

SI: Diagram Venn

Graef 2005

$$\textcircled{4} \quad P(A) = 0.2 \quad P(B) = 0.6 \quad P(A|B) = 0.3$$

$$\text{(a)} \quad P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$0.3 = \frac{P(A \cap B)}{0.6}$$

$$0.3 \times 0.6 = P(A \cap B)$$

$$P(A \cap B) = 0.18$$

$$\text{(b)} \quad P(B|A) = \frac{P(B \cap A)}{P(A)}$$

$$P(B|A) = \frac{P(A \cap B)}{P(A)}$$

$$P(B|A) = \frac{0.18}{0.2}$$

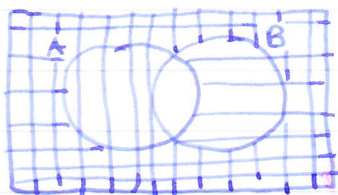
$$P(B|A) = 0.9$$

$$\text{(c)} \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = 0.2 + 0.6 - 0.18$$

$$P(A \cup B) = 0.62$$

(ch)



$$P(A' \cap B') = 1 - P(A \cup B)$$

$$P(A' \cap B') = 1 - 0.62$$

$$P(A' \cap B') = 0.38$$

Haf 2005

$$\textcircled{2} \quad (a) \quad (i) \quad P(A) = \frac{80}{150}$$

$$P(A) = \frac{8}{15}$$

$$(ii) \quad P(B|A) = \frac{P(B \cap A)}{P(A)}$$

$$P(B|A) = \frac{\frac{20}{150}}{\frac{8}{15}}$$

$$P(B|A) = \frac{1}{4}$$

$$(iii) \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = \frac{8}{15} + \frac{35}{150} - \frac{20}{150}$$

$$P(A \cup B) = \frac{19}{30}$$

$$(b) \quad P(A) \times P(B) = \frac{8}{15} \times \frac{35}{150}$$
$$= \frac{28}{225}$$

Nid yw hyn yn hafal i $P(A \cap B)$, sef $\frac{20}{150}$, felly nid yw A a B yn annibynnol.

Gaeaf 2006

$$\textcircled{2} \quad P(A) = 0.5 \quad P(A \cup B) = 0.7$$

$$(a) \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$0.7 = 0.5 + P(B) - 0$$

[cyd-anghyngwysol]

$$0.7 = 0.5 + P(B)$$

$$\underline{P(B) = 0.2}$$

$$(b) \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$0.7 = 0.5 + P(B) - P(A) \times P(B)$$

[annibynnol]

$$0.7 = 0.5 + P(B) - 0.5P(B)$$

$$0.7 = 0.5 + 0.5P(B)$$

$$0.2 = 0.5P(B)$$

$$\underline{P(B) = 0.4}$$

$$(c) P(B|A) = \frac{P(B \cap A)}{P(A)}$$

$$0.3 = \frac{P(B \cap A)}{0.5}$$

$$0.3 \times 0.5 = P(B \cap A)$$

$$P(B \cap A) = 0.15$$

Felly $P(A \cap B) = 0.15$.

$$\rightarrow P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$0.7 = 0.5 + P(B) - 0.15$$

$$0.7 = 0.35 + P(B)$$

$$\underline{P(B) = 0.35}$$

Haf 2006

$$(2) P(A) = 0.2 \quad P(B) = 0.6 \quad P(A \cup B) = 0.75$$

$$(a) P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$0.75 = 0.2 + 0.6 - P(A \cap B)$$

$$0.75 = 0.8 - P(A \cap B)$$

$$P(A \cap B) = 0.05$$

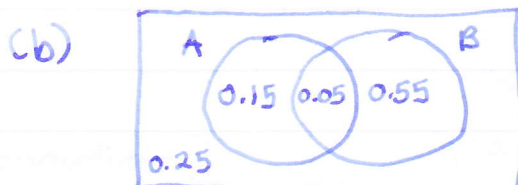
$$\text{Mae } P(A) \times P(B) = 0.2 \times 0.6$$

$$= 0.12$$

Gan fod $P(A) \times P(B) \neq P(A \cap B)$

$$(0.12 \neq 0.05)$$

nid yw A a B yn annibynnol.



