

**Chapter**  
**4****Ratios and Rates**

Dear Family,

Sports and games provide an opportunity to relax and have fun with our families and friends. The nature of competition gives us an opportunity to explore mathematics at the same time.

When we are competing, we are often thinking about how we are doing. Are we hitting the ball as well as we did last year? Are we running faster now than at the beginning of the season? Are we currently winning, or is our opponent winning? Even if we are only watching a game, many of us tend to obsess over our favorite player's and team's performances.

Spend some time with your student talking about your family's favorite sport or game. What kinds of "stats" are kept about the players and events? How does that help you understand the game? For example, you and your student might talk about the following:

- How are batting averages figured out in baseball and softball? What does this tell you about the next time your favorite player is at bat?
- What does the ratio of red pieces to black pieces tell you about how a game of checkers is going? Who's winning?
- How fast can you run a 100-meter sprint? Do you think you could run the same speed in the 200-meter or the 400-meter?

Next time your team is playing their big rival, ask your student how he or she could predict who will win. Do you think it matters more what each team's average score is, or what the win-loss ratio is for the two teams? What kind of information could help you decide which team is better?

Enjoy the game!

<b>Lesson</b>	<b>Learning Target</b>	<b>Success Criteria</b>
4.1 Ratios	Understand the concepts of ratios and equivalent ratios.	<ul style="list-style-type: none"> <li>I can write and interpret ratios using appropriate notation and language.</li> <li>I can recognize multiplicative relationships in ratios.</li> <li>I can describe how to determine whether ratios are equivalent.</li> <li>I can name ratios equivalent to a given ratio.</li> </ul>
4.2 Using Tape Diagrams	Use tape diagrams to model and solve ratio problems.	<ul style="list-style-type: none"> <li>I can interpret tape diagrams that represent ratio relationships.</li> <li>I can draw tape diagrams to model ratio relationships.</li> <li>I can find the value of one part of a tape diagram.</li> <li>I can use tape diagrams to solve ratio problems.</li> </ul>
4.3 Using Ratio Tables	Use ratio tables to represent equivalent ratios and solve ratio problems.	<ul style="list-style-type: none"> <li>I can use various operations to create tables of equivalent ratios.</li> <li>I can use ratio tables to solve ratio problems.</li> <li>I can use ratio tables to compare ratios.</li> </ul>
4.4 Graphing Ratio Relationships	Represent ratio relationships in a coordinate plane.	<ul style="list-style-type: none"> <li>I can create and plot ordered pairs from a ratio relationship.</li> <li>I can create graphs to solve ratio problems.</li> <li>I can create graphs to compare ratios.</li> </ul>
4.5 Rates and Unit Rates	Understand the concept of a unit rate and solve rate problems.	<ul style="list-style-type: none"> <li>I can find unit rates.</li> <li>I can use unit rates to solve rate problems.</li> <li>I can use unit rates to compare rates.</li> </ul>
4.6 Converting Measures	Use ratio reasoning to convert units of measure.	<ul style="list-style-type: none"> <li>I can write conversion facts as unit rates.</li> <li>I can convert units of measure using ratio tables.</li> <li>I can convert units of measure using conversion factors.</li> <li>I can convert rates using conversion factors.</li> </ul>