

SE PERFORMANCE TASK: Dice Game

Michael, Janet, Kareta, and Chan are playing a game. Each person has chosen two special numbers between 2 and 12. Here are the numbers they chose:

Michael: 7 and 8

Janet: 5 and 10

Kareta: 11 and 12

Chan: 4 and 9

They each take turns rolling a pair of dice. Each person receives 8 points whenever the total number of dots on the two dice is equal to one of their special numbers. The winner is the first person to get more than 100 points.

1. Play the game. Roll a pair of dice over and over again. Every time you roll, record the total of the dice and the number of points scored for each of the 4 people. Stop rolling when someone wins (makes more than 100 points). Who wins? Who would you expect to win if you played the game again? Why?

2. Make a graph or some display showing the experimental probabilities of rolling each total from 2 to 12. Using this information, for each person, Michael, Janet, Kareta, and Chan, calculate the experimental probability of rolling one of their special numbers.

3. Make another display, like the one you did in part 3, showing the theoretical probabilities of rolling each total from 2 to 12. Using this information, for each person, Michael, Janet, Kareta, and Chan, calculate the theoretical probability of rolling one of their special numbers.

4. Using the displays you made in part 3 and 4, compare theoretical probabilities with experimental probabilities. Are they different? How? Can you explain the reason for these differences?

5. What would you expect if you played the game again? Why?