**TEACHER RESOURCE LIBRARY**

Grade 6 ~ ***Ratio and Proportional Reasoning (6.RP1-3)***

|  |
| --- |
| **Understand ratio concepts and use ratio reasoning to solve problems.** |
| **Resources** | **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.”* | **2. Understand the concept of a unit rate *a*/*b* associated with a ratio *a:b* with *b* ≠ 0, and use rate language in the context of a ratio relationship.***For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar.” “We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.”* (1Expectations for unit rates in this grade are limited to non-complex fractions.) | **3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.****a.** 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**b.** Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then* *at that rate, how many lawns could be mowed in 35 hours? At what* *rate were lawns being mowed?***c.** Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.**d.** Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. |
| **My Stuff** |  |  |  |
| **Resource Books** | * **Developing Essential Understanding of Ratios, Proportions, and Proportional Reasoning for Teaching Mathematics: Grades 6-8, ISBN:** 978-0-87353-622-6, NCTM Publications
* **Elementary & Middle School Mathematics (VanDeWalle, 7th Ed.)**
	+ TEACHER CONTENT
		- Types of Ratios and Interpreting Ratios: p. 25, 287, 348-350
		- Multiplicative Nature of Ratios: p. 350-353
		- Comparing Ratios and Equivalent Ratios: p. 353-356
		- Ratio Tables: p. 356-358
		- Graphing Equivalent Ratios: p. 359
	+ STUDENT ACTIVITIES
		- Multiplicative Nature of Ratios: p. 351, figure 18.1; p. 352, Activity 18.1; p. 353, Activity 18.2
		- Comparing Ratios and Equivalent Ratios: p. 353, Activity 18.4; p. 354, Figure 18.6, p. 355, Activity 18.5
		- Ratio Tables: p. 357, Activity 18.6
* **Elementary & Middle School Mathematics (VanDeWalle, 6th Ed.)**
	+ TEACHER CONTENT
		- Types of Ratios and Interpreting Ratios: p. 27, 353-354
		- Multiplicative Nature of Ratios: p. 355-358
		- Comparing Ratios and Equivalent Ratios: p. 358-361
		- Ratio Tables: p. 361-363
		- Graphing Equivalent Ratios: p. 359
	+ STUDENT ACTIVITIES
		- Multiplicative Nature of Ratios: p. 356, figure 19.1; p. 357, figure 19.2; p. 357, Activity 19.1
		- Comparing Ratios and Equivalent Ratios: p. 358, Activity 19.3; p. 359, Activity 19.4 & 19.5
		- Ratio Tables and Graphing: p. 361, Activity 19.6; p. 362, Activity 19.7
* **Elementary Mathematics for Teachers (Parker, Baldridge, 2004) ISBN 0-9748140-0-8**
	+ TEACHER CONTENT
		- Ratios and Proportions: p. 167-171
		- Ratios and Fractions: p. 171-172
		- Changing Ratios and Percentages: p. 173-177
		- Solving Percent Problems by the Unitary Method: p. 178-181
* ***Math On Call: A Mathematics Handbook* by Andrew Kaplan, Carol DeBold, ISBN 13:978-0-669-50819-2800-289-4490**
 |
| **Web**  | **Types of Ratios and Interpreting Ratios** TEACHER CONTENT* **Ratio - Teacher Tutorial** - <https://www.etap.org/demo/math4_6/math3/instruction3tutor.html>
* **eHow - Video Tutorial** - <http://www.ehow.com/video_4754324_understanding-math-ratios.html>
* **Purplemath - Teacher Tutorial** - <http://www.purplemath.com/modules/ratio.htm>

STUDENT ACTIVITIES/LESSONS* **Math Forum - Fish Game - Student Applet** - <http://mathforum.org/escotpow/puzzles/fish/applet.html>
* **BBC - Ratio and Proportion - Game** - [http://www.bbc.co.uk/skillswise/numbers/wholenumbers/ratioandproportion/ratio/game.shtml](http://www.bbc.co.uk/skillswise/numbers/wholenumbers/)
* **Academic Skill Builder - Martian Ratio - Game** - <http://www.arcademicskillbuilders.com/games/ratio-martian/ratio-martian.html>
* **Ratio - Practice Exercises** - <http://math.rice.edu/~lanius/proportions/index.html>
* **LearnAlberta - “Ratio” Lesson** - <http://www.learnalberta.ca/content/mesg/html/math6web/index.html?page=lessons>
* **IXL - Write a Ratio to Describe Objects in a Picture - Assessment** - <http://www.ixl.com/math/grade-6/write-a-ratio-to-describe-objects-in-a-picture>

