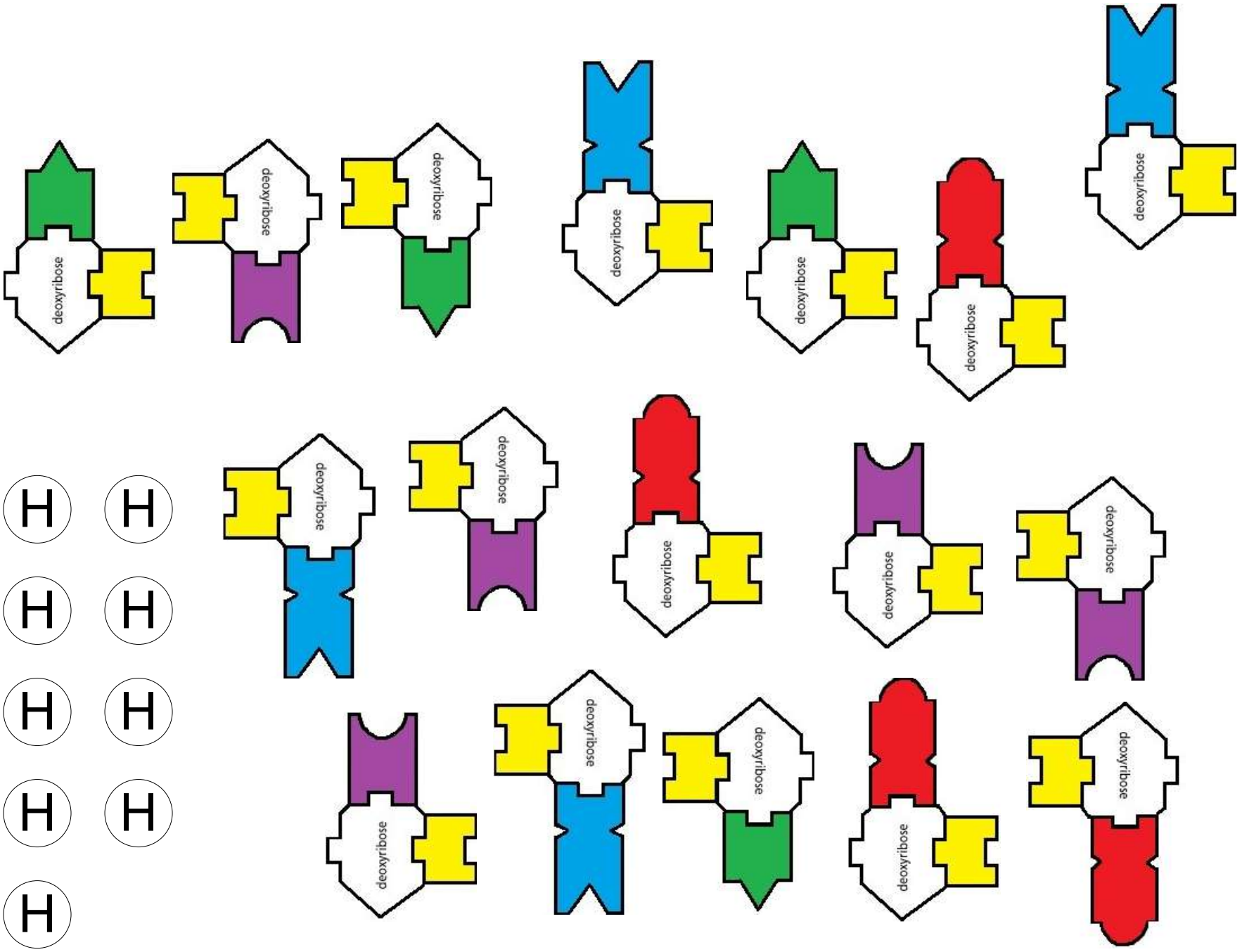
Type Your Name Here

SB2a Build DNA using the Nucleotides Then Print



1. Copy your DNA from slide 1 of this PowerPoint onto this slide.

2. Unzip the last 4 bases on the right to show a replication fork.

3. Copy and paste any extra free nucleotides and Hydrogen bonds if that you will need from your DNA model

The scissors below represent the enzyme called DNA helicase. It is responsible for cutting the DNA molecule in half by breaking the hydrogen bonds **between the bases** so that transcription can occur. It is represented by the hand.