$P(\text{union un o A a B yn digwydd})$

$$= 0.15 + 0.55$$

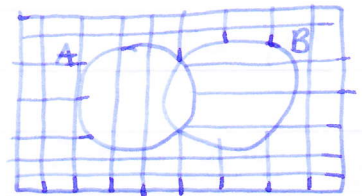
$$= 0.7$$

Gaeaf 2007

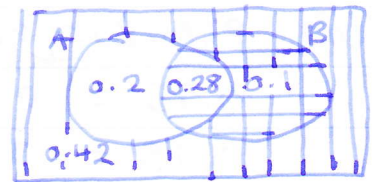
$$\textcircled{2} \quad P(A) = 0.48 \quad P(B) = 0.38 \quad P(A \cap B) = 0.28$$

$$\begin{aligned} \text{(a)} \quad P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\ P(A \cup B) &= 0.48 + 0.38 - 0.28 \\ P(A \cup B) &= \underline{0.58} \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad P(A' \cap B') &= 1 - P(A \cup B) \\ P(A' \cap B') &= 1 - 0.58 \\ P(A' \cap B') &= \underline{0.42} \end{aligned}$$



$$\begin{aligned} \text{(c)} \quad P(B|A') &= \frac{P(B \cap A')}{P(A')} \\ P(B|A') &= \frac{0.1}{1 - P(A)} \\ P(B|A') &= \frac{0.1}{0.52} \\ P(B|A') &= \underline{\frac{5}{26}} \end{aligned}$$



Haf 2007

$$\textcircled{1} \quad P(A) = 0.6 \quad P(B) = 0.3$$

$$\begin{aligned} \text{(a)} \quad P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\ P(A \cup B) &= P(A) + P(B) - P(A)P(B) \\ P(A \cup B) &= 0.6 + 0.3 - 0.6 \times 0.3 \\ P(A \cup B) &= \underline{0.72} \end{aligned}$$

[annibynnol]

$$\begin{aligned} \text{(b)} \quad P(\text{nid yw } A \text{ a } B \text{ yn diglyfdd}) &= 1 - P(A \cup B) \\ &= 0.28 \end{aligned}$$

$$\begin{aligned}
 \text{(c)} \quad P(A|A \cup B) &= \frac{P(A \cap (A \cup B))}{P(A \cup B)} \\
 &= \frac{P(A)}{P(A \cup B)} \\
 &= \frac{0.6}{0.72} \\
 &= \frac{5}{6}
 \end{aligned}$$

Graef 2008

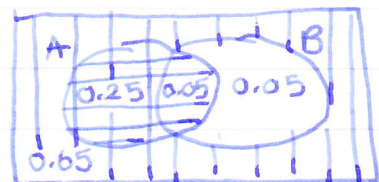
$$\text{(i)} \quad P(A) = 0.3 \quad P(B) = 0.1 \quad P(A \cup B) = 0.35$$

$$\begin{aligned}
 \text{(a)} \quad P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\
 0.35 &= 0.3 + 0.1 - P(A \cap B) \\
 0.35 &= 0.4 - P(A \cap B) \\
 \underline{P(A \cap B) = 0.05}
 \end{aligned}$$

$$\begin{aligned}
 \text{(b)} \quad P(A) \times P(B) &= 0.3 \times 0.1 \\
 &= 0.03
 \end{aligned}$$

Nid yw $P(A \cap B)$ yn hafal i $P(A) \times P(B)$
 ($0.05 \neq 0.03$) felly nid yw A a B yn annibynnol.

$$\begin{aligned}
 \text{(c)} \quad P(A|B^c) &= \frac{P(A \cap B^c)}{P(B^c)} \\
 &= \frac{0.25}{1 - P(B)} \\
 &= \frac{0.25}{0.9} \\
 &= \frac{5}{18}
 \end{aligned}$$



