AQA – Discrete random variable and expectation – A2 Further Mathematics Statistics

1. June/2021/Paper_7367/3S/No.1

The discrete uniform distribution X can take values 1, 2, 3, ..., 10

Find $P(X \geq 7)$

Circle your answer.

[1 mark]

0.3 0.4 0.6 0.7

2. June/2021/Paper_7367/3S/No.2

The random variable X has variance $\text{Var}(X)$

Which of the following expressions is equal to $\text{Var}(aX + b)$, where a and b are non-zero constants?

Circle your answer.

[1 mark]

$a\,\text{Var}(X)$ $\quad$ $a\,\text{Var}(X) + b$ $\quad$ $a^2\,\text{Var}(X)$ $\quad$ $a^2\,\text{Var}(X) + b$

3. June/2021/Paper_7367/3S/No.3

In a game, it is only possible to score 10, 20 or 30 points.

The probability of scoring 20 points is twice the probability of scoring 30 points.

The probability of scoring 20 points is half the probability of scoring 10 points.

(a) Find the mean points scored when the game is played once, giving your answer to two decimal places.

[3 marks]

(b) Mina plays the game.

Her father, Michael, tells her that he will multiply her score by 5 and then subtract 10

He will then give her the value he has calculated in pence rounded to the nearest penny.

Calculate the expected value in pence that Mina receives.

[2 marks]