Practice worksheet | Discrete probability distributions

Effects of scale/shift

Name: _____ Date: _____

6 questions | 14 marks

1. $E(X) = 5$ and $\text{Var}(X) = 4$. Find $E(2X + 3)$ and $\text{Var}(2X + 3)$. [2 marks]

2. $E(X) = 8$ and $\text{SD}(X) = 3$. Find the mean and SD of $Y = 10 - X$. [2 marks]

3. A random length X in metres has mean 1.2 and variance 0.04. Convert both to centimetre-based quantities. [3 marks]

4. A score X has mean 50 and SD 10. Find mean and variance of $Z = \frac{X - 50}{10}$. [2 marks]

5. X is -2 or 2 with equal probabilities. Find $E(X^2)$. Explain why squaring $E(X)$ gives the wrong answer. [3 marks]

6. X is 1, 2 or 4 with probabilities 0.2, 0.5, 0.3. For $Y = 6 - X$, find $P(Y \geq 4)$. [2 marks]