative Criteria</i> | <i>Assessment Evidence</i> |
|                            | PERFORMANCE TASK(S):       |
|                            | OTHER EVIDENCE:            |

| Stage 3 – Learning Plan                        |                                |
|------------------------------------------------|--------------------------------|
| Summary of Key Learning Events and Instruction |                                |
| <i>Language Arts Integration</i>               | <i>Mathematics Integration</i> |
| • 1.OA.1 Use                                   | • 1.OA.1 Use                   |

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|--------------------------------------------------------------|----------------------------------|
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| <b><i>Technology Integration</i></b>                         | <b><i>District Materials</i></b> |
| <ul style="list-style-type: none"><li>• 1.OA.1 Use</li></ul> |                                  |