**AQA – Probability – A2 Mathematics P3**

**1.** June/2021/Paper_7357/3/No.14

$A$ and $B$ are two events such that

$$P(A \cap B) = 0.1$$

$$P(A' \cap B') = 0.2$$

$$P(B) = 2P(A)$$

**(a)** Find $P(A)$

**[4 marks]**

**(b)** Find $P(B|A)$

**[2 marks]**

**(c)** Determine if $A$ and $B$ are independent events.

**[1 mark]**

**2.** June/2021/Paper_7357/3/No.16

The discrete random variable $X$ has the probability function

$$\mathrm{P}(X = x) = \begin{cases} c(7 - 2x) & x = 0, 1, 2, 3 \\ k & x = 4 \\ 0 & \text{otherwise} \end{cases}$$

where $c$ and $k$ are constants.

**(a)** Show that $16c + k = 1$

**[2 marks]**

**(b)** Given that $\mathrm{P}(X \geq 3) = \frac{5}{8}$

find the value of $c$ and the value of $k$.

**[2 marks]**