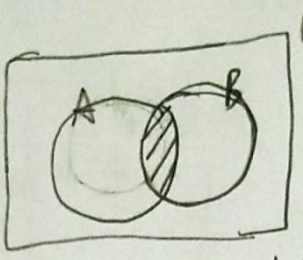
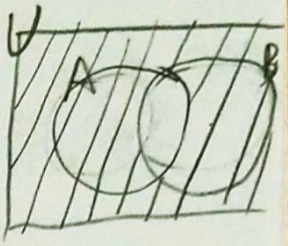
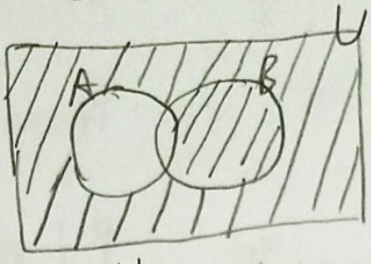
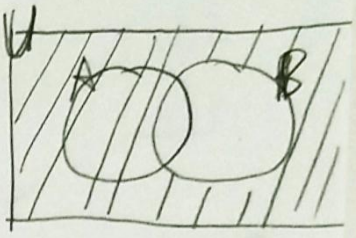
Nhan Vo
0177 71388

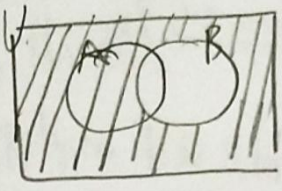
HW #1

① $A \cap B =$ 

$\overline{A \cap B} =$ 

$\bar{A} =$ 

$\bar{B} =$ 

$\bar{A} \cup \bar{B} =$ 

$= \overline{A \cap B}$

② $P(A) = \frac{1}{3}$, $P(B) = \frac{1}{2}$, $P(A \cup B) = \frac{3}{4}$

(a)
$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$
$$\Rightarrow P(A \cap B) = -\frac{3}{4} + \frac{1}{3} + \frac{1}{2} = \boxed{\frac{1}{12}}$$

(b) $P(A' \cup B') = ?$

$$P(A' \cup B') = P(\overline{A \cap B}) = 1 - P(A \cap B)$$
$$= 1 - \frac{1}{12} = \boxed{\frac{11}{12}}$$

(c) $P(A' \cap B) = ?$

$=$

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

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

$$\Rightarrow P(A' \cap B) = P(B) - P(A \cap B)$$

$$= \frac{1}{2} - \frac{1}{12} = \boxed{\frac{5}{12}}$$

(3) $P(\text{rabbit sell}) = 15\%$, $P(\text{perch sell}) = 20\%$

$P(\text{rabbit sell and perch sell}) = 5\%$

$\Rightarrow P(\text{rabbit sell or perch sell}) = ?$

$P(\text{rabbit sell} \cup \text{perch sell}) = P(\text{rabbit}) + P(\text{perch}) - P(r \cap p)$

$= 15\% + 20\% - 5\%$

$= \boxed{30\%}$

(4) Urn: 4 blue, 3 yellow

Remove 2

$P(\text{both blue}) = ?$

$P(\text{first blue}) = \frac{4}{7}$

$P(\text{Second blue}) = \frac{3}{6} = \frac{1}{2}$

$\Rightarrow P(\text{both blue}) = \frac{4}{7} \cdot \frac{1}{2} = \boxed{\frac{4}{14}}$

(5) With replacement $\Rightarrow P(\text{both blue}) = \left(\frac{4}{7}\right)^2 = \boxed{\frac{16}{49}}$

(6) $S = \{8, 1, 6, 1, 1, 6\}$ determine:

a) $\mu = \frac{\Sigma x}{N} = \frac{8+1+6+1+1+6}{6} = \boxed{3.8}$

b) median: $1, 1, 1, 6, 6, 8 \Rightarrow \frac{1+6}{2} = \boxed{3.5}$

c) Mode $= \boxed{1}$

d)

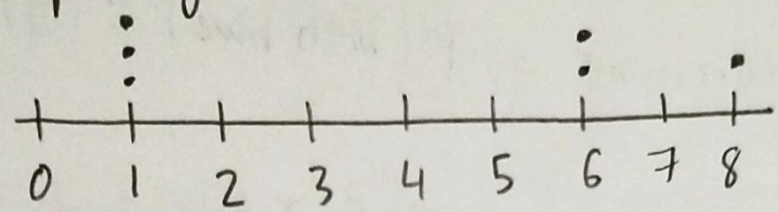
x	$x - \mu$	$(x-\mu)^2$
8	4.2	17.64
6	2.2	4.84
1	-2.8	7.84
1	-2.8	7.84
6	2.2	4.84
1	-2.8	7.84

$\Sigma(x-\mu)^2 = \boxed{50.84}$

$\sigma = \sqrt{\frac{50.84}{6}} = 2.91$

interval $(\mu-\sigma, \mu+\sigma) = (0.89, 6.71)$

dot plot of the data:



Part 2

① Sum of 2 dice that are 7

$S = \{(1,6), (2,5), (3,4), (5,2), (6,1), (4,3)\}$

Two dices $\Rightarrow$ 36 possibilities

$\Rightarrow$ Sum of 7 $= \frac{6}{36} = \boxed{\frac{1}{6}}$

② P(not 5 at all one dice) $= \frac{5}{6}$

P(not 5 at all 4 dices) $= (\frac{5}{6})^4 = \frac{625}{1296}$

P(at least one 5 of 4 dices) $= 1 - \frac{625}{1296}$

$= \boxed{\frac{671}{1296}}$

(3) $P(\text{from A}) = 22\%$

$P(\text{defective from A}) = 0.03$

$P(\text{defective from B}) = 0.07$

$P(\text{from B}) = 100\% - 22\% = 78\%$

$\Rightarrow P(D) = P(A \cap D) + P(B \cap D)$

$= P(A)\,P(D|A) + P(B)\,P(D|B)$

$= 0.22 * 0.03 + 0.78 * 0.07$

$= 0.0612 = \boxed{6.12\%}$