Section 12.3 DNA, RNA, and Protein (continued)

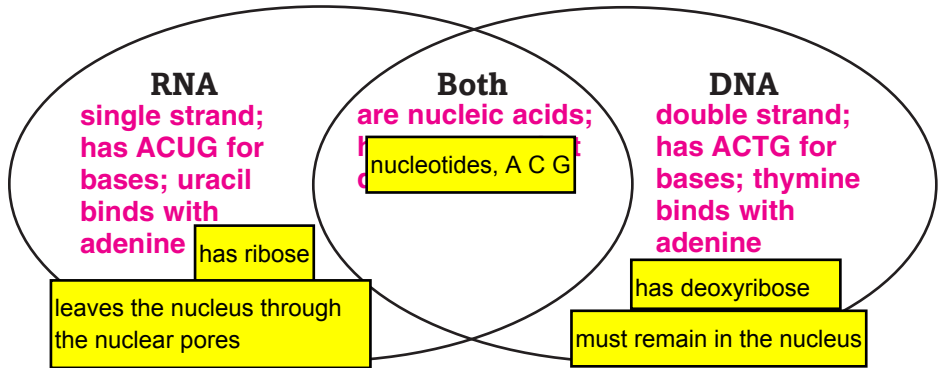| Main Idea	Details

Central Dogma

I found this information on page _____.
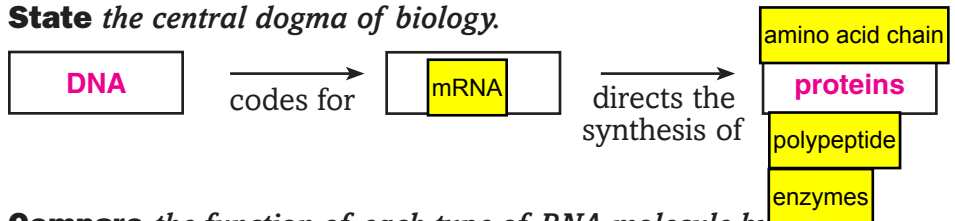
SE, pp. 336–337
RE, pp. 134–135

Compare and contrast *RNA and DNA by writing at least five characteristics of their structure and composition in the Venn diagram.* **Accept all reasonable responses.**
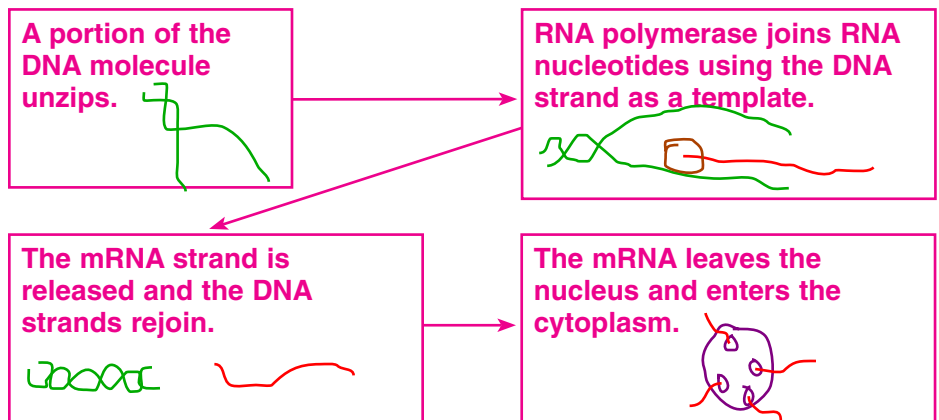
RNA
single strand; has ACUG for bases; uracil binds with adenine
has ribose
leaves the nucleus through the nuclear pores

Both
are nucleic acids;
nucleotides, A C G

DNA
double strand; has ACTG for bases; thymine binds with adenine
has deoxyribose
must remain in the nucleus

"One gene makes one protein!"

State *the central dogma of biology.*

| DNA | → codes for → | mRNA | → directs the synthesis of → | amino acid chain / **proteins** / polypeptide / enzymes |

Compare *the function of each type of RNA molecule by completing the table.*

Type of RNA	Function
mRNA messenger	**carry genetic** copy from the DNA in the **nucleus to the cytoplasm to direct protein synthesis**
rRNA ribosomal	**form part of the ribosome**
tRNA transfer	**carry amino acids to the ribosome**

Sequence *the steps in transcription of RNA.*

A portion of the DNA molecule unzips.

RNA polymerase joins RNA nucleotides using the DNA strand as a template.

The mRNA strand is released and the DNA strands rejoin.

The mRNA leaves the nucleus and enters the cytoplasm.

Section 12.3 DNA, RNA, and Protein (continued)

⟨Main Idea⟩ ——— **⟨Details⟩** ————————————————————————

**The Code,
One Gene—
One Enzyme**

*I found this information
on page* _____.
SE, pp. 338–341
RE, pp. 135–138

Identify *four examples of codons and state the instructions they encode.*

1. **(GCU) alanine**

2. **(AAA) lysine**

3. **(AUG) methionine, tells the ribosome that this is the start of the
amino acid chain**

4. **(UAA) stop, tells ribosome that this is the end of the amino acid chain**

Model *the movement of tRNA molecules showing the translation
process.*
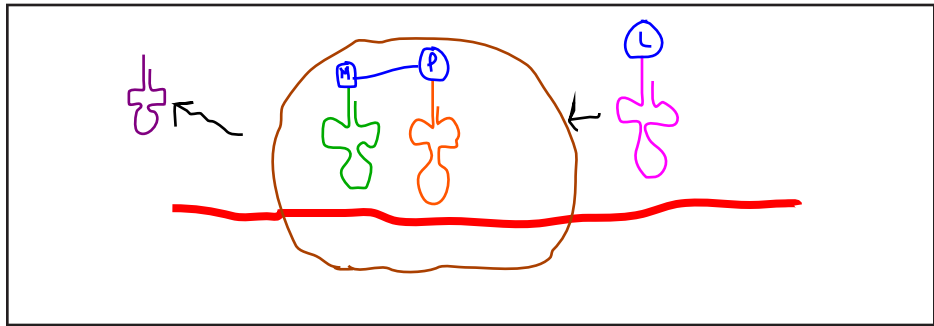
State *the updated version of Beadle and Tatum's hypothesis.*

One gene _____ codes for _____ **one polypeptide** _____.

SUMMARIZE

Create a flow chart to describe the formation of a protein.
Describe the activities of DNA and the three types of RNA.

responses.

**DNA issues
instructions**

**messenger
RNA brings
instructions
from DNA to
the cytoplasm**

**ribosomal
RNA binds to
the mRNA**

**transfer RNA delivers
amino acids to the
ribosome to be made
into a protein**

**the rRNA uses the
instructions to assemble
the amino acids in the right
order**