Haf 2008

② $P(A) = 0.2$ $P(A \cup B) = 0.4$

(a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$P(A \cup B) = P(A) + P(B) - P(A)P(B)$

[annibynnol]

$0.4 = 0.2 + P(B) - 0.2P(B)$

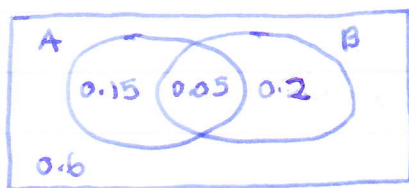
$0.4 = 0.2 + 0.8P(B)$

$0.2 = 0.8P(B)$

$P(B) = \frac{0.2}{0.8}$

$P(B) = 0.25$

(b)



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

$= 0.2 \times 0.25$

$= 0.05$

$P(\text{union un or ddau ddigwyddiad yn digwydd}) = 0.15 + 0.2$

$= 0.35$

(c) $P(A | \text{union un yn digwydd}) = \frac{P(A \cap \text{union un yn digwydd})}{P(\text{union un yn digwydd})}$

$= \frac{0.15}{0.35}$

$= \frac{0.15}{0.35}$

$= \frac{3}{7}$

Graef 2009

① $P(A) = 0.65$ $P(A \cup B) = 0.93$

(a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$P(A \cup B) = P(A) + P(B) - 0$

[cyd-anghyhnwysol]

$0.93 = 0.65 + P(B)$

$P(B) = 0.28$

(b) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$P(A \cup B) = P(A) + P(B) - P(A)P(B)$

[annibynnoi]

$0.93 = 0.65 + P(B) - 0.65P(B)$

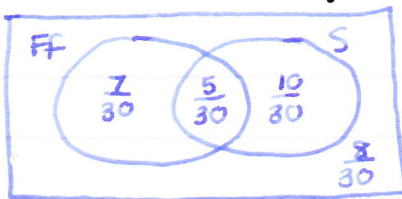
$0.93 = 0.65 + 0.35P(B)$

$0.28 = 0.35P(B)$

$P(B) = \frac{0.28}{0.35}$

$P(B) = 0.8$

② $P(F) = \frac{12}{30}$ $P(S) = \frac{15}{30}$ $P(F' \cap S') = \frac{8}{30}$



$P(F \cup S) = 1 - P(F' \cap S')$

$= 1 - \frac{8}{30}$

$= \frac{22}{30}$

(a) $P(F \cup S) = P(F) + P(S) - P(F \cap S)$

$\frac{22}{30} = \frac{12}{30} + \frac{15}{30} - P(F \cap S)$

$\frac{22}{30} = \frac{27}{30} - P(F \cap S)$

$P(F \cap S) = \frac{5}{30}$

(b) $P(F \cap S') = P(F) - P(F \cap S)$

$= \frac{12}{30} - \frac{5}{30}$

$= \frac{7}{30}$

Haf 2009

② $P(A) = 0.2$ $P(B) = 0.3$

(a) (i) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$P(A \cup B) = P(A) + P(B) - 0$

$P(A \cup B) = 0.2 + 0.3$

$P(A \cup B) = 0.5$

[Cyd-anghynhwysol]

(ii) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$P(A \cup B) = P(A) + P(B) - P(A)P(B)$

$P(A \cup B) = 0.2 + 0.3 - 0.2 \times 0.3$

$P(A \cup B) = 0.44$

[annibynnoi]

(b) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$0.4 = 0.2 + 0.3 - P(A \cap B)$

$0.4 = 0.5 - P(A \cap B)$

$P(A \cap B) = 0.1$

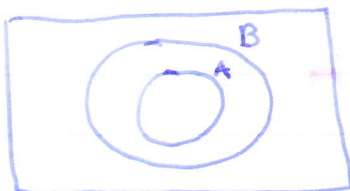
Nawr $P(A|B) = \frac{P(A \cap B)}{P(B)}$

$P(A|B) = \frac{0.1}{0.3}$

$P(A|B) = \frac{1}{3}$

(c) Y gwerth lleiaf posib ar gyfer $P(A \cup B)$ fydd 0.3.

