CS222 Test #1 Jeremiah Webb

1. $\overline{(A \cup B) \cap C}$

$A = \{t, v, z\}$ $B = \{u, v, x, z\}$

$A \cup B = \{t, v, u, x, z\}$

$U = \{t, u, v, w, x, y, z\}$

$\overline{(A \cup B)} = \{w, y\}$

$C = \{u, v, y\}$

$\overline{(A \cup B)} \cap C = \{y\}$

2.

$A = \{t, v, z\}$

$B \cap C = \{u, v\}$

$\overline{B \cap C} = \{t, w, x, y, z\}$

$A \cup \overline{B \cap C} = \{t, u, v, w, x, y, z\}$

3.

Need bb for blue eyes

$\frac{1}{4}$ = 25% chance

4. 6 sides rolled twice

$$\frac{1}{6} \times \frac{1}{6} = \frac{1}{36}$$

5. 10 people 1 teacher, 9 students
1 difficult

$8! \cdot 9$

40320

6.

k = 1, 2

f = {6, 12}

7. Subsets

{6}, {12}

9. 8 letters

$$\frac{8!}{3! \cdot 2!} = 3360 \text{ ways}$$

Scanned with CamScanner

10.

2 plates
80 cookies

50 chocolate chips

$$\frac{50}{80} \cdot \frac{1}{2} = .3125$$

11.

A.

$A = \{6, 11, 16 \ldots\}$

B.

$A = \{x \mid x, n \in \mathbb{N}\ x = 5n + 1,\ n > 0\}$

C.

$$T = \begin{cases} t_1 = 6 \\ t_n = 6n + 1,\ n \in \mathbb{N},\ n > 0 \end{cases}$$

12.

131134 total people
60940 female

$$.963 = \frac{58655}{60940}$$

13.

$\frac{58655}{131134}$ female employed / total

14. Male / Total

15. Against $\frac{48}{52}$

16. 5 people chosen

$13c5 = 1287$ combos

$7c3 \cdot 6c2$

$35 \cdot 15$

$.408 = \frac{525}{1287}$

17.

A	B	C	$A \cap B$	$\overline{A \cap B}$	$\overline{A \cap B} \cup C$
0	0	0	0	1	1
0	0	1	0	1	1
0	1	0	0	1	1
0	1	1	0	1	1
1	0	0	0	1	1
1	0	1	0	1	1
1	1	0	1	0	0
1	1	1	1	0	1

19. Mall A

.5 · 350,000 + .5(−70000)

Profit = 155000

20. Mall B

190000 × .75 + .25(−30000)

Profit = 135000

21. Mall A has higher profit

Mall A

18. 10 problems
Must answer 7

$_{10}C_7$

$$\frac{10!}{7! \cdot 3!} = 120$$

22. 5 People

A. 5! 120 ways

B. $\frac{3!}{5!} = \frac{6}{120} = .05$

3 random
1 × 3! × 1