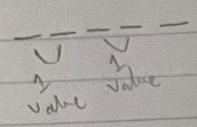


Counting Problems

1. a) 1 unique subset
b) choose 5 letters from 7, & order matters
 $7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 = 420$
 $3! \leftarrow$ for repeating letters

2.  $\binom{13}{2} \binom{4}{2} \cdot \binom{13}{2} \binom{4}{2} \cdot 48$
choose 2 #s from 13 choose 2 suits from 4 48 cards left, so 48 choices for last card

3. For $k=7$ boxes & $n=16$ balls, the # of ways to distribute is $\binom{22}{6}$.
Subtract # of ways where fighting couple gets 2 songs:
 $k=7$ boxes, 14 balls $\Rightarrow \binom{20}{6}$

Answer: $\binom{22}{6} - \binom{20}{6}$

4. Don't know:

5. Don't know