Bydd hyn yn digwydd pan fydd $P(A \cap B) = 0.2$



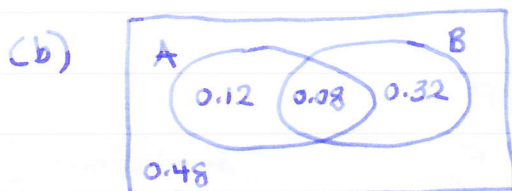
Gaeaf 2010

② $P(A) = 0.2$ $P(B) = 0.4$ $P(A \cup B) = 0.52$

(a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
 $0.52 = 0.2 + 0.4 - P(A \cap B)$
 $0.52 = 0.6 - P(A \cap B)$
 $P(A \cap B) = 0.08.$

Nawr $P(A) \times P(B) = 0.2 \times 0.4$
 $= 0.08$

Mae A a B yn annibynnol gan fod $P(A \cap B) = P(A) \times P(B)$.



$$P(\text{union un yn digwydd}) = 0.12 + 0.32$$
$$= 0.44$$

(c) $P(A | \text{union un yn digwydd}) = \frac{P(A \cap \text{union un yn digwydd})}{P(\text{union un yn digwydd})}$

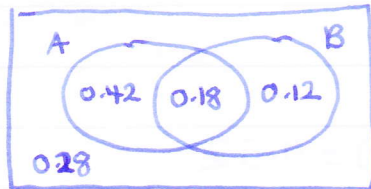
$$= \frac{0.12}{0.44}$$
$$= \frac{3}{11}$$

Haf 2010

① $P(A) = 0.6$ $P(B) = 0.3$

(a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
 $P(A \cup B) = P(A) + P(B) - P(A)P(B)$ [annibynnol]
 $P(A \cup B) = 0.6 + 0.3 - 0.6 \times 0.3$
 $P(A \cup B) = 0.72$

(b)



$$P(A \cup B^c) = 0.42 + 0.18 + 0.28$$

$$\underline{P(A \cup B^c) = 0.88}$$

Gaeaf 2011

② $P(A) = P(B) = p$, $P(A \cup B) = 0.64$

(a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$$P(A \cup B) = P(A) + P(B) - 0$$

[cyd-anghybnmysol]

$$0.64 = p + p$$

$$2p = 0.64$$

$$\underline{p = 0.32}$$

(b) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$$P(A \cup B) = P(A) + P(B) - P(A)P(B)$$

[annibynnol]

$$0.64 = p + p - p^2$$

$$p^2 - 2p + 0.64 = 0$$

$$25p^2 - 50p + 16 = 0$$

[felly $k=16$]

Datrys:

$$(5p - 2)(5p - 8) = 0$$

Unai $5p - 2 = 0$

neu $5p - 8 = 0$

$$5p = 2$$

$$5p = 8$$

$$p = \frac{2}{5}$$

$$p = \frac{8}{5}$$

$$p = 0.4$$

$$p = 1.6$$

Mae p yn debygolrwydd ($0 \leq p \leq 1$)

felly rhaid bod $p = 0.4$

Haf 2011

$$\textcircled{3} \quad P(A) = 0.25 \quad P(B) = 0.4 \quad P(A' \cap B') = 0.45$$

$$\text{(a)} \quad P(A \cup B) = 1 - P(A' \cap B')$$

$$P(A \cup B) = 1 - 0.45$$

$$P(A \cup B) = 0.55$$

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$0.55 = 0.25 + 0.4 - P(A \cap B)$$

$$0.55 = 0.65 - P(A \cap B)$$

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

Nid yw A a B yn gyd-arghynhwysol gan fod $P(A \cap B) \neq 0$.

$$\text{(b)} \quad P(A) \times P(B) = 0.25 \times 0.4$$

$$= 0.1$$

Mae A a B yn annibynnol gan fod $P(A \cap B) = P(A) \times P(B)$.

