Name Ms. D

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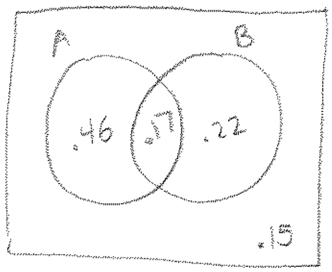
CC Algebra 2

Module 4 Regents Review – Probability and Statistics

1. If $P(A) = 63\%$ $P(B) = 39\%$ $P(A \text{ and } B) = 17\%$

a. Draw a Venn diagram and a hypothetical 1000 two way table to represents this information



	B	Not B	Total
A	170	460	630
Not A	220	150	370
Total	390	610	1000

b. Find $P(A / B)$

$\frac{170}{390} \approx .436$

c. Find $P(B / A)$

$\frac{170}{630} \approx .270$

d. Find $P(A \text{ or } B)$

$\frac{170+460+220}{1000} = .85$

e. Are A and B independent events? Explain.

$P(A) \neq P(A|B)$
$.63 \neq .436$

OR

$P(B) \neq P(B|A)$
$.39 \neq .270$

OR

$P(A \text{ and } B) \neq P(A) \cdot P(B)$
$.17 \neq (.63)(.39)$
$.2457$

A and B are not independent because these probabilities are NOT equal

2. Two versions of a standardized test are given an April and a May version. The statistics for the April version show a mean score of 510 and a standard deviation of 20. The statistics for the May version score of 515 and a standard deviation of 24. Assume the scores are normally distributed. Jack took the April version and scored in the interval 550-590 . What is the probability, to the nearest ten thousandth that a test paper selected at random from the April version scored in the same interval?

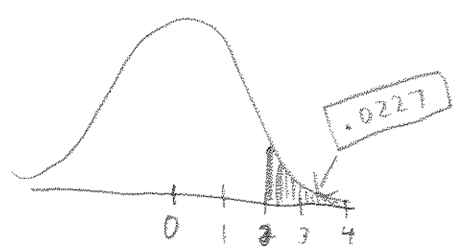
APRIL
mean = 510
SD = 20
Normal

MAY
mean = 515
SD = 24
Normal

Jack - April
550-590

$z = \frac{550-510}{20} = 2$

$z = \frac{590-510}{20} = 4$



Jill took the May version of the test, in what interval must she have scored to claim that she scored as well as Jack?

Jill - May

$2 = \frac{X-515}{24}$

$48 = X - 515$

$563 = X$

$4 = \frac{X-515}{24}$

$611 = X$

Interval

$\boxed{563-611}$

Green Review Book Questions

Test 5 #18

2·2·2·2 = 16 poss.

*BBGG	*GGBB
*BGBG	*GBGB
*BGGB	*GBBG
BBBB	GGGG
BBBG	GGGB
BBGB	GGBG
BGBB	GBGG
GBBB	BGGG

$\frac{6}{16} = \frac{3}{8}$

CHOICE (1)

Test 6 #1

	Female	Male	Total
Insta	216	172	388
No Insta	54	68	122
Total	270	240	510

P(instashop | female) = $\frac{216}{270}$ = .8

CHOICE (1) 80% / conditional Prob

Test 6 #7

P(brown) = .65 P(not brown) = .35

P(not brown, not brown) = (.35)(.35) = .1225

CHOICE (3)

Test 6 #9

	Neg Parent	Not neg Parent	Total
Neg Peer	80	80	160
Not Neg Peer	270	570	840
Total	350	650	1000

CHOICE (3)

P(neg parent or neg peer) = $\frac{80+80+270}{1000} = \frac{430}{1000}$ = .43

Test 6 #18

P(MAC) = .12 P(≥ 2 TV's) = .72

Independent

P(MAC and ≥ 2 TV's) = (.12)(.72)

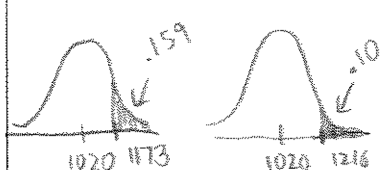
.0864

CHOICE (1)

Test 6 #19

mean = 1020

SD = 153



~~(1)~~ (2)

Test 6 #24

BAD QUESTION

Test 6 #29

	Female	Male	Total
Sport	85	165	250
No sport	255	495	750
Total	340	660	1000

(a) Male and sports Indep?

p(male) = p(male | sports)

.66 = .66

so, Independent

(b) P(no sport | female) = $\frac{255}{340}$ = .75

Conditional because we are only choosing from the females.