Sl: Cwestiynau Eraill

Gaeaf 2007

(5) (a) $X \sim B(20, 0.35)$ Binomial

(i) $P(X=5) = {}^{20}C_5\ 0.35^5\ (1-0.35)^{20-5}$

$= {}^{20}C_5\ 0.35^5 \times 0.65^{15}$

$= 0.1272$ i 4 lle degol

(Hefo Tablau: $P(X=5) = P(X \leq 5) - P(X \leq 4)$

$= 0.2454 - 0.1182$

$= 0.1272$.)

(ii) $P(X < 8) = P(X \leq 7)$

$= 0.6010$ [Tablau]

(b) Blodau Melyn: $Y \sim B(500, 0.03)$ Binomial

Brasamcan Poisson: $Y \sim Po(500 \times 0.03)$

$Y \sim Po(15)$

(i) $P(Y=10) = \dfrac{15^{10}\ e^{-15}}{10!}$

$= 0.0486$ i 4 lle degol.

(Hefo Tablau: $P(Y=10) = P(Y \leq 10) - P(Y \leq 9)$

$= 0.1185 - 0.0699$

$= 0.0486$.)

(ii) $P(Y > 12) = 1 - P(Y \leq 12)$

$= 1 - 0.2676$ [Tablau]

$= 0.7324$.

Haf 2007

③ $E(X) = 5$ $\quad Var(X) = 4$

$E(Y) = 0$ $\quad Var(Y) = 1$ $\quad Y = aX - b$

Nawr $E(Y) = aE(X) - b$

$0 = a(5) - b$

$0 = 5a - b$

$Var(Y) = a^2 Var(X)$

$1 = a^2(4)$

$1 = 4a^2$

$4a^2 = 1$

$a^2 = \frac{1}{4}$

$a = \pm\sqrt{\frac{1}{4}}$

$a = \pm \frac{1}{2}$

ond mae a, b yn bositif

felly $a = \frac{1}{2}$

Felly $0 = 5(\frac{1}{2}) - b$

$b = 2\frac{1}{2}$

Haf 2010

② $E(X) = 4$ $\quad Var(X) = 2$

$Y = 3X - 1$

(a) $E(Y) = 3E(X) - 1$

$E(Y) = 3 \times 4 - 1$

$E(Y) = 11$

$Var(Y) = 3^2 Var(X)$

$Var(Y) = 9 \times 2$

$Var(Y) = 18$

(b) $Var(Y) = E(Y^2) - [E(Y)]^2$

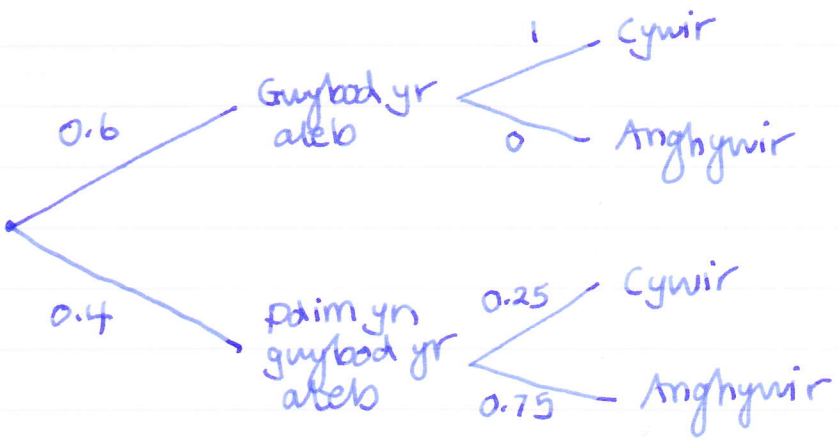
$18 = E(Y^2) - 11^2$

$18 = E(Y^2) - 121$

$18 + 121 = E(Y^2)$

$E(Y^2) = 139$

(5)



(a) P(siôn yn rhoi ateb cywir)
$= 0.6 \times 1 + 0.4 \times 0.25$
$= 0.6 + 0.1$
$= 0.7.$

(b) P(Gwybod yr ateb cywir | Wedi ateb yn gywir)
$= \dfrac{P(\text{Gwybod yr ateb cywir} \cap \text{Wedi ateb yn gywir})}{P(\text{Wedi ateb yn gywir})}$
$= \dfrac{0.6 \times 1}{0.7.}$
$= \frac{6}{7}.$

Haf 2012

(2) (a) $E(X) = 8 \quad Var(X) = 2$
$Var(X) = E(X^2) - [E(X)]^2$
$2 = E(X^2) - 8^2$
$2 = E(X^2) - 64$
$2 + 64 = E(X^2)$
$E(X^2) = 66$

(b) $Y = 3X + 4$
$E(Y) = 3E(X) + 4$
$E(Y) = 3 \times 8 + 4$
$E(Y) = 28$

$Var(Y) = 3^2 Var(X)$
$Var(Y) = 9 \times 2$
$Var(Y) = 18$

S1 Haf 2017

2) $E(X) = 10$ $\quad Var(X) = 2^2$

$Var(x) = 4$

a) $Var(X) = E(X^2) - [E(X)]^2$

$4 = E(X^2) - 10^2$

$4 + 100 = E(X^2)$

$E(X^2) = 104$

b) $Y = 2X + 3$

$E(Y) = 2E(X) + 3$

$E(Y) = 2 \times 10 + 3$

$E(Y) = 23$

$Var(Y) = 2^2 \times Var(x)$

$Var(Y) = 4 \times 4$

$Var(Y) = 16$

S1 Haf 2018

1) Mae'r hapnewidyn X efo cymedr 12 ar amrywiant 9

$E(X) = 12$ $\quad$ $\mathrm{Var}(X) = 9$

a) $\mathrm{Var}(X) = E(X^2) - [E(X)]^2$

$9 = E(X^2) - 12^2$

$144 + 9 = E(X^2)$

$E(X^2) = \underline{153}$

b) $Y = 4X - 3$

$E(Y) = 4E(X) - 3$

$= 4 \times 12 - 3$

$= \underline{45}$

$\mathrm{Var}(Y) = 4^2 \times \mathrm{Var}(X)$

$= 16 \times 9$

$= 144$

Gwyriad Safonol $(Y) = \sqrt{144}$

$= \underline{12}$