Gaeaf 2012

$$\textcircled{4} \quad P(A) = 0.4 \quad P(B) = 0.2 \quad P(A|B) = 0.3$$

$$\text{(a)} \quad P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$0.3 = \frac{P(A \cap B)}{0.2}$$

$$0.2$$

$$0.3 \times 0.2 = P(A \cap B)$$

$$\underline{P(A \cap B) = 0.06}$$

$$\text{(b)} \quad P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = 0.4 + 0.2 - 0.06$$

$$\underline{P(A \cup B) = 0.54}$$

$$\begin{aligned}
 (c) \quad P(B|A) &= \frac{P(B \cap A)}{P(A)} \\
 &= \frac{P(A \cap B)}{P(A)} \\
 &= \frac{0.06}{0.4} \\
 \underline{P(B|A) = 0.15}
 \end{aligned}$$

Haf 2012

$$(1) \quad P(A) = 0.5 \quad P(B) = 0.3$$

$$\begin{aligned}
 (a) \quad (i) \quad P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\
 P(A \cup B) &= P(A) + P(B) - 0 \\
 P(A \cup B) &= 0.5 + 0.3 \\
 \underline{P(A \cup B) = 0.8}
 \end{aligned}$$

[Cyd-anghynhwysol]

$$\begin{aligned}
 (ii) \quad P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\
 P(A \cup B) &= P(A) + P(B) - P(A)P(B) \\
 P(A \cup B) &= 0.5 + 0.3 - 0.5 \times 0.3 \\
 \underline{P(A \cup B) = 0.65}
 \end{aligned}$$

[Cannibynnol]

$$\begin{aligned}
 (b) \quad P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\
 0.7 &= 0.5 + 0.3 - P(A \cap B) \\
 0.7 &= 0.8 - P(A \cap B) \\
 \underline{P(A \cap B) = 0.1}
 \end{aligned}$$

$$\begin{aligned}
 \text{Nawr } P(B|A) &= \frac{P(B \cap A)}{P(A)} \\
 &= \frac{P(A \cap B)}{P(A)} \\
 &= \frac{0.1}{0.5} \\
 \underline{P(B|A) = 0.2}
 \end{aligned}$$

Graef 2013

① $P(A) = 0.2$ $P(A \cup B) = 0.4$

(a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$$P(A \cup B) = P(A) + P(B) - P(A)P(B) \quad \text{[Cannibynnol]}$$

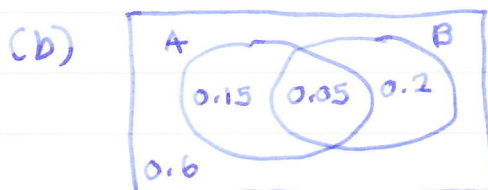
$$0.4 = 0.2 + P(B) - 0.2P(B)$$

$$0.4 = 0.2 + 0.8P(B)$$

$$0.2 = 0.8P(B)$$

$$P(B) = \frac{0.2}{0.8}$$

$$P(B) = \underline{0.25}$$



$$P(A \cap B) = 0.2 \times 0.25 \\ = 0.05$$

$$P(\text{union un yn digwydd}) = 0.15 + 0.2 \\ = \underline{0.35}$$

Itaf 2013

① $P(A) = 0.25$ $P(A \cup B) = 0.4$

(a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$$P(A \cup B) = P(A) + P(B) - 0$$

[Cyd-anghyntwysol!]