**Defining Ratios and Rates –** TEACHER CONTENT* **Houghton-Mifflin - Teacher Tutorial -** <http://www.eduplace.com/math/mhm/6/07a/index.html>
* **Houghton-Mifflin - Teacher Tutorial -** <http://www.eduplace.com/math/mathsteps/6/e/index.html>

**Define/Find a Percent –** STUDENT ACTIVITIES/LESSONS* **LearnAlberta - “Percent” Lesson** - <http://www.learnalberta.ca/content/mesg/html/math6web/index.html?page=lessons>
* **Math.com - Fraction, Decimal, Percent - Teacher Tutorial -** <http://www.math.com/school/subject1/lessons/S1U1L7GL.html>
* **Illuminations - “Now and Then” Lesson** - <http://illuminations.nctm.org/LessonDetail.aspx?id=L837>
* **CyberChase - Fraction, Decimal Percent - Game** - <http://pbskids.org/cyberchase/games/percent/>

**Comparing Ratios and Equivalent Ratios**STUDENT ACTIVITIES/LESSONS* **Academic Skill Builder - Ratio Stadium - Game -** [**http://www.arcademicskillbuilders.com/games/ratio-stadium/ratio-stadium.html**](http://www.arcademicskillbuilders.com/games/ratio-stadium/ratio-)
* **Academic Skill Builder - Ratio Blaster - Game -** [http://www.arcademicskillbuilders.com/games/ratio-blaster/ratio-blaster.html](http://www.arcademicskillbuilders.com/games/ratio-blaster/ratio-)
* **IXL- Equivalent Ratios - Assessment** - <http://www.ixl.com/math/grade-6/equivalent-ratios>
* **LearnAlberta - Rate, Ratio and Proportion - Interactive Applet and Video** -

 <http://www.learnalberta.ca/content/mejhm/index.html?l=0&ID1=AB.MATH.JR.NUMB&ID2=AB.MATH.JR.NUMB.RATE>**Unit Rates**TEACHER CONTENT* **Tutor Vista - “How Can I Solve a Unit Rate” - Teacher Tutorial** - <http://www.tutorvista.com/math/how-can-i-solve-a-unit-rate>

STUDENT ACTIVITIES* **Proportional Relationships and Unit Rates - Lesson and Practice Pages** –

<http://www.cehd.umn.edu/rationalnumberproject/89_4.html>* **AIMS -“Time Trials” Lesson** - <http://www.aimsedu.org/Activities/samples/TimeTrials.pdf>
* **Figure This - Problem Solving with Rates -** <http://www.figurethis.org/challenges/c24/challenge.htm>

**Tape Diagrams and Double Number Line Diagrams**TEACHER CONTENT* **Tape Diagrams - Teacher Tutorial -** <http://mathgpselaboration.blogspot.com/2010/04/mp5-tape-diagrams.html>
 |
| **Literature Connections** | Beanstalk: The Measure of a Giant by Ann McCallum Biggest, Strongest, Fastest by Steve JenkinsCut Down to Size at High Noon by Scott SundbyGulliver’s Travels by Jonathan SwiftHow Many Snails? by Paul GigantiIf the World Were a Village by David J. SmithIf You Hopped Like a Frog by David SchwartzKate and the Beanstalk by Mary Pope Osborne“One Inch Tall” in Where the Sidewalk Ends by Shel Silverstein | Only One by Marc HarshmanPiece=Part=Portion by Scott GiffordA Pizza the Size of the Sun by Jack PrelutskyPythagoras and the Ratios by Julie EllisThe Shrinking of Treehorn by Florence Parry HeideSwamp Angel by Anne IsaacsThe Warlord’s Puppeteers by Virginia Walton PilegardWhat’s Faster Than a Speeding Cheetah? by Robert E. Wells |