1. Roll two dice and X is the sum of faces values. If we roll them 5 times and get 2,3,4,5,6 — 1 point

Which of the following is/are true about X?

- [ ] X can only take values 2,3,4,5,6
- [x] X is a random variable
- [ ] The mean of X is 4.

2. Roll two dice and X is the sum of faces values. If we roll them 5 times and get 2,3,4,5,6 — 1 point

What do we know about X?

- ( ) The most likely value of X is 6
- (•) We have 5 observations of X
- ( ) The dice is fair.
- ( ) Range of X is 6-2=4

3. Roll two dice and X is the sum of faces values. If we roll them 5 times and get 2,3,4,5,6 — 1 point

X is a _____ random variable.

- ( ) None of the above
- (•) discrete
- ( ) continuous

4. Why do we use relative frequency instead of frequency? — 1 point

- ( ) Relative frequency is easier to compute
- ( ) Frequency cannot show the number of appearance of outcomes
- (•) Relative frequency can be used to compare the ratio of values between difference collections with difference number of values
- ( ) Relative frequency is easier to compute when the number of observations increases

5. What can we say about relative frequency when we have large number of trials? — 1 point

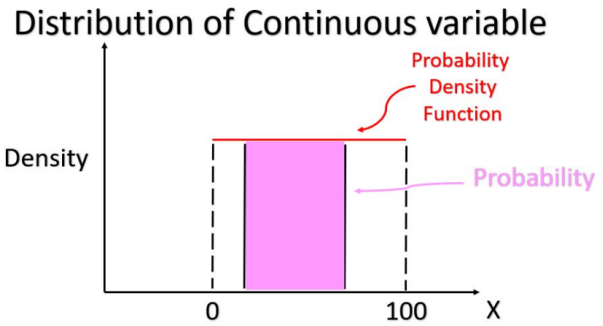
- (•) Relative frequency becomes approximately the distribution of the corresponding random variable
- ( ) The relative frequency of each possible outcome will be the same
- ( ) The relative frequency stays constant after a very large number of trials, eg. n=10000
- ( ) None of the above

6. What is the notion of "95% Value at Risk" ? — 1 point

- ( ) 95% Value at Risk is 95% quantile
- (•) 95% VaR measures the amount of investment you can lose, at the worst 5% scenario
- ( ) 95% VaR measures how much you can lose at most
- ( ) 95% VaR measures how much you can win at most

7. In the lecture video, we mentioned the calculation of continuous random variable is based on the probability density function. — 1 point

Given a probability density function, $f(x) = 1/100$, what is the probability $P(10<X<20)$, where $X \sim Uniform[0, 100]$?



- ○ f(20) – f(10)
- ○ f(10)
- ○ f(20)
- ◉ (20- 10) * 1/100

8. What methods should we use to get the cdf and pdf of normal distribution? 1 point

- ○ cdf() and pdf() form numpy
- ◉ norm.cdf() and norm.pdf() from scipy.stats
- ○ cdf() and pdf() from pandas
- ○ norm.cdf() and norm.pdf() from statsmodels

9. Which additional library should we import when we want to calculate log daily return specifically? 1 point

- ○ Pandas
- ◉ Numpy
- ○ Statsmodels
- ○ Matplotlib

10. What is the distribution of stock returns suggested by Fama and French in general? 1 point

- ○ Arbitrary distribution
- ○ Left-skewed distribution
- ◉ Close to normal distribution but with fat tail
- ○ A perfect normal distribution