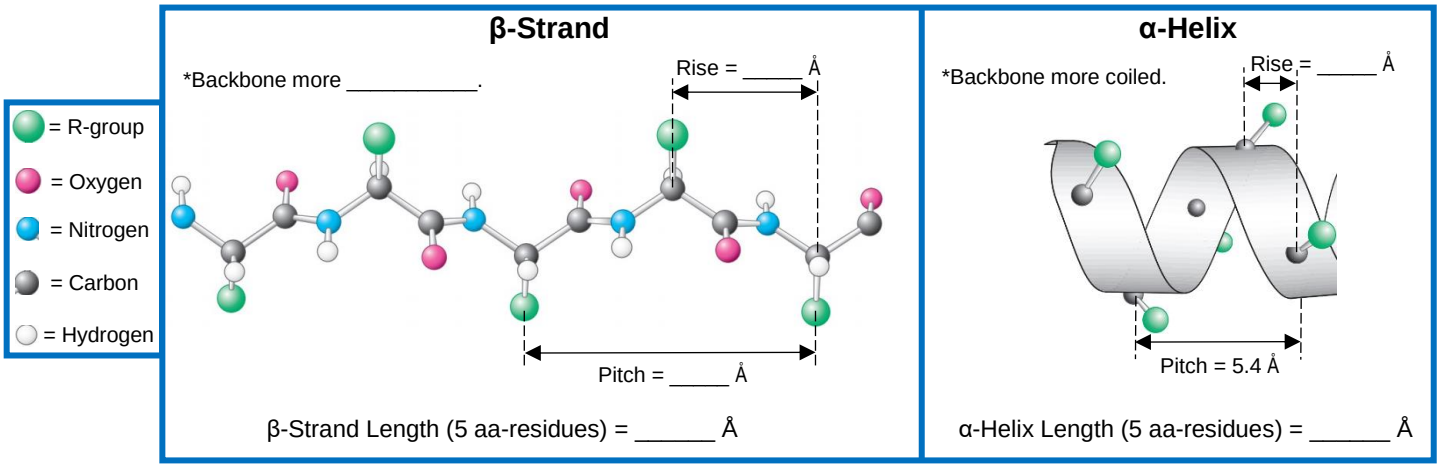
CONCEPT: BETA STRAND

- _____ (β) Strands: secondary structure where the protein _____ extends & takes a periodic zig-zag conformation.
  - □ The extended, periodic zig-zag structure repeats every ____ amino acid residues.
  - □ _____ per residue in a β-strand is *about* 3.5 Å.
  - □ _____ for a β-strand is *about* 7 Å.

EXAMPLE: Compare the rise/pitch/length of 5 amino acid residues in β-strand vs. α-helix conformation.



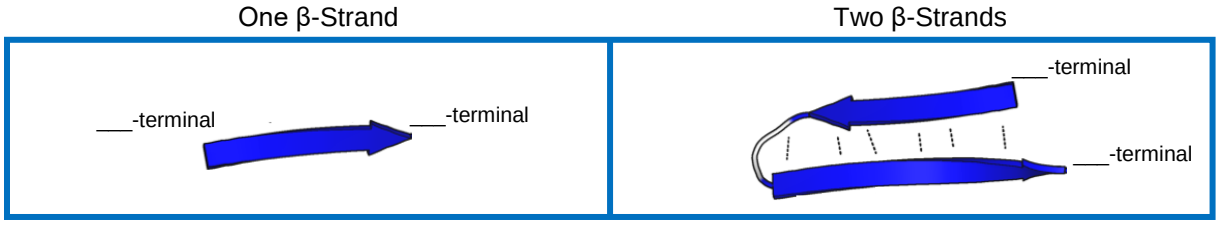
PRACTICE: What is the approximate length of a β-strand containing 27 amino acids?

a) 94.5 Å b) 189 Å c) 75.4 Å d) 40.5 Å

β-Strand Depictions

- β-strands are commonly depicted as extended broad _____ that can twist & point toward the ___-terminal end.
  - □ Similar to α-helices, β-strands are stabilized by _____-bonding of the backbone.
  - □ Unlike α-helices, the hydrogen bonds are _____ to the *directions* of the β-strands.

EXAMPLE: Label the terminals of the beta strands.



PRACTICE: Which phrase best describes the hydrogen bonds of a β-strand in silk fibroin, a protein with β-conformations?

a) They occur mainly near the amino and carboxyl termini of the β-strands.
b) They are perpendicular to the plane of the two β-strands.
c) They occur mainly between the atoms of the R groups.
d) They occur between backbone atoms of adjacent β-strands.