



# MAKING A MODEL OF DNA INSTRUCTIONS



1) Colour the individual structures on the worksheet as follows:

adenine = red  
guanine = blue  
phosphate = brown

thymine = green  
cytosine = yellow  
deoxyribose = purple

2) Cut out each structure.

3) Using the small symbols (squares, circles and stars) on the structures as guides, line up the bases, phosphates and sugars.

4) Glue the appropriate pairs together to form nucleotides.

5) Construct the right side of your DNA molecule by putting together in sequence a cytosine, thymine, guanine and adenine nucleotide.

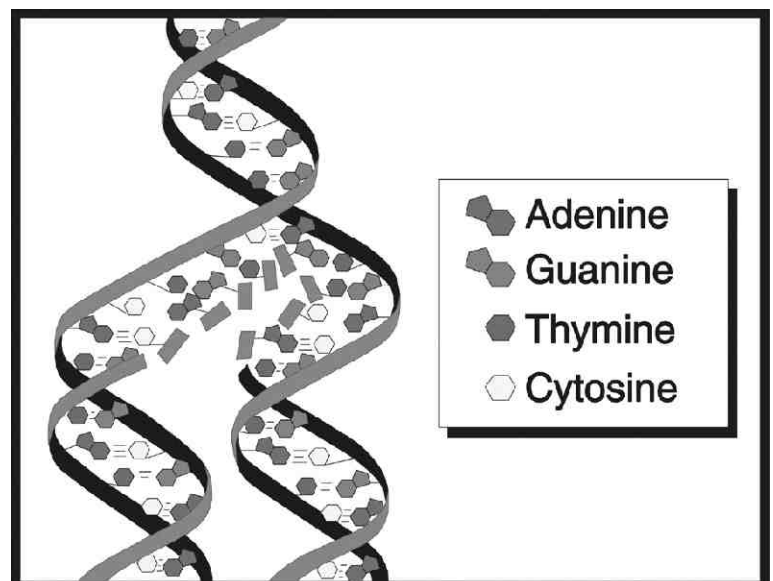
6) Complete the left side of the DNA ladder by adding complementary nucleotides or nucleotides that fit. Your finished model should resemble a ladder.

7) To show replication of your model, separate the left side from the right side on your desk, leaving a space of about 15 to 20 cm.

8) Using the remaining nucleotides, add to the left side of the model to build a new DNA molecule. Do the same with the separated right side.

9) Tape or glue the nucleotides together to form two complete identical DNA ladders or molecules.

10) Answer the following questions.





# MAKING A MODEL OF DNA



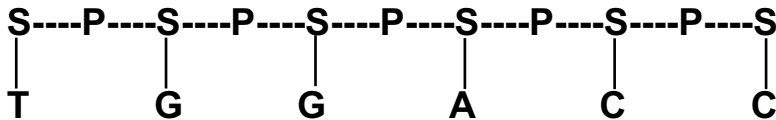
## QUESTIONS

a) When constructing the DNA molecule, what did you notice about the orientation of the two strands?



b) Define replication.

c) What DNA strand would bond opposite



d) How does DNA of yellow perch differ from human DNA?

e) Would yellow perch DNA be closer to walleye DNA or deer DNA? Why?

