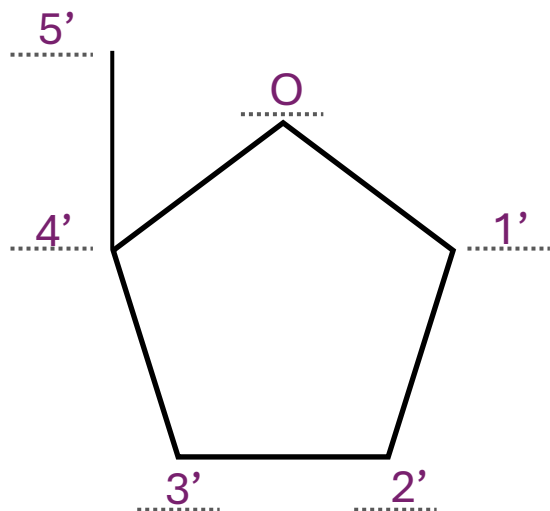


What is this structure called? Pentose Sugar



Label this structure as instructed.

1. How many carbons are in this structure?

2. Google 'pent prefix' and jot down a quick definition:

Pent means five

Google 'ose suffix' and jot down a quick definition:

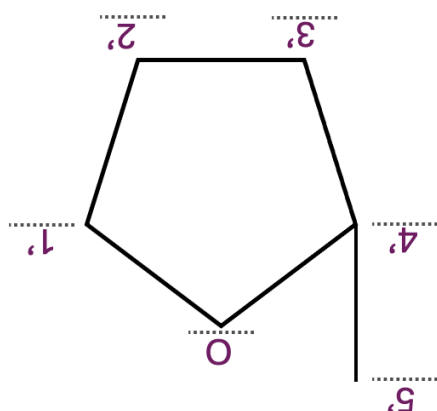
Ose is in reference to sugar

3. On your pentose sugar above which carbon (5' or 3') is at the top (the number)? 5'

4. On your pentose sugar above carbon (5' or 3') is at the bottom (the number)? 3'

5. This pentose sugar is oriented 5' (top carbon's number) to 3' (bottom carbon's number)

 Paste rotated pentose sugar below:

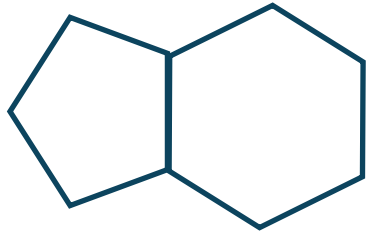


6. On your rotated pentose sugar above which carbon (5' or 3') is at the top (the number)? 3'

7. On your rotated pentose sugar above which carbon (5' or 3') is at the bottom (the number)? 5'

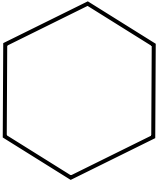
8. This (rotated) pentose sugar is oriented 3' to 5'

What are these structures called (the broad category)? Nitrogenous Bases



Purine

9. Label which is purine and which is a pyrimidine.

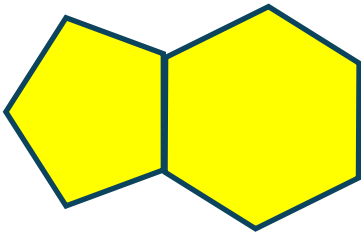


Pyrimidine

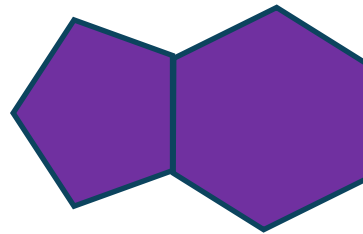
10. How can you differentiate a purine from a pyrimidine?

A purine has two rings, a pyrimidine has one

11. Label the two types of purines in DNA. Decide a color for each and color them below (This is completely your choice, There is no right or wrong color choice):

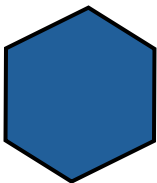


Adenine

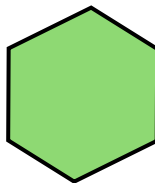


Guanine

12. Label the three types of pyrimidines in DNA & RNA. Decide a color for each and color them below (this is complete your choice, there is no right or wrong color choice, just make sure none of them match):

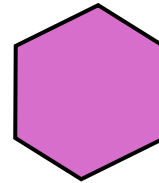


Cytosine



Thymine

DNA only



Uracil

RNA only

13. Above, clearly indicate which pyrimidine is only in DNA and which is only in RNA

14. In DNA which bases could bind to each other based on purine-pyrimidine binding?

Adenine could bind Cytosine or Thymine

Guanine could bind Cytosine or Thymine

15. In DNA which bases actually do bind?

Adenine binds Thymine

Guanine binds Cytosine

16. In RNA which bases could bind to each other based on purine-pyrimidine binding?

Adenine could bind Cytosine or Uracil

Guanine could bind Cytosine or Uracil

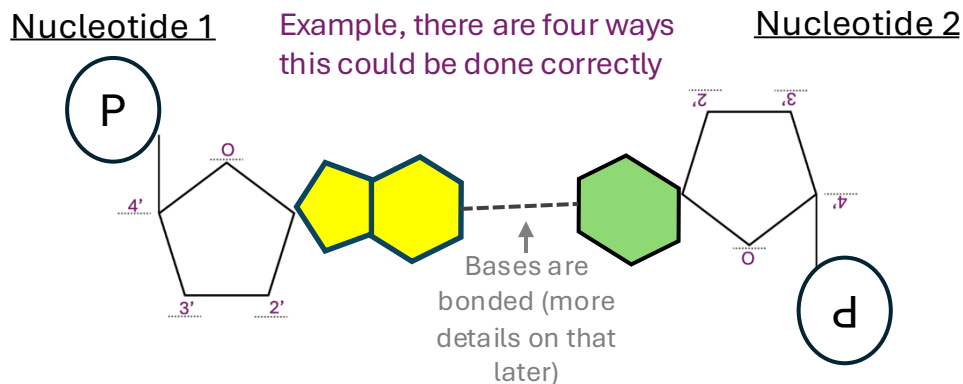
17. In RNA which bases actually do bind?

Adenine binds Uracil

Guanine binds Cytosine

Constructing the Nucleotide

Construct a nucleotide with the pentose sugar oriented 5' to 3'. Paste it to the left side of the blank area below (under Nucleotide 1).



18. Which base must bind to the one you chose for your nucleotide above?

Thymine (binds Adenine)

19. Are your nucleotides in a configuration such that the bases can bind each other?

If not play with the orientation to see if you can figure out a configuration that allows the bases to bind.

20. Nucleotide 1 is oriented 5' to 3'
Nucleotide 2 is oriented 3' to 5'