

Biochemical Chemistry Models and Evidence Boundaries

Student Worksheet | g10_u07_w28

I can: interpret simplified carbohydrate, peptide, and nucleotide chain cards and state what those representations do and do not establish.

Scope card: Unit markers represent connectivity only. C is a carbohydrate-chain model made of monosaccharide-unit markers; P is a peptide model made of amino-acid-residue markers; N is a nucleotide-chain model made of nucleotide-unit markers. For a linear chain in this classroom model, adjacent-link count equals unit count minus 1. These are not cells, organisms, biological measurements, medical evidence, nutrition guidance, or pharmaceutical claims. Use paper/data cards only—no biological samples, food tests, body-fluid tests, ingestion, or handling.

model card	unit markers	adjacent-link markers	stated model label
C	6 monosaccharide units	5	carbohydrate chain
P	4 amino-acid residues	3 peptide links	peptide chain
N	5 nucleotide units	4 adjacent positions	nucleotide chain

1. What does a unit marker represent in this packet?

2. Which card is the carbohydrate-chain model?

3. Which card is the peptide model?

4. Which card is the nucleotide-chain model?

5. State the type of unit marker used in C.

6. State the type of unit marker used in P.

7. State the type of unit marker used in N.

8. How many unit markers and adjacent links are shown in C?

9. How many amino-acid residues and peptide links are shown in P?

10. How many nucleotide units and adjacent positions are shown in N?

11. Use the linear-chain rule to predict the adjacent-link count for 8 unit markers.

12. Use the linear-chain rule to predict the adjacent-link count for 10 nucleotide-unit markers.

13. Explain why a four-residue peptide model has three peptide links in this scope.

14. Compare the unit types in C and P. What is the same about the representation, and what differs?

15. Does a matching unit count on two cards prove matching 3-D shape, biological role, or behavior? Explain.

16. What can the printed chain models show about connectivity, and what exact feature can they not show by themselves?

17. Critique: “A peptide-link count proves how a real protein functions in a cell.”

18. Critique: “A nucleotide-unit count proves a genetic, medical, nutrition, or pharmaceutical conclusion.”

19. List two additional kinds of evidence that would be needed before extending a classroom chain card to a biological, medical, nutrition, or pharmaceutical claim.

20. Write a cautious CER statement using one unit/link count and one model-label comparison. Include a biology/health evidence boundary.