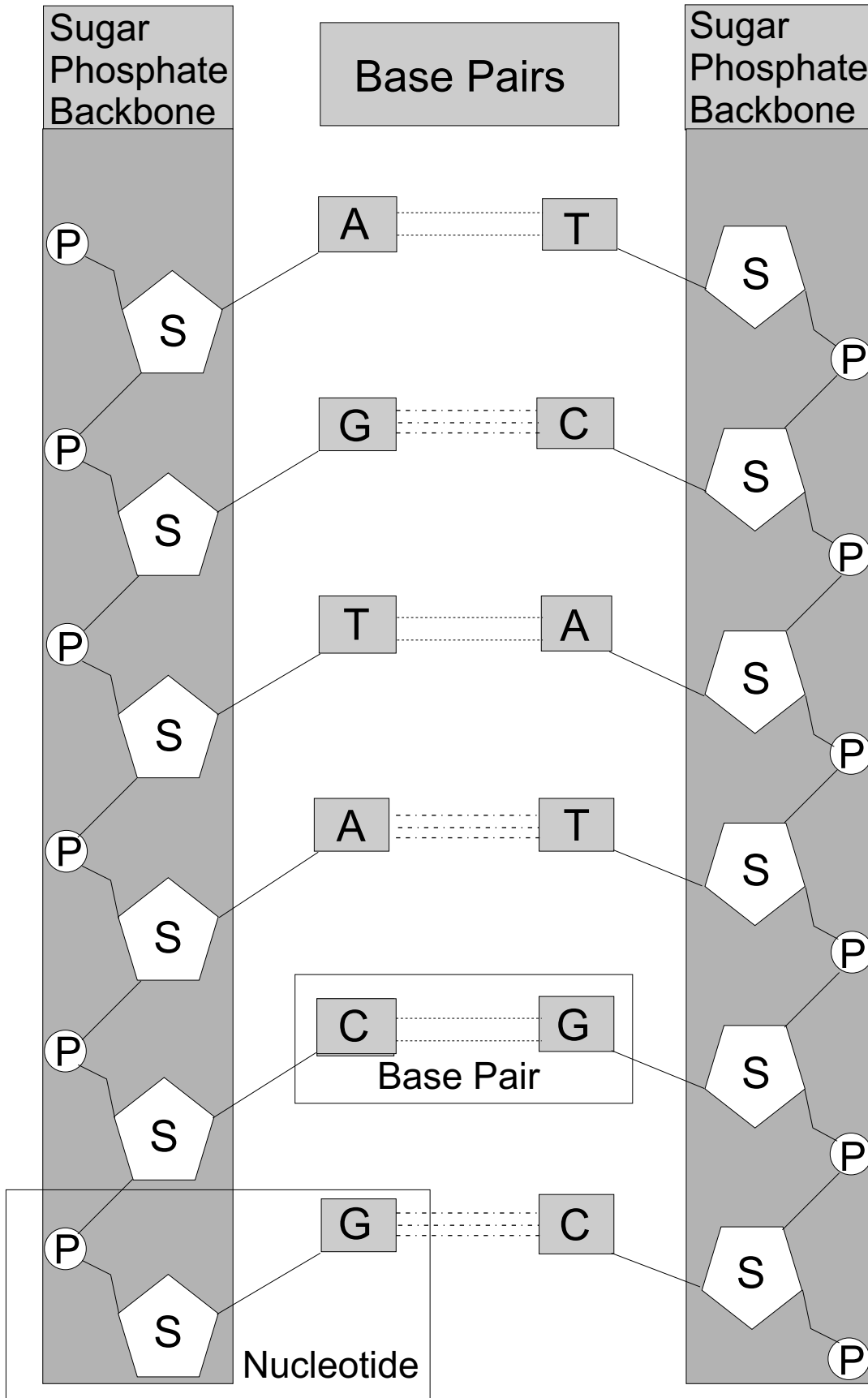




# MAKING A MODEL OF DNA



## EXAMPLE

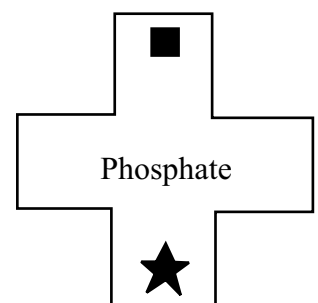
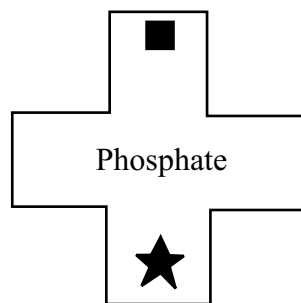
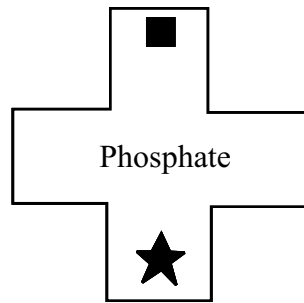
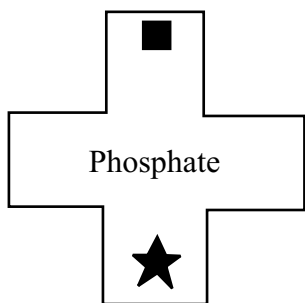
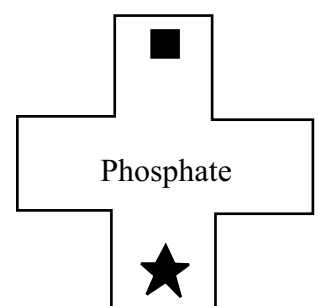
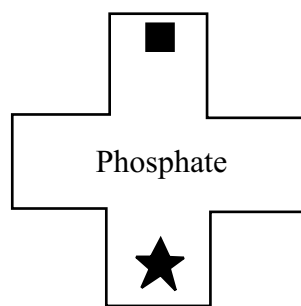
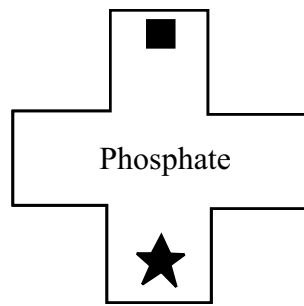
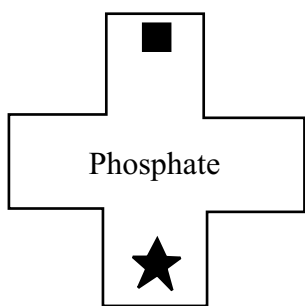
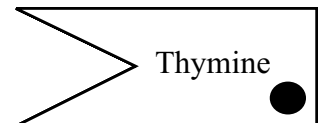
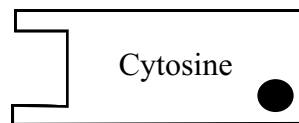
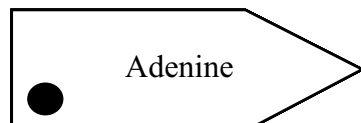
