Practice worksheet | Discrete probability distributions

Sums of independent variables

Name: _____ Date: _____

6 questions | 15 marks

1. Independent X and Y have means 4, 7 and variances 1, 9. Find the mean and variance of $X+Y$. [2 marks]

2. Using the same X and Y, find the mean and variance of $3X-2Y+5$. [3 marks]

3. Five independent copies of X each have mean 2 and variance 3. Find the mean and variance of their sum. [2 marks]

4. For those five independent copies, find the mean and variance of their average. [3 marks]

5. Independent fair dice are rolled. Let X and Y be their scores. Find $P(X+Y=5)$. [2 marks]

6. A supplier gives $E(X)=8$, $E(Y)=3$, $\mathrm{Var}(X)=4$ and $\mathrm{Var}(Y)=2$, but does not state independence. Which of $E(X+Y)=11$ and $\mathrm{Var}(X+Y)=6$ is justified? [3 marks]