

Analyze proportional relationships and use them to solve real-world and mathematical problems (7.RP.1-3)	
<b>Standard 7.RP.1:</b> Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. <i>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}{1/4}</math> miles per hour, equivalently 2 miles per hour.</i>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>Extend the concept of a unit rate to include ratios of fractions.</li> <li>Compute a unit rate, involving quantities measured in like or different units.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">7.RP.2</a> , <a href="#">7.RP.3</a> , <a href="#">7.EE.2</a> , <a href="#">7.G.1</a>	<a href="#">8.EE.5</a> , <a href="#">8.EE.6</a> , Foundation for rates of change in all future courses

## Support for Teachers

Critical Background Knowledge
<ul style="list-style-type: none"> <li>Build fractions from unit fractions (<a href="#">4.NF.3</a> and <a href="#">4.NF.4</a>)</li> <li>Understand ratios, equivalent ratios, rates, unit rate (<a href="#">6.RP.1</a>, <a href="#">6.RP.2</a>, <a href="#">6.RP.3b</a>)</li> <li>Simplify complex fractions (<a href="#">6.NS.1</a>)</li> </ul>
Academic Vocabulary
Ratio, rate, unit rate
Resources
<a href="http://www.uen.org/core/core.do?courseNum=5170#71277">Curriculum Resources</a> : <a href="http://www.uen.org/core/core.do?courseNum=5170#71277">http://www.uen.org/core/core.do?courseNum=5170#71277</a>

Analyze proportional relationships and use them to solve real-world and mathematical problems (7.RP.1-3)	
<p><b>Standard 7.RP.2:</b> Recognize and represent proportional relationships between quantities.</p> <ol style="list-style-type: none"> <li>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>Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.</li> <li>Represent proportional relationships by equations. <i>For example, if total cost <math>t</math> is proportional to the number <math>n</math> of items purchased at a constant price <math>p</math>, the relationship between the total cost and the number of items can be expressed as <math>t = pn</math>.</i></li> <li>Explain what a point <math>(x, y)</math> on the graph of a proportional relationship means in terms of the situation, with special attention to the points <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</li> </ol>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>Determine if two quantities are in a proportional relationship by testing equivalent ratios</li> <li>Determine if two quantities are in a proportional relationship by graphing and checking for straight line through <math>(0, 0)</math></li> <li>Find the constant of proportionality from tables, graphs, equations, diagram, or verbal descriptions.</li> <li>Write an equation for a proportional relationship in the form <math>y = kx</math></li> <li>Explain the meaning of a point <math>(x, y)</math> in terms of the situation, especially <math>(0, 0)</math> and <math>(1, r)</math> where <math>r</math> is the unit rate.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">7.RP.1</a> , <a href="#">7.RP.3</a> , <a href="#">7.G.1</a> , <a href="#">7.SP.1</a> , <a href="#">7.SP.2</a> , <a href="#">7.SP.6</a> , <a href="#">7.SP.7</a>	<a href="#">8.EE.5</a> , <a href="#">8.EE.6</a> , <a href="#">8.G.4</a> , <a href="#">8.F.3</a> , <a href="#">8.F.4</a> , <a href="#">8.F.5</a> , <a href="#">I.F.IF.1</a> , <a href="#">I.F.IF.6</a> , <a href="#">I.F.IF.7a</a> , <a href="#">I.F.LE.1a</a> , <a href="#">II.F.IF.6</a> , <a href="#">II.F.BF.3</a> , <a href="#">III.F.IF.6</a> , <a href="#">III.F.BF.1</a> (Rates of change in all future courses)
Support for Teachers	
Critical Background Knowledge	
<ul style="list-style-type: none"> <li>Generate equivalent fractions (<a href="#">4.NF.1</a> and <a href="#">5.NF.1</a>) and interpret multiplication of a fraction and a whole number as scaling (<a href="#">5.NF.5</a>)</li> <li>Understand concept of ratio between two quantities (<a href="#">6.RP.1</a>) and unit rate (<a href="#">6.RP.2</a>)</li> <li>Make tables of equivalent ratios, find missing values in a table, plot points on the coordinate plane (<a href="#">6.RP.3a</a>)</li> <li>Write equations using variables to represent the relationship between two variables (<a href="#">6.EE.6</a>, <a href="#">6.EE.7</a>)</li> <li>Identify the relationship between dependent and independent variables from graphs and tables (<a href="#">6.EE.9</a>)</li> </ul>	
Academic Vocabulary	
Unit rate, constant of proportionality, origin	
Resources	
<a href="http://www.uen.org/core/core.do?courseNum=5170#71277">Curriculum Resources</a> : <a href="http://www.uen.org/core/core.do?courseNum=5170#71277">http://www.uen.org/core/core.do?courseNum=5170#71277</a>	

Analyze proportional relationships and use them to solve real-world and mathematical problems (7.RP.1-3)	
<b>Standard 7.RP.3:</b> Use proportional relationships to solve multi-step ratio and percent problems. <i>Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</i>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> <li>• Use proportional reasoning to solve multistep ratio and multistep percent problems.</li> <li>• Write proportions from various contexts. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.</li> </ul>	
Related Standards: Current Course	Related Standards: Future Courses
<a href="#">7.RP.1</a> , <a href="#">7.RP.2</a> , <a href="#">7.EE.3</a> , <a href="#">7.EE.4</a> , <a href="#">7.G.1</a>	<a href="#">I.F.LE.1b</a> , <a href="#">II.G.SRT.2</a> , <a href="#">II.G.SRT.4</a> , <a href="#">II.G.SRT.5</a> , <a href="#">II.G.SRT.6</a> , <a href="#">II.G.C.5</a> , <a href="#">II.G.GMD.1</a>

## Support for Teachers

Critical Background Knowledge
<ul style="list-style-type: none"> <li>• Make tables of equivalent ratios (<a href="#">6.RP.3a</a>)</li> <li>• Find percent of a quantity as a rate per 100 (<a href="#">6.RP.3c</a>)</li> </ul>
Academic Vocabulary
Percent error, gratuity, commission, markup, markdown, simple interest, percent increase, percent decrease
Resources
<a href="http://www.uen.org/core/core.do?courseNum=5170#71277">Curriculum Resources</a> : <a href="http://www.uen.org/core/core.do?courseNum=5170#71277">http://www.uen.org/core/core.do?courseNum=5170#71277</a>