



Round 1 Section 3 - Case Study Information Pack

Section 3: Case Study – Roll The Dice

Relates to Questions 20-30

Time Allocated: 36 minutes.

INTRODUCTION

You have been playing a game in which the rules are as follows:

- Each game consists of 2 turns.
 - For each turn, roll one six-sided die 6 times, making a note of each number in the order it was rolled.
 - Once you have your list of six numbers, determine the possible scores for the turn according to the categories below.
- For each game, score the game by finding the highest possible combined score from the two turns, noting that no category may be used more than once (i.e. you may not score the two hands in the same category).

As you have a keen interest in statistics, you have decided to simulate several games in Excel and analyze the resulting scores. Questions 20 to 26 require only the 'turn' results. Questions 27 to 29 require analysis of the 'game' results.

The workbook provided contains dice rolls from 6,000 simulated turns (3,000 games). Use the rules below to first determine the possible scores for the turns, and then to find the highest possible score for each game.

SCORING TURNS

Category	Criteria	Score
High and Often	Any turn	The highest number rolled in the turn multiplied by the number of times it was rolled that turn
Summation	Any turn	Sum of all six dice rolls
Highs and Lows	Any turn	The highest number rolled multiplied by the lowest number rolled multiplied by the difference between them
Only two numbers	The six rolls are all one of two numbers (e.g. 3-6-3-6-6-6)	30
All the numbers	The rolls are (in any order) 1-2-3-4-5-6	40
Ordered subset of four	When listed in the order rolled the numbers contain a run of 4 consecutive increasing or decreasing numbers (e.g. 1-2-3-4 or 5-4-3-2)	50

For Questions 20 to 27, select your answer from a multiple choice list.

For Questions 28 to 29, you are required to type in your answer.

Prepare your model and then use it to answer the given questions.

When finished, please upload your workbook (Question 30).