⟹ ☆ Homework 1.1 ✷ ✷ ✷ ✷ ✷
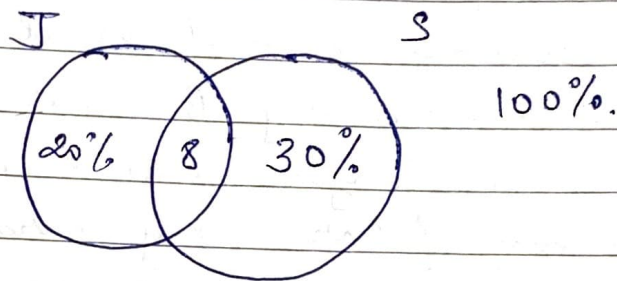
Ans a) Susan was at the bank last monday?
what's the Prob that Jerry was there
too ?

Ans.

J   S
                                    100%.
20%   8   30%

Bank,	Susan at bank.	Susan not at bank
Jerry at bank	8%	12%
Jerry not at bank	22%	58%

Answer of A) $\frac{8}{22+8}$ = 26.6%

b) Last Friday, Susan wasn't at the
bank. what the Probability that
Jerry was there?

Ans.

$P(jerry / Susan) = \frac{12}{58+12}$ = 17.1%

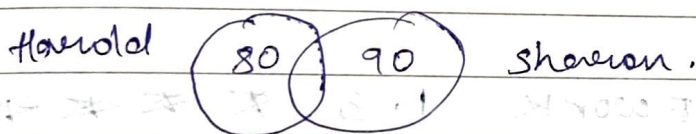c) Last wednesday at least one of them was at the bank. what is the Probability that both of them were there?

Ans:
$$\frac{P(\text{jerry} \cap \text{Susan})}{P(\text{jerry} \cup \text{Susan})} = \frac{8}{12+22+8} = 19.04\%$$

Homework 1.2 * * * * *

A) what is the Probability that only Harold gets a "B"?

Ans:

Harold   80   90   sharon.

$$P(\text{Harold}) = 80\% \qquad \left\} \quad P(\text{Harold} \cup \text{ Sharon}) = 91\% \right.$$
$$P(\text{sharon}) = 90\% \qquad$$

$$P(H \cup S) = P(H) + P(S) - P(H \cap S)$$
$$= P(H) + P(S) - P(H \cup S)$$
$$= 80 + 90 - 91$$
$$= 170 - 91 = 79.$$

a) $P(\text{only Harold}) = P(H) - P(H \cap S)$
$$= 80 - 79$$
$$= 1\%$$

b) what is the Probability that only sharon gets a "B"?

Ans. $P \text{ (only sharon)} = P(S) - P(H \cap S)$

$$= 90 - 79$$

$$= 11\%$$

c) what is the Probability that both won't get a "B"?

Ans. $P \text{ (none)} = 100 - P(H \cup S)$

$$= 100 - 91$$

$$= 9\%$$

⟹ ✱ HOME WORK   1·3. ✱ ✱ ✱ ✱ ✱

Are the events "Jerry is at the bank" and "Susan is at the bank" Independent?

Ans. $P(\text{Jerry}) = 20\%$ $P(\text{Susan}) = 30\%$

$P(\text{Susan})$ $P(J \cap S) = 8\%$

If A & B are Independent

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

Given - $P(J \cap S) = 8\%$; $P(J) * P(S) = 20 \times 30$

$$= 60\%$$

So it is not dependent.

You roll a dice.

a) Are the events "the sum is 6" and " the second die shows 5" independent?

Ans:

$$P(6) = \frac{5}{36} \qquad\qquad P(5) = \frac{6}{36} = \frac{1}{6}$$

$$P(\text{sum } 6 \cap \text{show } 5) = \frac{1}{36}$$

Independent Prob;

$$P(\text{sum } 6 \cap \text{show } 5) = \frac{5}{36} \times \frac{1}{6}$$

$$= \frac{5}{216}$$

∴ this is not Independent.

b) Are the events "the sum is 7" and "the first die shows 5" independent?

Ans:

$$P(\text{sum } 7) = \frac{6}{36} = \frac{1}{6}$$

$$P(\text{first die } 5) = \frac{6}{36} = \frac{1}{6}$$

$$P(\text{sum is } 7 \cap \text{shows } 5) = \frac{1}{6} * \frac{1}{6}$$

$$= \frac{1}{36}$$

∴ This event Independent.

☆☆ HOMEWORK 1.5 ☆ ☆ ☆ ☆☆

Texmor $Tx = 60\%$

$NJ = 10\%$

$AK = 100 - (60 + 10)$

$\quad = 30\%$

Finding oil .

$Tx = 60 \times \dfrac{30}{100} = 18\%$

$AK = 30 \times \dfrac{20}{100} = 6\%$

$NJ = \dfrac{10 \times 10}{100} = 1\%$

	Tx	AK	NJ	
oil not found	42%	24%	9%	75%
oil found	18%	6%	1%	25%

1) what is the Probability of finding oil?
Ans   25%

b)   The company decided to drill and found oil. what is the Probability that they drilled in Tx?

Ans. $\dfrac{18}{25} = 0.72 = 72\%$

⟹ ＊ HOME WORK   1.6 ＊ ＊ ＊＊＊

a) what is the probability that a passenger did not survive?

Ans'   Survive = 1490
Total = 2201

Not Survived = $\dfrac{1490}{2201}$ = 67.6%

b) what is the probability that a passinger was staying in the first class?

Ans'   First class = 325

P (staying in first class) = $\dfrac{325}{2201}$ = 14.7%

c) what is the probability that the passenger was staying in first class?

Ans'   Survived = 203

P (First class / Survived) = $\dfrac{203}{711}$

= 28.5%

d) Are survival and staying in the first class Independent?

Ans: $P(\text{Survival}) = \dfrac{711}{2201} = 32.3\%$

$P(\text{I}^{st}\text{ class}) = \dfrac{325}{2401} = 14.7\%$

$P(\text{I}^{st} / \text{Survived}) = \dfrac{203}{711} = 28.5\%$

$P(\text{Survived}) \neq P(S) + P(I^{st})$

Not Independent.

e) what is the Probability that the Passenger was staying in the first class and the Passenger was a child?

Ans: Survived = 711

No. of child first class = 6
  ↑ Survived

$P(c / \text{Survived}) = \dfrac{6}{711} = 0.008.$
  $= 0.84\%$

f) what is the Probability that the Passenger was an adult?

Ans: Survived = 654

$$P(Adult / Survived) = \frac{654}{711} = 91.9\%$$

g) Age and staying in the first class Independent?

Ans: $$P(1^{st} class / Survived) = \frac{203}{711}$$

$$= 28.5\%.$$

$$P(Adult) = \frac{654}{711} = 91.9\%$$

$$P(Adult / 1 class / Survived) = \frac{197}{711} = 27.7\%$$

P(1st class, Survived) & P(A/S) ≠
P(Adult / 1st class / Sur)

∴ NOT independent.

→ $$P(child / sur) = \frac{57}{711} = 8\%$$

→ $$P(child / 1^{st} class / Sur) = \frac{6}{711} = \frac{}{0.008}$$
$$= 0.84\%.$$

∴ Not Independent.