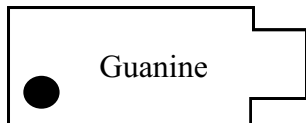
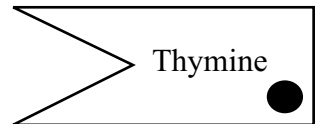
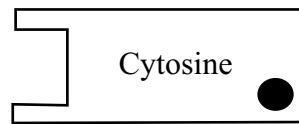
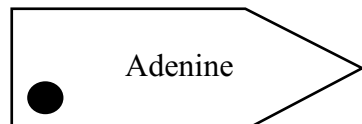
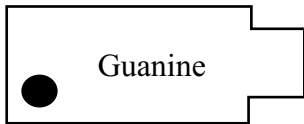
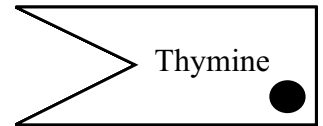
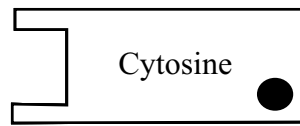
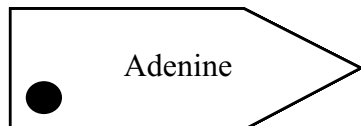
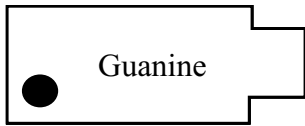
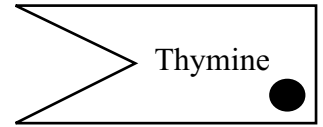
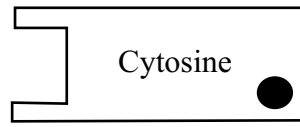
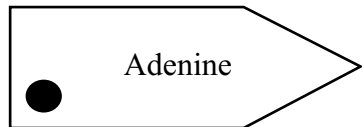




