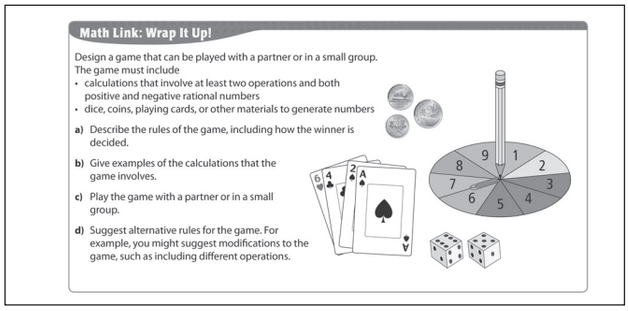
Math Link: Wrap It Up!


Math Link: Wrap It Up!

Design a game that can be played with a partner or in a small group.
The game must include
- calculations that involve at least two operations and both positive and negative rational numbers
- dice, coins, playing cards, or other materials to generate numbers

a) Describe the rules of the game, including how the winner is decided.

b) Give examples of the calculations that the game involves.

c) Play the game with a partner or in a small group.

d) Suggest alternative rules for the game. For example, you might suggest modifications to the game, such as including different operations.

***MathLinks 9*, page 85**

Suggested Timing
40–50 minutes

Materials
- dice, coins, playing cards, and other materials for creating a game

Blackline Masters
Master 1 Project Rubric
BLM 2–1 Chapter 2 Math Link Introduction
BLM 2–6 Section 2.1 Math Link
BLM 2–8 Section 2.2 Math Link
BLM 2–10 Section 2.3 Math Link
BLM 2–12 Section 2.4 Math Link
BLM 2–14 Chapter 2 Math Link: Wrap It Up!

Specific Outcomes
N3 Demonstrate an understanding of rational numbers by:
- comparing and ordering rational numbers
- solving problems that involve arithmetic operations on rational numbers.

N5 Determine the square root of positive rational numbers that are perfect squares.
N6 Determine an approximate square root of positive rational numbers that are non-perfect squares.

Planning Notes

Introduce the problem and clarify the assessment criteria. Review the requirements that the game must include and make sure that students understand them.

Have students consult the Math Links that they have completed throughout the chapter to look for ideas. If you have not already done so, consider having discussions around the ways in which one or more of the earlier games could be modified. Then, encourage students to come up with original ideas.

To provide a focus for students' thinking about the design of their game, you might ask:
- How will players generate positive and negative rational numbers in the game?
- What operations will players perform on the numbers that they generate? (Remind students that they must include at least two of addition, subtraction, multiplication, and division in their game.)
- Will the game include a game board? If so, how will players use it?
- How will players decide the winner of each round of the game?
- How many points will the winner of each round score?
- How will players decide the winner of the game?

Meeting Student Needs

- You may wish to allow students to include only one operation.
- Allow students to orally explain the rules for their game.

Assessment	Supporting Learning
Assessment *of* Learning	
Math Link: Wrap It Up! This chapter problem wrap-up gives students an opportunity to demonstrate their understanding of operations on rational numbers in decimal form and fraction form. It is important that students create a game that covers the operations and kinds of rational numbers in the chapter, and that their sample calculations demonstrate their ability to perform operations on rational numbers. **Master 1 Project Rubric** provides a holistic descriptor that will assist you in assessing student work on this Wrap It Up! Page 115 in this TR provides notes on how to use this rubric for the Wrap It Up!	• You may wish to have students review the work they have completed in the Math Links in the introduction and in each section before they begin. • If students have not completed the Math Links, you may wish to provide them with **BLM 2–1 Chapter 2 Math Link Introduction**, **BLM 2–6 Section 2.1 Math Link**, **BLM 2–8 Section 2.2 Math Link**, **BLM 2–10 Section 2.3 Math Link**, and **BLM 2–12 Section 2.4 Math Link**. • You may wish to have students use **BLM 2–14 Chapter 2 Math Link: Wrap It Up!**, which provides scaffolding for the chapter problem wrap-up.

The chart below shows the **Master 1 Project Rubric** for tasks such as the Wrap It Up! and provides notes that specify how to identify the level of specific answers for the project.

Score/Level	Holistic Descriptor	Specific Question Notes
5 (Standard of Excellence)	❑ Applies/develops **thorough** strategies and mathematical processes making **significant** comparisons/connections that demonstrate a **comprehensive** understanding of how to develop a complete solution ❑ Procedures are **efficient and effective** and may contain a **minor mathematical error** that does not affect understanding ❑ Uses **significant** mathematical language to explain their understanding and provides **in-depth** support for their conclusion	• provides a complete and correct solution
4 (Above Acceptable)	❑ Applies/develops **thorough** strategies and mathematical processes for making **reasonable** comparisons/connections that demonstrate a **clear** understanding ❑ Procedures are **reasonable** and may contain a **minor mathematical error** that may hinder the understanding in one part of a complete solution ❑ Uses **appropriate** mathematical language to explain their understanding and provides **clear** support for their conclusion	Demonstrates one of the following: • provides a complete response to all parts of the problem, with one algebraic error • provides a complete and correct response with weak communication • provides a complete and correct response to all parts of the problem, based on only positive or negative rational numbers but not both
3 (Meets Acceptable)	❑ Applies/develops **relevant** strategies and mathematical processes making **some** comparisons/connections that demonstrate a **basic** understanding ❑ Procedures are **basic** and may contain a **major error or omission** ❑ Uses **common** language to explain their understanding and provides **minimal** support for their conclusion	Demonstrates one of the following: • provides correct and complete solutions to parts a) and b), with calculations that may contain an algebraic error, but both positive and negative rational numbers are represented • provides partial correct solutions to parts a) to d); results of playing the game need not be present but some indication that it has happened must be
2 (Below Acceptable)	❑ Applies/develops **some relevant** mathematical processes making **minimal** comparisons/connections that lead to a **partial solution** ❑ Procedures are **basic** and may contain **several major mathematical errors** ❑ Communication is **weak**	• correctly completes calculations for one or two operations, focusing on only positive or negative rational numbers but not both; rules are present but communication may be weak
1 (Beginning)	❑ Applies/develops an **initial start** that may be **partially correct** or could have led to a correct solution ❑ Communication is **weak or absent**	Demonstrates one of the following: • shows or describes a calculation but lacks further information, resulting in a weak connection to a game • shows calculations, but minimal understanding, and errors, are present