Statistics

Lecture 9

Feb 19-8:47 AM

Class Quiz 2:

Complete the chart below

class limits	Class MP	class F
12 – 20	16	3
21 – 29	25	7
30 – 38	34	11
39 – 47	43	4

(+9, +9, +9)

then find

1) $\bar{x} = 30.76 \approx \boxed{31}$

2) $S = 8.166 \approx \boxed{8}$

} Round to whole #

3) $n = \boxed{25}$

4) $S^2 = \boxed{\frac{6669}{100}}$

} Reduced fraction

Class MP → L1

class F → L2

STAT → CALC

1-Var Stats

List: L1

FreqList: L2

Calculate

L1, L2

Enter

VARS

5: Statistics

3: S_x

x^2 Math 1: ▶Frac

Enter

Mar 12-1:36 PM

Some review on probability

Given $P(A) = .4$

1) write in reduced fraction

$P(A) = .4 = \frac{4}{10} = \boxed{\frac{2}{5}}$

2) write in percent notation

$P(A) = .4(100)\% = \boxed{40\%}$

3) Find $P(\overline{A}) = 1 - P(A)$

$= 1 - .4 = \boxed{.6}$

Mar 12-2:01 PM

Consider a standard deck of playing cards.

52 cards, 26 Red, 12 face cards

If we randomly select one card, find

1) $P(\text{Red}) = \frac{26}{52} = \boxed{\frac{1}{2}}$

2) $P(\text{face}) = \frac{12}{52} = \boxed{\frac{3}{13}}$

3) $P(\text{Red and face}) = \frac{6}{52} = \boxed{\frac{3}{26}}$

6 face cards are red

4) $P(\text{Red or face}) = \frac{26 + 12 - 6}{52}$

$= \frac{32}{52} = \boxed{\frac{8}{13}}$

32 ÷ 52 MATH 1:▶Frac Enter

Mar 12-2:05 PM

SG 11

Addition Rule

Keyword OR $\quad P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

Single Action Event

ex: $P(A) = .4$, $P(B) = .5$, $P(A \text{ and } B) = .3$

1) $P(\overline{A}) = 1 - P(A)$
$= 1 - .4 = \boxed{.6}$

2) $P(\overline{B}) = 1 - P(B)$
$= 1 - .5 = \boxed{.5}$

3) $P(\overline{A \text{ and } B}) = 1 - P(A \text{ and } B)$
$= 1 - .3 = \boxed{.7}$

4) $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$
$= .4 + .5 - .3 = \boxed{.6}$

Mar 12-2:13 PM

$P(HB) = .65$

$P(FF) = .45$

$P(HB \text{ and } FF) = .3$

1) $P(\overline{HB}) = 1 - P(HB)$
$= 1 - .65$
$= \boxed{.35}$

2) $P(\overline{FF}) = 1 - P(FF)$
$= 1 - .45$
$= \boxed{.55}$

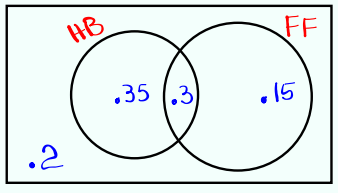
3) $P(HB \text{ or } FF) = P(HB) + P(FF) - P(HB \text{ and } FF)$
$= .65 + .45 - .3 = \boxed{.8}$

4) $P(\overline{HB \text{ or } FF}) = 1 - P(HB \text{ or } FF)$
$= 1 - .8 = \boxed{.2}$

Venn Diagram

$.65 - .3 = .35$

$.45 - .3 = .15$



Total = 1

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Mutually Exclusive Events

Disjointed Events

No overlap

If A and B are M.E.E., then $P(A \text{ and } B) = 0$

Suppose $P(A) = .7$, $P(B) = .1$, A & B are M.E.E.

1) $P(\bar{A}) = 1 - P(A) = 1 - .7 = .3$

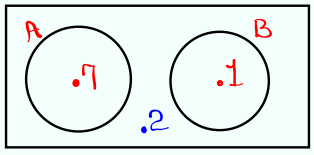
2) $P(\bar{B}) = 1 - P(B) = 1 - .1 = .9$

3) $P(A \text{ and } B) = 0$

4) $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B) = .7 + .1 - 0 = .8$

5) Construct the Venn Diagram.

Total = 1



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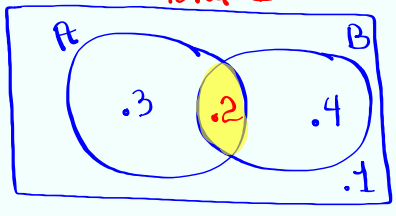
De Morgan's Law

$P(\bar{A} \text{ and } \bar{B}) = P(\overline{A \text{ or } B})$

$P(\bar{A} \text{ or } \bar{B}) = P(\overline{A \text{ and } B})$

Total 1



$P(A \text{ and } B) = .2$

$P(A \text{ or } B) = .9$

$P(\bar{A} \text{ and } \bar{B}) = P(\overline{A \text{ or } B}) = 1 - .9 = .1$

$P(\bar{A} \text{ or } \bar{B}) = P(\overline{A \text{ and } B}) = 1 - .2 = .8$

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