# MAKING A MODEL OF DNA



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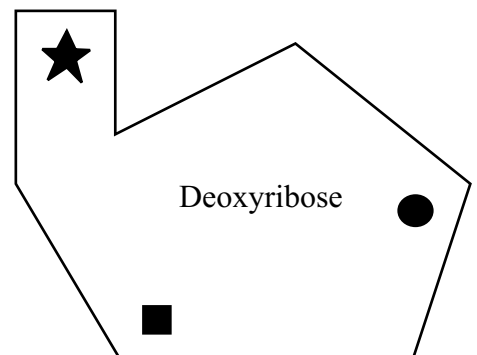
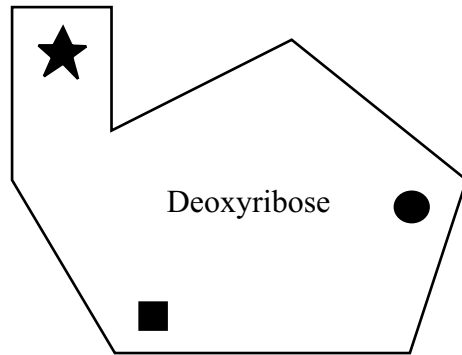
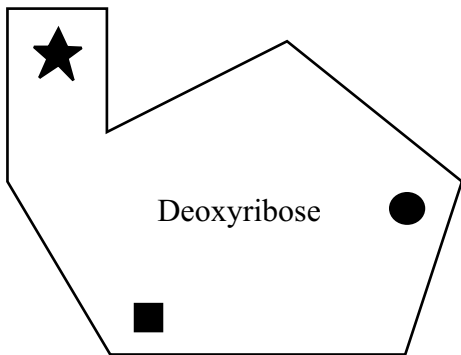
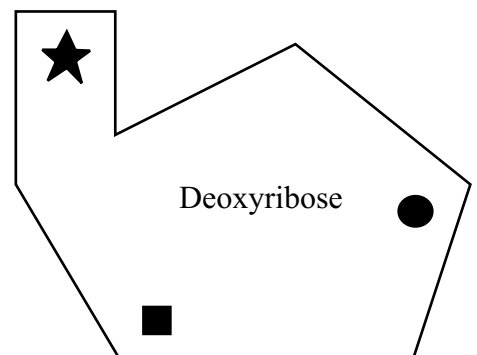
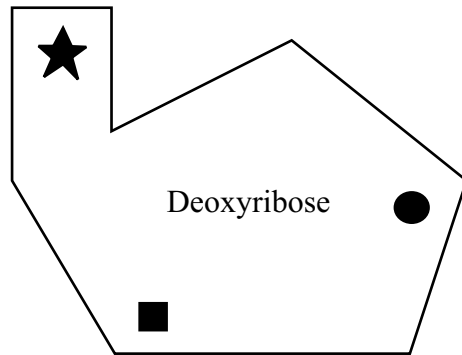
