

Chapter 11 Study guide

11-1 through 11-4

$$① {}_{23}P_6 = \frac{23!}{(23-6)!} = \frac{23!}{17!} = 23 \cdot 22 \cdot 21 \cdot 20 \cdot 19 \cdot 18$$

$$② {}_{15}C_8 = \frac{15!}{8!(7!)} = \frac{15 \cdot 14 \cdot 13 \cdot 12 \cdot 11 \cdot 10 \cdot 9 \cdot 8!}{8! \cdot 7!} = \frac{72,681,840}{81,720} = 889$$

$$③ {}_4P_2 = \frac{4!}{(4-2)!} = \frac{4!}{2!} = 4 \cdot 3 = 12$$

$$④ {}_7C_4 = \frac{7!}{4!(3)!} = \frac{7 \cdot 6 \cdot 5 \cdot 4!}{4! \cdot 3!} = \frac{7 \cdot 6 \cdot 5}{6} = 35$$

$$⑤ P(1, 3 \text{ or } 4) = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$$

⑥ $P(2 \text{ or odd}) = \frac{4}{6} = \frac{2}{3}$

⑦ $P(6) = \frac{1}{6}$

$$⑥ P(C) = \frac{2}{5} \quad P(D) = \frac{1}{3} \quad P(C \text{ and } D) = \frac{0}{21}$$

$$⑦ P(X) = \frac{6}{6} \quad P(Y) = \frac{1}{9} \quad P(X \text{ or } Y) = \frac{5}{6} + \frac{1}{9} = \frac{20}{36} + \frac{4}{36} = \frac{34}{36} = \frac{17}{18}$$

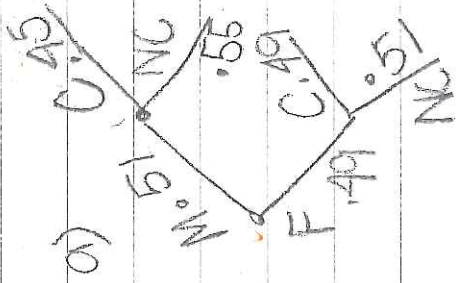
⑧ Independent ⑨ Dependent

$$⑩ P(\text{multiple 4} | \text{even}) = \frac{14}{24} = \frac{7}{12} = \frac{6}{12} + \frac{1}{12} = \frac{7}{12} \neq \frac{1}{2}$$

24 6 10 12 14 16 18 20 22 24
 even = 12 14 16 18 20 22 24 both = 6 12 18 24

$$\textcircled{11} P(\text{men} | \text{sales}) = \frac{2588}{2588 + 3213} = .4461 = 44.61\%$$

$$\textcircled{12} P(\text{women and laborers}) = \frac{1432}{19121} = 7.49\%$$



$$\textcircled{13} \text{ b) } P(\text{concert}) = P(\text{M and C}) + P(\text{F and C})$$

$$= (.51)(.45) + (.49)(.49)$$

$$= .4696$$

$$= 46.96\%$$

$$\text{c) } P(\text{F} | \text{NG}) = \frac{P(\text{F and NG})}{P(\text{NG})}$$

$$= \frac{(.49)(.51)}{(.49)(.51) + (.51)(.55)}$$

$$= 47.12\%$$

$$\text{d) } P(\text{C} | \text{M}) = \frac{P(\text{C and M})}{P(\text{M})} = \frac{(.51)(.45)}{.51} = .45\%$$

$\textcircled{14}$ $4P_2$ + Pairs of two from four objects such that the order matters

$4C_2$ - Pairs of two from four objects such that order does not matter

$\textcircled{15}$ $P(B|A)$ is the probability of B given that A happened, $P(A \text{ and } B)$ is the probability of both happening simultaneously.

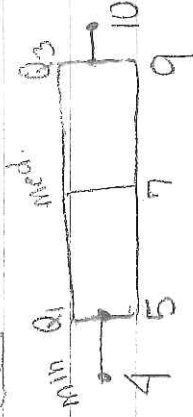
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- Q1 4 5 5 6 7 7 7 9 10 10

1. mean = $\frac{\text{sum}}{n} = \frac{77}{11} = 7$

median = 7

mode = 7



mean!

x	\bar{x}	$x - \bar{x}$	$(x - \bar{x})^2$
5	11.25	-6.25	39.0
8	11.25	-3.25	10.6
10	11.25	.75	.56
15	11.25	3.75	14.1
17	11.25	5.75	33.1
12	11.25	.75	.56
14	11.25	2.75	7.56
7	11.25	-4.25	18.06

2. *use calculator or ...

$\sum (x - \bar{x})^2 = 123.54$

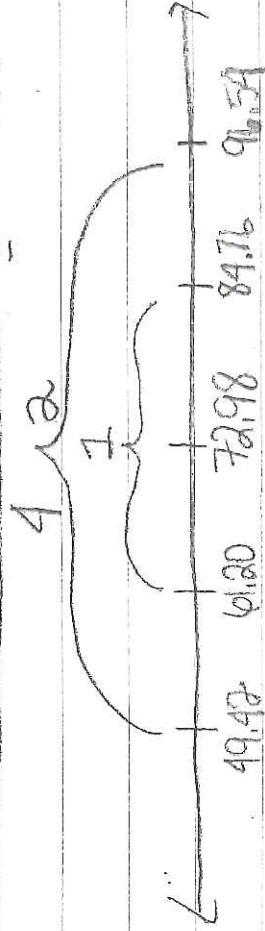
$\frac{\sum (x - \bar{x})^2}{n} = 15.4$ (variance)

$\sqrt{15.4} = 3.9$ (standard dev)

Calc (more accurate)

$6 = 3.929...$
 $6^2 = 15.437...$

3. $72.42 + 91.50 + 58.99 + 69.02 = 72.98$



2 standard deviation!

