## Department of Statistics

## The Wharton School

**University of Pennsylvania**

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Quiz 2 Solutions

(1) An option has the following payouts with the indicated probabilities.

Payout Probability   
 $0 0.5  
 $5 0.3  
 $20 0.2

If this option were offered for $5, would this be a bargain?

* Yes because this price is smaller than the expected value of the payout.

(2) The volatility drag of an investment in stocks measures the

* reduction in long-run return caused by variation in returns.

(3) The amount won by a player in a game of chance is normally distributed with mean μ = $1 and variance σ2 = 25. A brother and a sister play the game, independently of each other. Let B and S denote the amounts won by the brother and the sister, respectively. The standard deviation of the difference in the winnings B-S is then

* 7.1

(4) Random variables X and Y are independent if for all outcomes (x,y)

* P(Y = y | X = x) = P(Y = y)

(5) The monthly *returns* on two stocks have the following properties.

Average Variance

Stock A 0.010 0.009  
 Stock B 0.020 0.005

Consider a portfolio with 1/2 the value in Stock A and 1/2 the value in Stock B. Of the following, the variance of the returns on this portfolio is smallest when

* the covariance between the returns on Stock A and Stock B is –0.002