Copy and paste these scissors and hand on the **slide 2** to show where DNA helicase and DNA polymerase enzymes will act on DNA.

Process SB1ab

- Why is DNA copied to make more DNA and copied to form the new nucleic acid called RNA?
- Complete the key for the nitrogen bases for your DNA Model
  - Blue = guanine
  - Green =
  - Red = Adenine
  - Purple =

1. Copy and paste your DNA from Slide 1 onto this slide in the blank area below

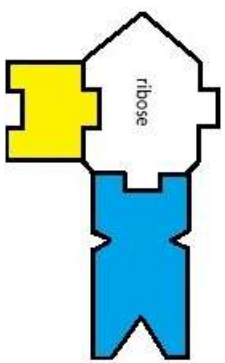
2. Arrange the DNA nucleotides so that it is unzipped or pulled apart without the DNA helicase molecules (scissors) present.

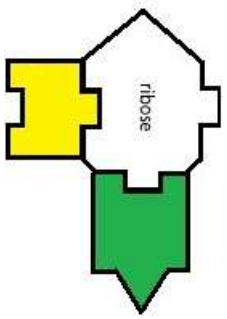
3. Leave enough room in between the top and bottom DNA strand to place the RNA nucleotides.

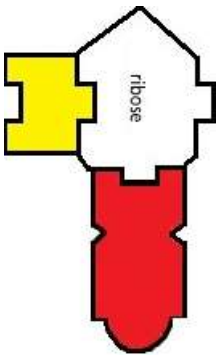
4. Copy and paste the RNA nucleotides next to the bottom DNA strand on this slide to represent the process of transcription.

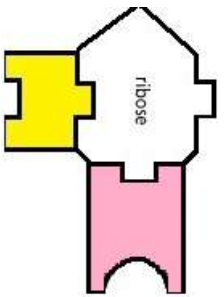
5. Place a hand over each RNA nucleotide to symbolize the enzyme that is making the RNA strand.

6. If you need more of a particular RNA nucleotide just copy it and paste it as needed.









Process SB1ab

- What enzyme does the hand represent when you made DNA?
- What enzyme does the hand represent when you made RNA?
- Where does DNA Replication take place?
- Where does transcription take place in a cell?

Record the bases from **left to right** on your new mRNA molecule for just the first 9 bases

DNA base sequence	Process →	mRNA codon	Process →	Amino acid	tRNA anticodon

1. How are tRNA molecules like chemical tow trucks?

2. Why are there three connectors on the back of the tow truck (tRNA)?

3. What bases will fit there?

4. What are these three based called?

Process SB1ab

- What process were you simulating by looking up the mRNA letters (codon) to find the amino acids?

- Where does this process occur in the cell?

