

Analyze proportional relationships and use them to solve real-world and mathematical problems (7.RP.1-3)	
Standard 7.RP.1: 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 $\frac{1}{2}$ mile in each $\frac{1}{4}$ hour, compute the unit rate as the complex fraction $\frac{1/2}{1/4}$ miles per hour, equivalently 2 miles per hour.</i>	
Concepts and Skills to Master	
<ul style="list-style-type: none"> • Extend the concept of a unit rate to include ratios of fractions. • Compute a unit rate, involving quantities measured in like or different units. 	
Related Standards: Current Course	Related Standards: Future Courses
7.RP.2 , 7.RP.3 , 7.EE.2 , 7.G.1	8.EE.5 , 8.EE.6 , Foundation for rates of change in all future courses

Support for Teachers

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

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

Analyze proportional relationships and use them to solve real-world and mathematical problems (7.RP.1-3)	
Standard 7.RP.3: 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"> • Use proportional reasoning to solve multistep ratio and multistep percent problems. • Write proportions from various contexts. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. 	
Related Standards: Current Course	Related Standards: Future Courses
7.RP.1 , 7.RP.2 , 7.EE.3 , 7.EE.4 , 7.G.1	I.F.LE.1b , II.G.SRT.2 , II.G.SRT.4 , II.G.SRT.5 , II.G.SRT.6 , II.G.C.5 , II.G.GMD.1

Support for Teachers

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