

Statistics

Lecture 5



Feb 19-8:47 AM

Class Quiz 3

Given the chart below

class MP	class F
16	7
25	10
34	13
43	10

class MP \rightarrow L1

class F \rightarrow L2

[STAT] \rightarrow CALC

1:1-Var Stats

Menu

List: L1

Freq List: L2

[Calculate]

Find

$$1) \bar{x} = 30.85 \approx 31$$

$$2) S = 9.461 \approx 9$$

$$3) n = 40$$

$$4) S^2 = \frac{11637}{130}$$

} Round to whole number

} Reduced fraction

[VARS] [5: Statistics] [3: Sx]

[χ^2] [MATH] [1: \rightarrow Frac] [Enter]

No Menu

L1, L2

[Enter]

Mar 28-7:51 AM

Class Quiz 2

Using Calc.

Consider the Sample below

12 15 18 10

16 15 10 8

20 16 14 15

Find

1) $\bar{x} \approx 14$

2) $S \approx 4$

3) $S^2 = \frac{1619}{132}$

} Round to
whole #} Reduced
fractionStore \rightarrow L1[STAT] \rightarrow CALC
1:1-Var Stats

With Menu { List: L1
FreqList: [Clear]
[Calculate] }

No Menu
L1 [Enter]

[VARS]
5: Statistics
3: Sx
x² [MATH]
1: frac [Enter]

Mar 21-10:57 AM

Intro. to Probabilities

SG 10

 $E \rightarrow$ desired event (outcome) $P(E) \rightarrow$ Probability that event E happens

$$P(E) = \frac{\text{Total \# of all desired outcomes}}{\text{Total \# of all possible outcomes}}$$

Acceptable answers:

1) Reduced fraction

2) Round to 3-decimal places

3) Scientific Notations

Mar 28-8:17 AM

A class of 20 students has 12 females and 8 males.

If we randomly select one student, find the prob. that is a female.

$$P(\text{Female}) = \frac{12}{20} = \frac{3}{5} = .6$$

Mar 28-8:21 AM

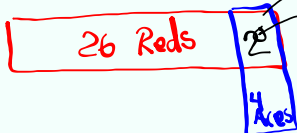
A standard deck of playing cards has 52 cards, 26 red, 12 face, and 4 aces.

If we randomly select one card,

$$1) P(\text{Red}) = \frac{26}{52} = \frac{1}{2} = .5 \quad 2) P(\text{ace}) = \frac{4}{52} = \frac{1}{13} \approx .077$$

3) $P(\text{Red ace})$

$$P(\text{Red and ace}) = \frac{2}{52} = \frac{1}{26} \approx .038$$



$$4) P(\text{Red or ace}) = \frac{26 + 4 - 2}{52} = \frac{28}{52} = \frac{7}{13} \approx .538$$

Double Count

Mar 28-8:23 AM

Do You Support mass deportation?

	Yes	No	Total
Democrats	30	70	100
Republicans	80	20	100
Independents	20	30	50
Total	130	120	250

If one person
is randomly
Selected,

$$1) P(\text{Yes}) = \frac{13}{250} = \boxed{\frac{13}{25}}$$

$$2) P(\text{Republican}) = \frac{100}{250} = \boxed{\frac{2}{5}}$$

$$3) P(\text{Republican and Yes}) = \frac{80}{250} = \boxed{\frac{8}{25}}$$

$$4) P(\text{Republican or Yes}) = \frac{100 + 130 - 80}{250} = \frac{150}{250} = \boxed{\frac{3}{5}}$$

Mar 28-8:34 AM

$E \rightarrow$ Desired event

$P(E) \rightarrow$ Prob. that E happens

$\bar{E} \rightarrow E\text{-bar, not } E, E\text{-Complement}$

$$\left. \begin{array}{l} P(E) + P(\bar{E}) = 1 \\ P(\bar{E}) = 1 - P(E) \end{array} \right\} \text{Complement Rule}$$

$$P(\text{Rain}) = 0.2 \quad P(\bar{\text{Rain}}) = 1 - P(E) = 1 - 0.2 = \boxed{0.8}$$

$$P(E) = \frac{3}{40}$$

$$1) \text{ Find } P(E) \text{ in decimal. } \boxed{P(E) = 0.075}$$

$$2) \text{ Find } P(E) \text{ in percent notation. } P(E) = 0.075(100)\% = \boxed{7.5\%}$$

$$3) \text{ Find } P(\bar{E}) \text{ in reduced fraction.}$$

$$P(\bar{E}) = 1 - P(E) = 1 - \frac{3}{40} = \frac{37}{40}$$

$$1 \div 3 \div 40 \text{ [Math] } 1 \div \text{frac} \text{ [Enter]}$$

Mar 28-8:44 AM

Some Prob. rules & language

1) $0 \leq P(E) \leq 1$

2) $\sum P(E) = 1$

3) $P(E) = 1 \iff$ Sure event

4) $P(E) = 0 \iff$ Impossible event

5) $0 < P(E) \leq .05 \iff$ Rare event

Mar 28-8:51 AM

Select one number from

1, 2, 3, 4,, 37, 38, 39, 40

1) $P(\text{Select } 2) = \frac{1}{40} = \boxed{.025}$
 \searrow Rare event

2) $P(\text{Select 5 or below}) = \frac{5}{40} = \frac{1}{8} = \boxed{.125}$

3) $P(\text{select 35 or more}) = \frac{6}{40} = \frac{3}{20} = \boxed{.15}$
35 36 37 38 39 40

4) $P(\text{Select multiple of 3}) = \frac{13}{40} = \boxed{.325}$

3 6 9 12
 15 18 21 24
 27 30 33 36
 39

Mar 28-8:56 AM

If we randomly select one person, find the prob. that he/she has a birthday

1) today $\frac{1}{365}$

2) This week $\frac{1}{52}$

3) This month $\frac{1}{12}$

Mar 28-9:02 AM

Class Quiz 4

x	y
2	6
3	10
4	10
5	12
8	15

Find

1) $a \approx 4.6$

2) $b \approx 1.4$

3) $r^2 \approx 91\%$

4) $r \approx .952$

} Round to
1-dec

} whole %

} 3-decimal
places

Mar 28-9:06 AM