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Other Questions

(Gaeaf 2007)

5. (a) It is known that 35% of a certain type of seed produce red flowers. A gardener buys 20 of these seeds. Find the probability that
- (i) exactly 5 seeds produce red flowers,
 - (ii) fewer than 8 seeds produce red flowers. [5]
- (b) It is also known that 3% of these seeds produce yellow flowers. The manager of a Garden Centre buys 500 of these seeds. Use a distributional approximation to find the probability that
- (i) exactly 10 seeds produce yellow flowers,
 - (ii) more than 12 seeds produce yellow flowers. [5]

(Haf 2007)

3. The random variable X is such that $E(X) = 5$ and $\text{Var}(X) = 4$. The random variable Y is defined by $Y = aX - b$ where a, b are positive constants. Given that $E(Y) = 0$ and $\text{Var}(Y) = 1$, find the values of a and b . [6]

(Haf 2010)

2. The random variable X has mean 4 and variance 2. The random variable Y is given by

$$Y = 3X - 1.$$

- (a) Find the mean and variance of Y . [4]
 - (b) Hence find the value of $E(Y^2)$. [2]
5. Jack is taking part in a quiz programme. For each question in the quiz, four alternative answers are given, only one of which is correct. Jack has probability 0.6 of knowing the correct answer to a question, and when he does not know the correct answer he chooses one of the four answers at random.
- (a) Calculate the probability that Jack gives the correct answer to a question. [3]
 - (b) Given that Jack gave the correct answer to a question, find the probability that he knew the correct answer. [3]

(Haf 2012)

2. The random variable X has mean 8 and variance 2.
- (a) Find the value of $E(X^2)$. [2]
 - (b) If $Y = 3X + 4$, find the mean and variance of Y . [4]

(Haf 2014)

8. Ann and Brenda each have a calculator which can generate a single digit random number from the set $\{1, 2, 3, 4, 5, 6, 7, 8\}$. They each generate a random number on their calculator.
- (a) Find the probability that the two numbers are equal. [2]
 - (b) Find the probability that the sum of the two numbers is 12. [3]
 - (c) Given that the sum of the two numbers is 12, find the probability that the two numbers are equal. [2]

(Haf 2017)

2. The random variable X has mean 10 and standard deviation 2.
- (a) Find the value of $E(X^2)$. [2]
 - (b) If $Y = 2X + 3$, find the mean and the variance of Y . [4]

(Haf 2018)

1. The random variable X has mean 12 and variance 9.
- (a) Find the value of $E(X^2)$. [2]
 - (b) If $Y = 4X - 3$, find the mean and the standard deviation of Y . [4]