

### Practice 12-1

Write the complementary strand of DNA to the following sequence.

5' A-C-T-C-G-G-T-A-A 3'

Answer

**Remember, A pairs with T and G pairs with C. Go through the original 5' to 3' sequence pairing each A with T and each C with G. Keep in mind that the complementary strand will read from left to right in the 3' to 5' direction. Therefore, the complementary strand starts with 3' and ends with 5'.**

**Original strand**                      5' A-C-T-C-G-G-T-A-A 3'  
**Complementary strand**        3' T-G-A-G-C-C-A-T-T 5'

### Practice 12-2

What is the DNA template that codes for the mRNA segment with the nucleotide sequence of sequence of 5' G-C-U-A-G-U 3'?

Answer

**Again, there are two ways to approach this problem:**

**Memorizing base-pair rules:**

**Complementary bases in mRNA**    5' G-C-U-A-G-U 3'

**Portion of DNA template**            3' C-G-A-T-C-A 5'

**Associate with DNA synthesis:**

**Complementary bases in mRNA**    5' G-C-U-A-G-U 3'

**Change all U's to T (no U in DNA)** 5' G-C-T-A-G-T 3'

**Follow normal base-pairing rules:** 3' C-G-A-T-C-A 5'

### Practice 12-3

Answer the following:

- a) What codons specify tyrosine?
- b) What amino acid is coded by CCG?

### Answer

**a) Using Table (1): UAC and UAU.**

**b) Using Table (2): Pro (proline).**