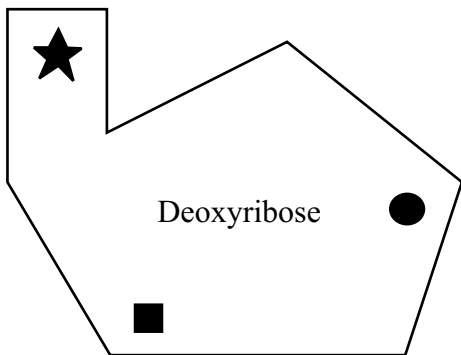
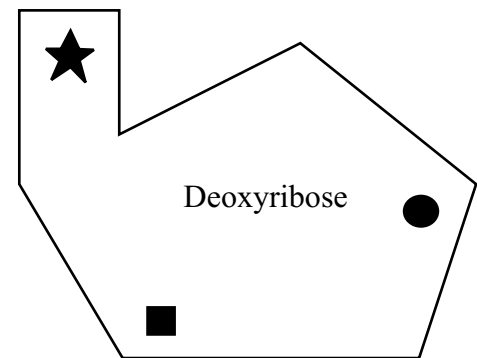
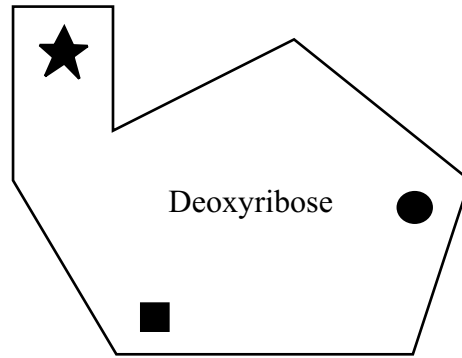
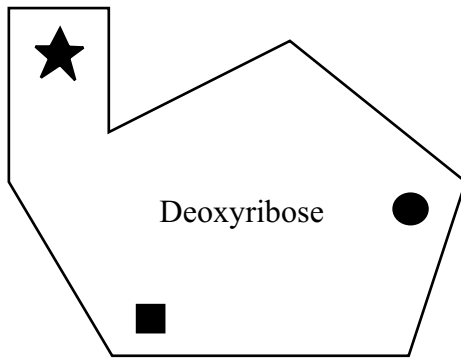
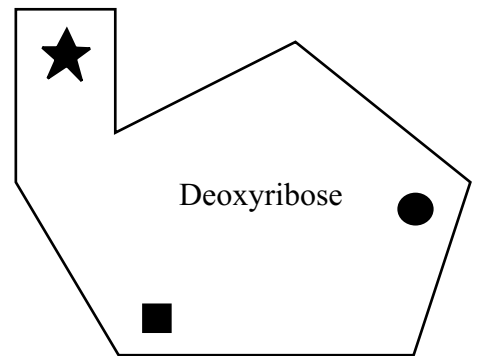
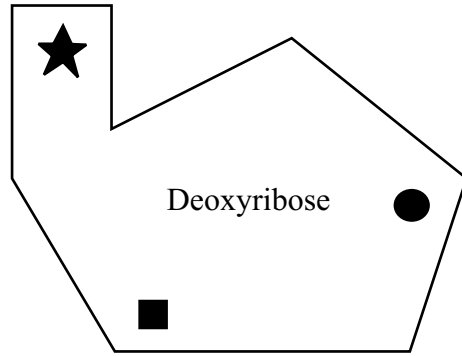
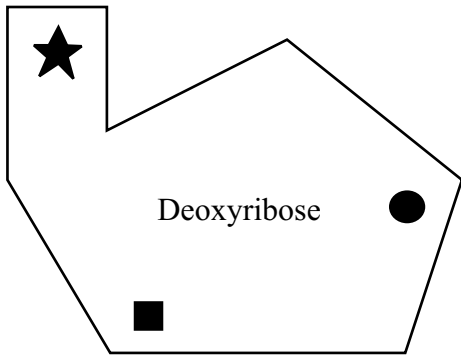