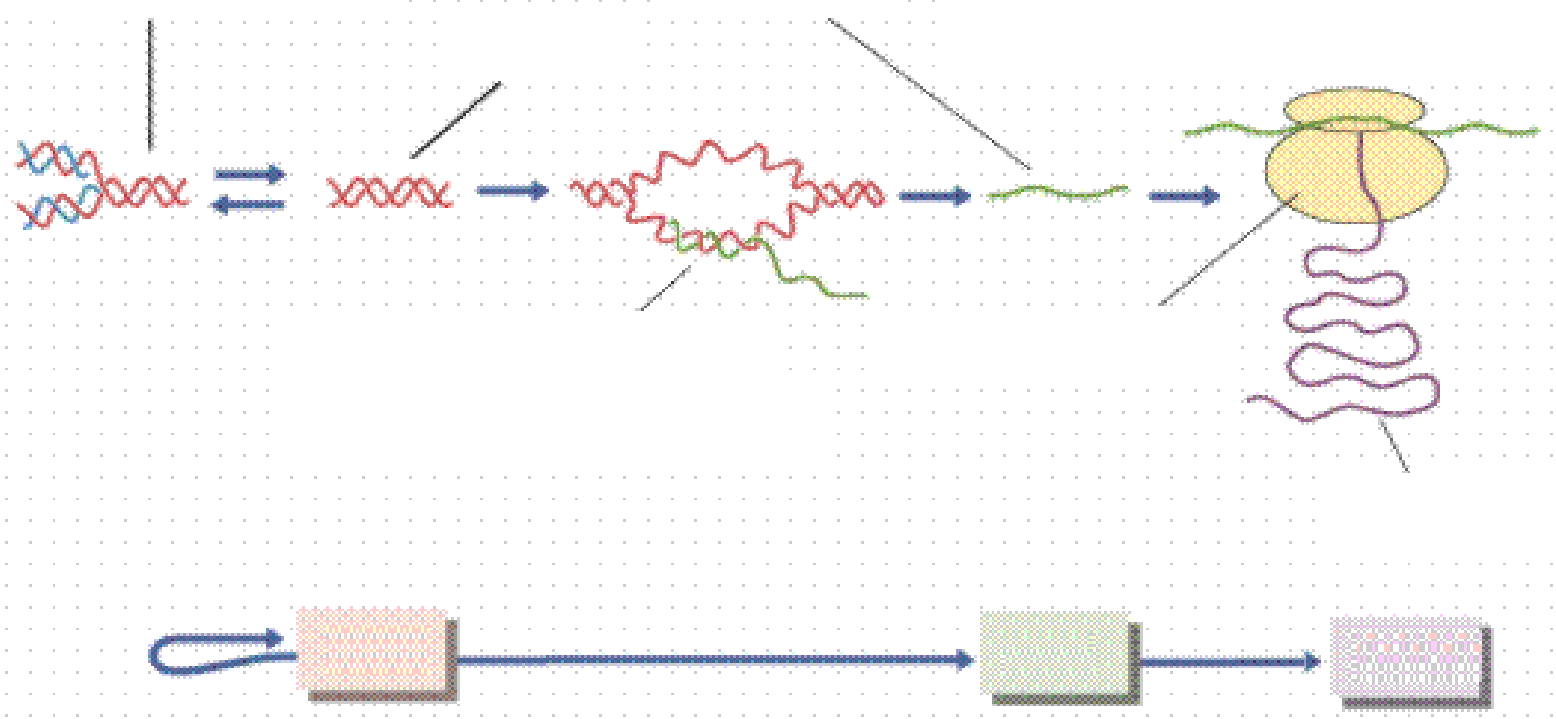
- What **form of RNA** is responsible for picking up the amino acids from your table to begin building your protein?

Conclusion 1:

Complete the diagram below using (click and drag) the words provided

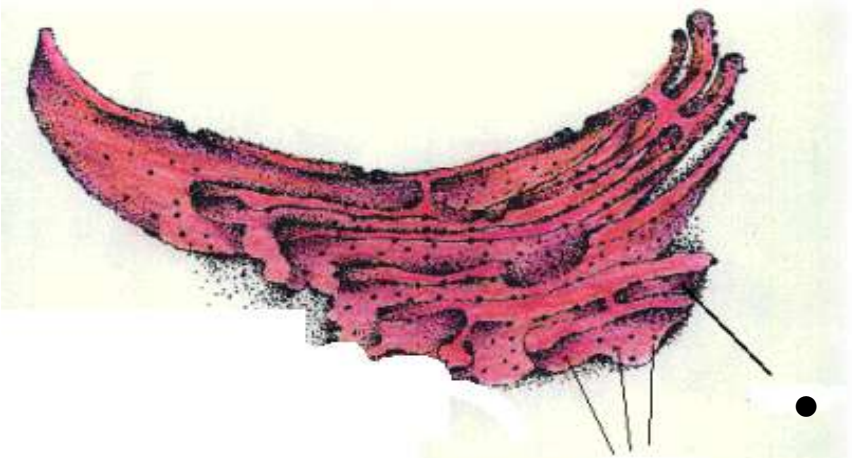
Protein Ribosome Transcription (RNA synthesis) DNA

Translation (protein synthesis) mRNA Replication



Conclusion 2:
Once the proteins are produced on the ribosomes....

- Where do they go to be refined?



- What organelle picks them up for packaging and distribution?

Conclusion 3:

- Compare DNA and RNA nucleotides
- Compare the shape of DNA and RNA
- Compare the functions of DNA and RNA

Applications

- How is DNA like a filing cabinet (Hint: Read standard SB2b)?

- Make an analogy between building a house and building a protein. Be sure to include all words provided from the diagram slide.