

Solutions

2.1 A A codon comprises three bases. The genetic code is degenerate: more than one codon can specify the same amino acid. A substitution can therefore be silent, while insertions or deletions can shift the reading frame.

2.2 $63/3=21$ codons including one stop. Peptide length= $21-1=20$ amino acids.

2.3 False. The number of bases is not automatically the number of amino acids. Real genes include regulatory regions and, in eukaryotes, often introns; a whole gene length is not a peptide-length calculation.

2.4 transcription. transcription means Formation of RNA using a DNA template.

3.1 Original $126/3-1=41$ amino acids. New codon 11 is not translated into an amino acid: 10 residues. The model excludes altered initiation, splicing and readthrough.