Question:

Build a password accordingly,

First letter is lower case alphabet.

Second letter is upper case alphabet.

Third, fourth letter are both digits.

Fifth letter is @ symbol.

Sixth and Seven are either upper- or lower-case alphabet.

Eight, Nine and Ten choose 3 letters from this pool, {$, 9, 5, v, w, J}.

Then Tiger Hash the password and compare both entropies.

Password Entropy of: (“bL18@Az9w$”)

Size (L) = 10

$$Entropy = 26^1 \times 26^1 \times 10^2 \times 1 \times 52^2 \times 6^3 = 39{,}482{,}726{,}400$$

$$= \log_2(39{,}482{,}726{,}400) \text{ } \textit{\# Log is not multiplied by length since the password is not changing}$$

$$\approx 35.2\ bits$$

$$Tiger(\text{"bL18@Az9w\$"}) = 0cd8cdf857bb5deb2438e82d903e76f5$$

$$Entropy = 128\ bits = \frac{128}{8} = 16\ bytes$$

$$= 32\ hexadigits$$

$$= 32 \log_2 16 = 128\ bits$$

By hashing, the entropy increased from 35.2 bits to 128 bits. Since, the original password is shorter than the tiger hashed password. The time it takes to crack/hack the tiger hash of the password would be much longer/difficult than the original password. Tiger hashing also does not affect the uncertainty of the original password.