

1. What random number functions did we use in the three different Google Sheets simulations?
2. How do you write an “if” statement in Sheets?
3. How do you write a Sheets formula to calculate gain (or loss) in the stock market simulation?
4. Python can be used as a calculator. How do you format Python code to multiply seven times eight and then raise the product to the 4th power?
5. How to you add a number to a numeric list variable in Python?
6. In probability, what is the Sample Space?
7. How would you write Python code to generate a line plot for a list variable?
8. What is the difference between discrete and continuous probability?

Write Python code for each scenario. Write clearly! If I can't read it you won't get credit.

9. Write a “for” loop that adds integers to a list variable in descending order from 100 to 1.

10. Simulate a 10-year stock market run with annual returns randomly determined. Assume stock market returns have a mean = 9% and a standard deviation = 12%

main.py



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```
1 import random
2 sims,wins,losses = 100,0,0
3
4 for i in range(sims):
5     d1 = random.randint(1,6)
6     d2 = random.randint(1,6)
7     rollsum = d1 + d2
8
9     if rollsum == 7 :
10        print("winner")
11        wins += 1
12    else:
13        print("loser")
14        losses += 1
15
16 print("wins: ", wins)
17 print("losses: ", losses)
18 print("total rolls: ", sims)
19
```

Use the Python program code above to answer questions 11-20.

11. How many total dice rolls are simulated in the program?

12. How many list variables appear in the program?

13. On what lines are random numbers generated to simulate a dice roll?

15. On what line is the sum of the randomly generated integers calculated?

16. How would you recreate the "if" statement (beginning on line 9) in Sheets?

17. How many "wins" would you expect in this simulation?

18. How many "losses" would you expect in this simulation?

19. How would you change the program if rolling an eleven also resulted in a win?

20. How many additional wins would you expect as a result of the change (adding eleven as a winning roll) in #19?