# MAKING A MODEL OF DNA



## CUT OUT SHEET

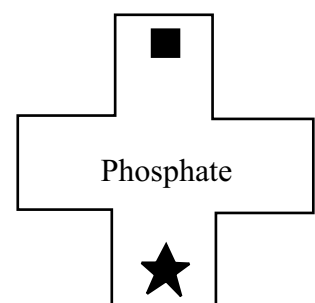
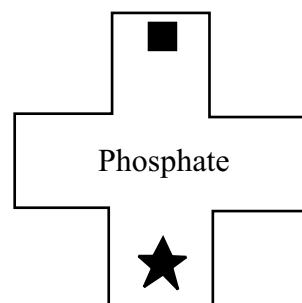
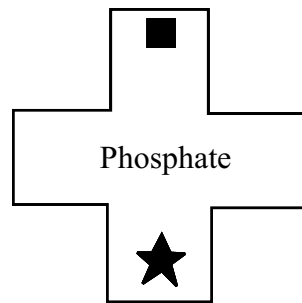
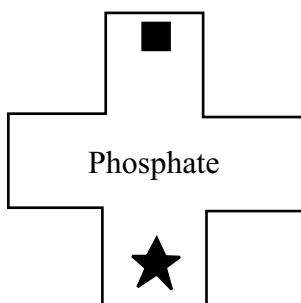
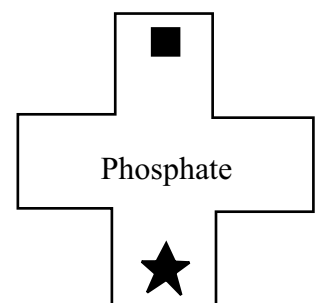
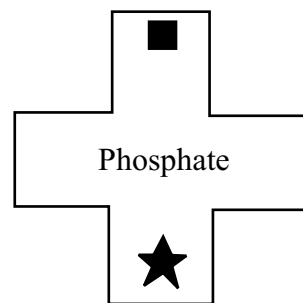
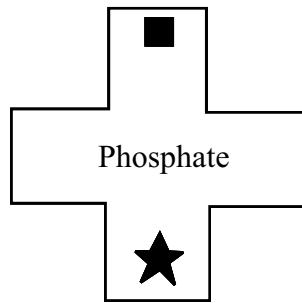
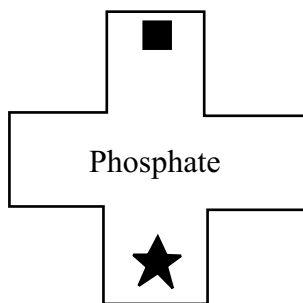
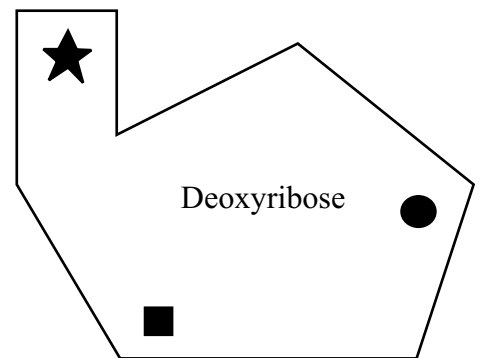
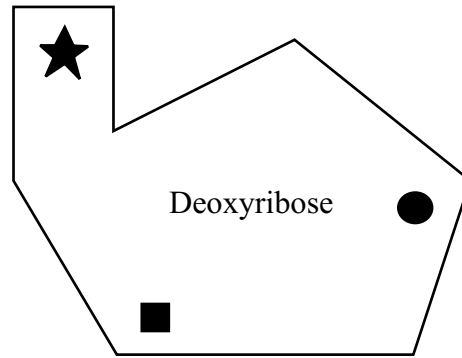
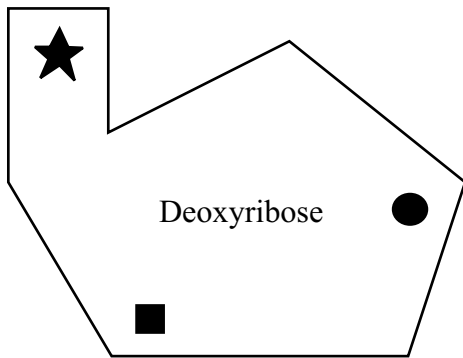
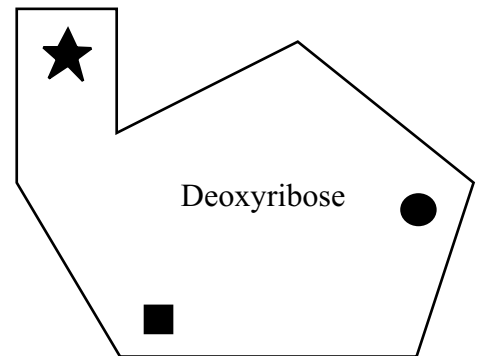
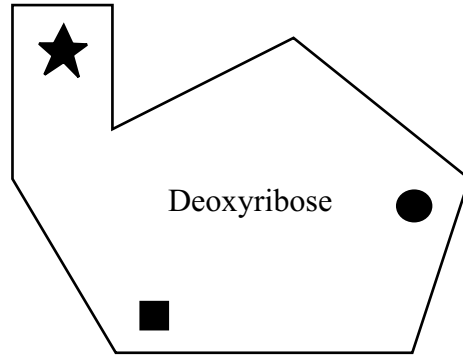
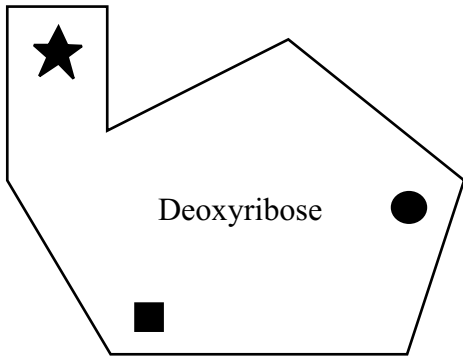




# MAKING A MODEL OF DNA



## CUT OUT SHEET





# MAKING A MODEL OF DNA



## ANSWER KEY

1) Colour the individual structures on the worksheet as follows:

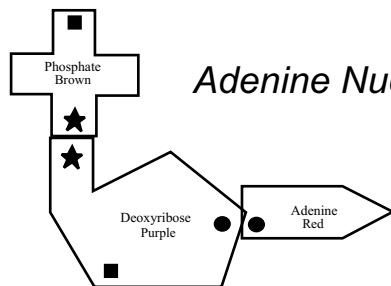
adenine = red  
guanine = blue  
phosphate = brown

thymine = green  
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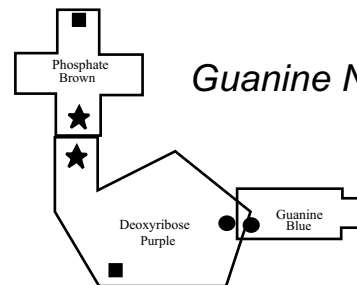
2) Cut out each structure.

3) Using the small symbols (squares, circles and stars) on the structures as guides, line up the bases, phosphates and sugars.

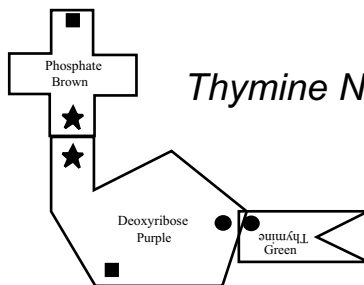
4) Glue the appropriate pairs together to form nucleotides.



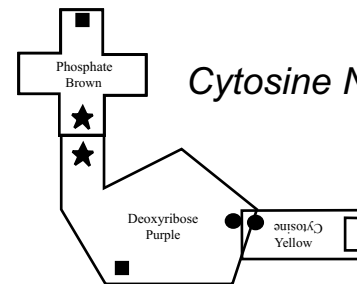
*Adenine Nucleotide*



*Guanine Nucleotide*



*Thymine Nucleotide*



*Cytosine Nucleotide*

- 5) Construct the right side of your DNA molecule by putting together in sequence a cytosine, thymine, guanine and adenine nucleotide. **See next page.**
- 6) Complete the left side of the DNA ladder by adding complementary nucleotides or nucleotides that fit. Your finished model should resemble a ladder. **See next page.**
- 7) To show replication of your model, separate the left side from the right side on your desk, leaving a space of about 15 to 20 cm.
- 8) Using the remaining nucleotides, add to the left side of the model to build a new DNA molecule. Do the same with the separated right side.
- 9) Tape or glue the nucleotides together to form two complete identical DNA ladders or molecules.
- 10) Answer the following questions.

