1) How many different combinations for 6 digits password where the first 4 digits are a date like ddmm?

$31 * 12 * 10 * 10 = 37,200$ possibilities

but this will include the days that dont exist so = $336 * 94 * 94$

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2) How many different combinations of 8-digits pin code that contains exactly 3 similar digits.

3 Similar

~~10^5~~ are we used one number for the similar but also exclude the similar.

$(3 \text{ out of } 8) * 10 * (9)^5 - (5 \text{ out of } 8)$

or

$9 \times 8 * 7 * 6 * 5$

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3) What is the entropy of an 8 character password which has the word "hard" in it?

small, caps, Symbol, number = 94

4 letters will be known.

$S = 5 * \log_2 (94)^4$

$H = \log_2 (5 * \log_2 (94)^4)$

$= 28.54$

5 choices

hard____

_hard___

__hard__

___hard_

____hard

4)How many different combinations for 6 digits passwords where at least two categories should be used?

(right - wrong)

- Caps → 26
- small → 26
- number → 10
- special → 32.

} 94

$(94)^6$ = all possibilities

$$(94)^6 - \left(\underbrace{(26)^6}_{\text{all small}} - \underbrace{(26)^6}_{\text{all cap}} - \underbrace{(32)^6}_{\text{all special}} - \underbrace{(10)^6}_{\text{all num}} \right) = 690{,}944{,}522{,}880$$