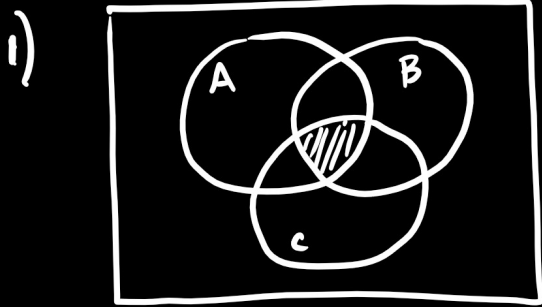
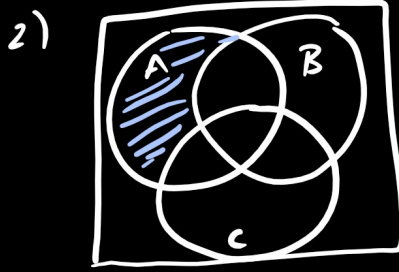


WARMUP

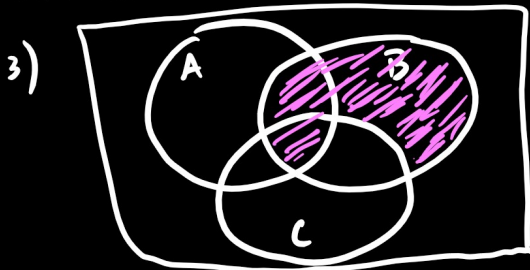
Use a Venn Diagram to shade the correct region



$$A \cap B \cap C$$



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



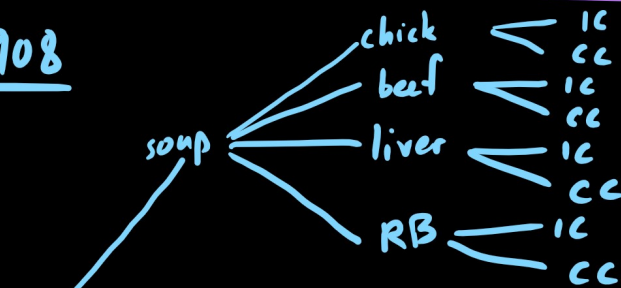
$$B \cap (A \cup C)$$



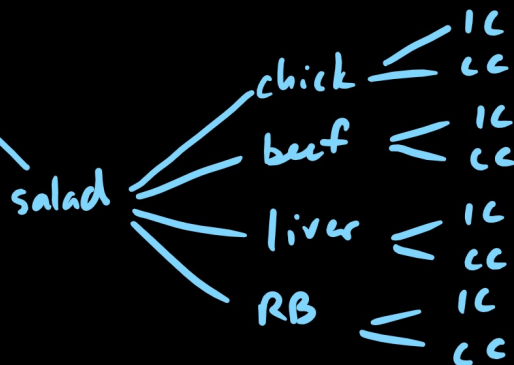
$$(\overline{A \cup B}) \cap C$$

Section 12.2 Permutations and Combinations

ex 1 p 908



16 different
meal possible



$$\underline{2} \cdot \underline{4} \cdot \underline{2} = 16$$

ex 2 p 909

$$\underline{26} \cdot \underline{10} = 260$$

ex 3 p 910

$$\underline{26} \cdot \underline{26} \cdot \underline{26} = 17,576$$

ex 4 p 911

$$\underline{26} \cdot \underline{25} \cdot \underline{24} = 15,600$$

This demonstrates permutations, where you pick r items out of n total, and order is important.

ex 5 p 911

In how many ways can we line 5 people up?

$$\underline{5} \cdot \underline{4} \cdot \underline{3} \cdot \underline{2} \cdot \underline{1} = 120$$

$$P(n, r) = \frac{n!}{(n-r)!}$$

ex:

120 tickets

3 chosen for 3 different prizes

$$P(120, 3) = \frac{120!}{(120-3)!}$$

OR calculator ${}_{120}P_3 = 1,685,040$

120 MATH PRB nPr 3 entr

In combinations, order is not important
like if I chose 3 students to give \$1,000,000
each to if I have 135 students.

$$C(135, 3) = \frac{135!}{(135-3)! \cdot 3!}$$

$${}_{135}C_3 = 400,995$$

ex 11 p 915 Committee consisting of 2 faculty members
and 3 students. Choosing from 6 faculty
members and 10 students.

$$\underbrace{{}_{10}C_3}_{3 \text{ students}} \cdot \underbrace{{}_6C_2}_{2 \text{ faculty}} = 120 \cdot 15 = 1800$$

ex: How many "words" can you make from
letters in MISSISSIPPI?

$$\frac{11!}{1! \cdot 4! \cdot 4! \cdot 2!} = 34,650$$

p916-918 3-60 multiples of 3