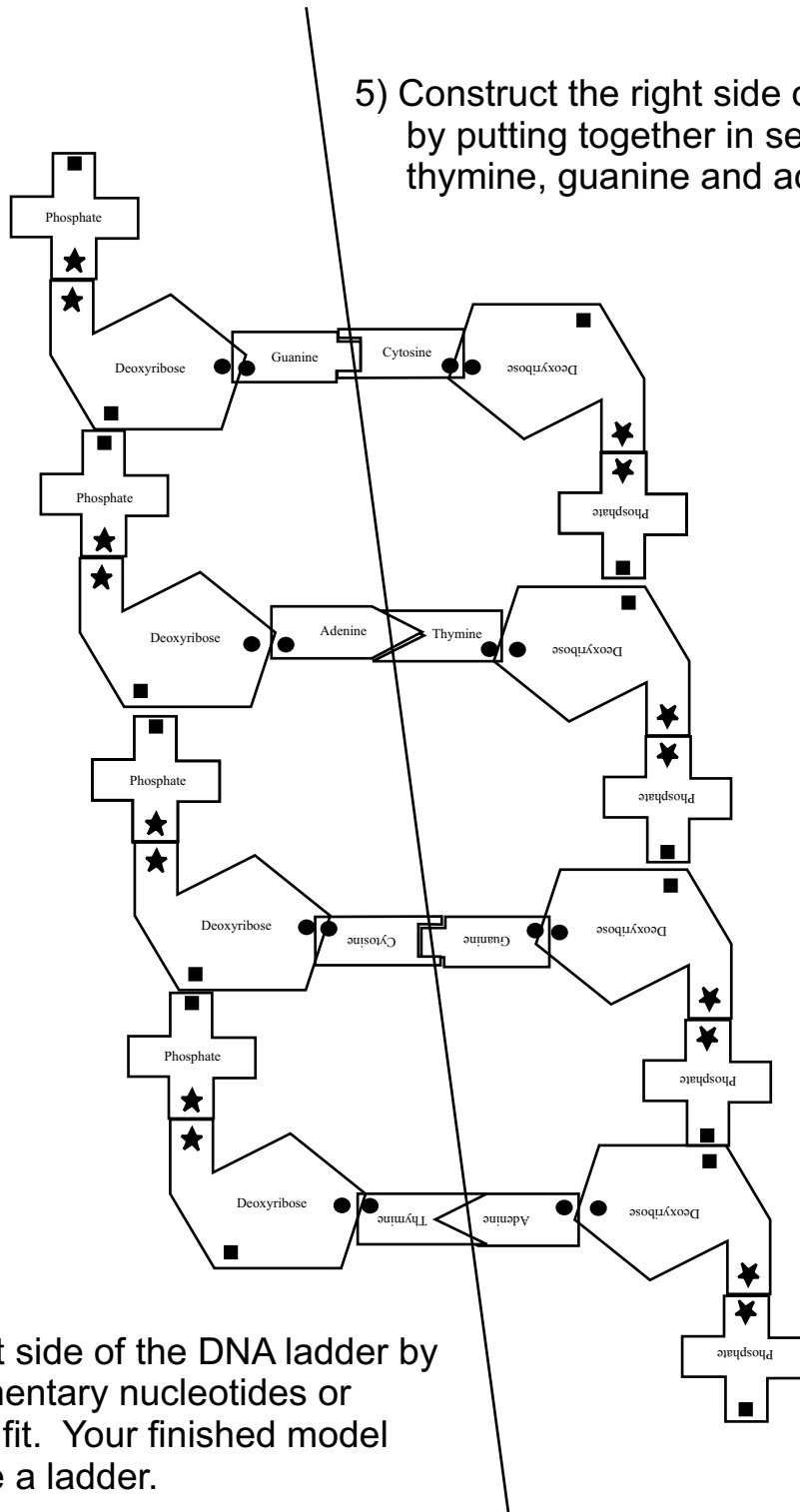


# MAKING A MODEL OF DNA



## ANSWER KEY

5) Construct the right side of your DNA model by putting together in sequence a cytosine, thymine, guanine and adenine nucleotide.



6) Complete the left side of the DNA ladder by adding complementary nucleotides or nucleotides that fit. Your finished model should resemble a ladder.





# MAKING A MODEL OF DNA



## ANSWER KEY

### QUESTIONS:

- a) When constructing the DNA molecule, what did you notice about the orientation of the two strands?

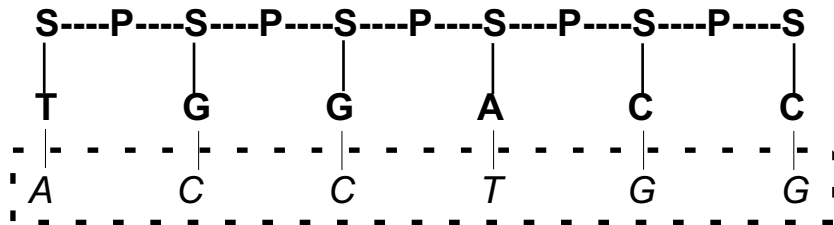


*One of the strands is inverted.*

- b) Define replication.

*Replication is the process by which genetic material, a single-celled organism or a virus reproduces or makes a copy of itself.*

- c) What DNA strand would bond opposite



- d) How does DNA of yellow perch differ from human DNA?

*DNA of yellow perch would be different from human DNA since it would have different chromosomes and different nucleotide pairings.*

- e) Would yellow perch DNA be closer to walleye DNA or deer DNA? Why?



*Yellow perch DNA would be closer to walleye DNA because they are both species of fish.*

*Their genetic make-up would be very similar since they are more closely related to each other than to deer.*