Eight amino acids are encoded by eight codons. Each codon has three nucleotides. Thus, the number of nucleotides in mRNA that encode this peptide is 24. The successive nucleotides of both DNA and RNA are covalently linked through phosphate-group "bridges," in which the 5'-phosphate group of one nucleotide unit is joined to the 3'-hydroxyl group of the next nucleotide, creating a phosphodiester linkage. Thus, there are 2 ester bonds between each two nucleotides. Therefore, 48 ester bonds are required to join the 24 nucleotides. By definition, the 5' end lacks a nucleotide at the 5' position and the 3' end lacks a nucleotide at the 3' position. Other groups (most often one or more phosphates) may be present on one or both ends. Thus, the most suitable answer from the list is 47 ester bonds (1)