$$0.4 = 0.25 + P(B)$$

$$P(B) = \underline{0.15}$$

(b) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$$P(A \cup B) = P(A) + P(B) - P(A)P(B) \quad \text{[Cannibynnol]}$$

$$0.4 = 0.25 + P(B) - 0.25P(B)$$

$$0.4 = 0.25 + 0.75P(B)$$

$$0.15 = 0.75P(B)$$

$$P(B) = \frac{0.15}{0.75}$$

$$P(B) = \underline{0.2}$$

SI Graef 2014

① $P(A) = 0.5$ $P(B) = 0.2$ $P(A|B) = 0.4$

a) i) $P(A|B) = \frac{P(A \cap B)}{P(B)}$

$$0.4 = \frac{P(A \cap B)}{0.2}$$

$$0.4 \times 0.2 = P(A \cap B)$$

$$0.08 = P(A \cap B)$$

$$\underline{P(A \cap B) = 0.08}$$

ii) $P(B|A) = \frac{P(B \cap A)}{P(A)}$

$$= \frac{P(A \cap B)}{P(A)}$$

$$= \frac{0.08}{0.5}$$

$$P(B|A) = 0.16$$

b) Mae $P(A \cap B) > 0$ felly nid yw A a B yn
eiddanghynhysol.

SI Haf 2014

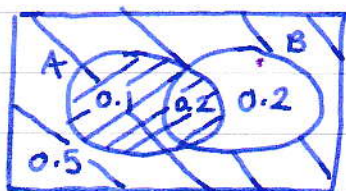
① $P(A) = 0.3$ $P(B) = 0.4$ $P(A \cup B) = 0.5$

(a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
 $0.5 = 0.3 + 0.4 - P(A \cap B)$
 $0.5 = 0.7 - P(A \cap B)$
 $P(A \cap B) = 0.7 - 0.5$
 $P(A \cap B) = 0.2$

Mae $P(A) \times P(B) = 0.3 \times 0.4$
 $= 0.12.$

Gan fod $P(A \cap B) \neq P(A) \times P(B)$
 $0.2 \neq 0.12$
nid yw A a B yn annibynnol.

(b) $P(A|B') = \frac{P(A \cap B')}{P(B')}$



$P(A \cap B') = 0.1$
 $P(B') = 1 - 0.4$
 $= 0.6$

Felly $P(A|B') = \frac{0.1}{0.6}$
 $P(A|B') = \frac{1}{6}$
(= 0.16)

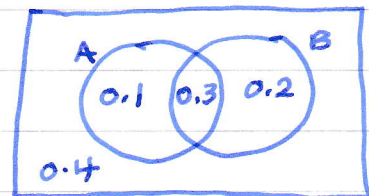
SI Haf 2015

2) $P(A) = 0.4$, $P(B) = 0.5$, $P(A \cup B) = 2 \times P(A \cap B)$.

a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
 $2 \times P(A \cap B) = 0.4 + 0.5 - P(A \cap B)$
 $3 \times P(A \cap B) = 0.9$
 $P(A \cap B) = 0.9 \div 3$
 $P(A \cap B) = 0.3$ ✓

b) $P(A|B) = \frac{P(A \cap B)}{P(B)}$
 $= \frac{0.3}{0.5}$
 $P(A|B) = 0.6$

c) $P(B|A^c) = \frac{P(B \cap A^c)}{P(A^c)}$
 $= \frac{P(B) - P(A \cap B)}{1 - P(A)}$
 $= \frac{0.5 - 0.3}{1 - 0.4}$
 $= \frac{0.2}{0.6}$
 $P(B|A^c) = \frac{1}{3}$



SI Haf 2016

① $P(A) = 0.3, P(B) = 0.4$

a) Mae A a B yn gydanghynhwysol.

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = 0.3 + 0.4 - 0$$

[cydanghynhwysol]

$$P(A \cup B) = 0.7.$$

b) Mae A a B yn annibynnol.

