Name Date

Enrichment and Extension

6.4

The Percent is Right: Closest Without Going Over

Preparation:

* Cut index cards to make 20 playing cards. Write each number from 1 to
20 on the cards.

To play:

* On your turn, choose a card and record that value. Your current score is
the percent of the value chosen out of the total possible, which is 20.
* With each consecutive turn, add your new card value to your previous total. Also add 20 to the total possible. Then, calculate your new score.
* You may choose to draw as many as 4 times, replacing the cards each time. You may end your turn at any time. But, you may not go back and draw again after other players have gone.
* The player who comes closest to 50% without going over, wins. If players tie, the one who drew the fewest number of cards is the winner.

A sample score card is shown.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Turn | Card Value | Total Card Value | Total Possible | Score |
| 1 | 7 | 7 | 20 | 35% |
| 2 | 15 | 22 | 40 | 55% |
| 3 | 6 | 28 | 60 | 46.6% |

Complete the following exercises after playing a few rounds.

 1. You draw a 5 on your first turn and a 17 on your second turn. Should
you draw again? Explain your reasoning.

 2. On your first 3 draws, you draw a 5, a 6, and a 10. Your opponent has already finished with a score of 42%. What is the lowest card you can
draw and still win? What is the highest card you can draw and still win? What percent of the cards could you draw and still win the game?

 3. What is the most you can get on your first three draws and still have a chance to win? Explain.

 4. You are the first player to take a turn and you draw a 7. Should you draw again? Explain your reasoning. What if your first draw is an 8 or a 9?

 5. If you have time, you can play multiple rounds with a different target percent score each round. Explain how a higher or lower target percent score would change the game.