

Unit 9

Ratio and Rate

Grade 7

Lesson Outline

BIG PICTURE

Students will:

- deepen their understanding of proportional relationships as they apply ratios and rates;
- model relationships and solve problems involving constant rates using a table of values, graphs, and algebraic expressions.

Day	Lesson Title	Math Learning Goals	Expectations
1	Ratio	<ul style="list-style-type: none"> • Understand that ratios compare two quantities. 	7m27, 7m29
2	<i>(lesson not included)</i>	<ul style="list-style-type: none"> • Represent ratios using a variety of forms, e.g., 3 to 4; 3:4, $\frac{3}{4}$ or .75. • Investigate the relationship among decimals, fractions, and percents as ratios. • Connect ratio to percent. Describe percent as a special kind of ratio in which the second quantity is always 100, e.g., 7% means 7 out of 100. 	CGE 2c, 3c
3	Rate <i>(lesson not included)</i>	<ul style="list-style-type: none"> • Understand that rate is a comparison of two quantities that have different units of measure. • Recognize commonly used rates and explain why they are rates, e.g., speed is a rate that compares distance and time; 110 km/h; hourly wage is a rate that compares money to time; \$9.50/h. • Recognize personal rates, e.g., walking rate, reading rate. 	7m29 CGE 2c, 3c
4	Modelling Rates <i>(lesson not included)</i>	<ul style="list-style-type: none"> • Create a table of values and a graph based on a personal rate, e.g., make a table of values for 0 to 10 minutes for a heart rate of 68 beats per minute, then graph the relationship. • Pose and solve problems based on the graph. • Write an algebraic expression to describe the rate, e.g. total heartbeats = $68 \times \text{time in minutes}$, or $H = 68t$. • Make connections between graphs of rates and graphs of linear relationships. 	7m29, 7m30, 7m64, 7m65 CGE 2b, 4c, 5b
5	Unit Rate <i>(lesson not included)</i>	<ul style="list-style-type: none"> • Understand that a unit rate is a rate where the second term is one unit, e.g., \$6.50 / 1 h, \$3.99/1 doz. • Recognize familiar unit rates. • Calculate and compare unit rates. • Solve problems involving unit rates. 	7m29, 7m30, 7m64, 7m65 CGE 3a, 3c
6	Scale as a Unit Rate or Ratio <i>(lesson not included)</i>	<ul style="list-style-type: none"> • Illustrate that measurements, on scale diagrams are unit rates or ratios, e.g., 1 cm = 100 km; 1:100 000. • Analyse and interpret the scales used on blueprints and maps. • Solve problems based on scale diagrams. 	7m27, 7m29, 7m30 CGE 3c, 4f
7	Determining the Best Rate <i>(lesson not included)</i>	<ul style="list-style-type: none"> • Apply unit rates • Solve problems that require determining the best price by calculating unit rates to compare costs of two differently priced items, e.g., school supplies, snacks, personal grooming products, season's passes. 	7m29, 7m30 CGE 3c, 3e
8	Assessment <i>(lesson not included)</i>	<ul style="list-style-type: none"> • Demonstrate an understanding of ratio and rate. • Apply rates to solve problems in everyday contexts. 	