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = P(A) + P(B) - P(A) \times P(B) \quad [\text{annibynnol}]$$

$$P(A \cup B) = 0.3 + 0.4 - 0.3 \times 0.4$$

$$P(A \cup B) = 0.7 - 0.12$$

$$P(A \cup B) = 0.58.$$

c) $P(A|B) = 0.25$

$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

$$0.25 = \frac{P(A \cap B)}{0.4}$$

$$0.25 \times 0.4 = P(A \cap B)$$

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

$$\rightarrow P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$P(A \cup B) = 0.3 + 0.4 - 0.1$$

$$P(A \cup B) = 0.6$$

Atebion SI Haf 2017

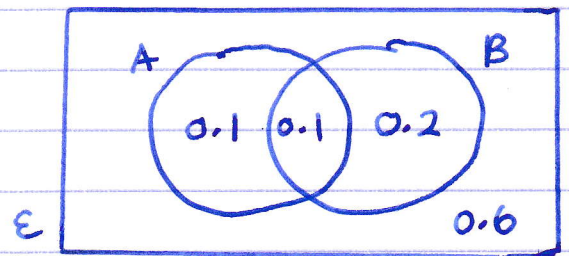
$$1) \quad P(A) = 0.2 \quad P(B) = 0.3 \quad P(A \cup B) = 0.4$$

$$\begin{aligned} a) \quad P(A \cup B) &= P(A) + P(B) - P(A \cap B) \\ 0.4 &= 0.2 + 0.3 - P(A \cap B) \\ 0.4 &= 0.5 - P(A \cap B) \\ P(A \cap B) &= 0.1 \end{aligned}$$

$$\begin{aligned} P(A) \times P(B) &= 0.2 \times 0.3 \\ &= 0.06 \end{aligned}$$

Nid yw A a B yn annibynnol gan fod $P(A)P(B) \neq P(A \cap B)$
 $0.06 \neq 0.1$

$$\begin{aligned} b) \quad i) \quad P(A' | B) &= \frac{P(A' \cap B)}{P(B)} \\ &= \frac{0.2}{0.3} \\ &= \frac{2}{3} \end{aligned}$$



$$\begin{aligned} ii) \quad P(A \cup B') &= 0.1 + 0.1 + 0.6 \quad \text{with edrych ar y} \\ &= 0.8 \quad \text{diagram Venn} \end{aligned}$$

$$\begin{aligned} \text{DULL 2: } P(A \cup B') &= P(A) + P(B') - P(A \cap B') \\ &= 0.2 + (1 - 0.3) - 0.1 \\ &= 0.2 + 0.7 - 0.1 \\ &= 0.8 \end{aligned}$$

SI Haf 2018

$$2) P(A \cup B) = 0.9, \quad P(A \cap B) = 0.4, \quad P(A) > P(B).$$

$$a) P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$0.9 = P(A) + P(B) - 0.4$$

$$1.3 = P(A) + P(B) \quad \text{--- (1)}$$

$$\text{Annibynnol} \Rightarrow P(A \cap B) = P(A) \times P(B)$$

$$0.4 = P(A) \times P(B)$$

$$P(A) = \frac{0.4}{P(B)} \quad \text{--- (2)}$$

Yn amnewid am $P(A)$ o (2) i (1):

$$1.3 = \frac{0.4}{P(B)} + P(B)$$

$$1.3P(B) = 0.4 + P(B)^2$$

$$13P(B) = 4 + 10P(B)^2$$

$$0 = 10P(B)^2 - 13P(B) + 4$$

$$0 = (5P(B) - 4)(2P(B) - 1)$$

$$\text{Naill ai } 5P(B) - 4 = 0 \quad \text{neu } 2P(B) - 1 = 0$$

$$5P(B) = 4$$

$$2P(B) = 1$$

$$P(B) = \frac{4}{5}$$

$$P(B) = \frac{1}{2}$$

$$P(B) = 0.8$$

$$P(B) = 0.5$$

Yn amnewid yn ôl i (2): $P(A) = \frac{0.4}{0.8}$ neu $P(A) = \frac{0.4}{0.5}$

$$P(A) = 0.5$$

$$P(A) = 0.8$$

Ond mae $P(A) > P(B)$ felly mae $P(A) = 0.8, P(B) = 0.5$

$$\begin{aligned} \text{b) } P(A|A \cup B) &= \frac{P(A \cap (A \cup B))}{P(A \cup B)} \\ &= \frac{P(A)}{P(A \cup B)} \\ &= \frac{0.8}{0.9} \\ &= \frac{8}{9} \end{aligned}$$