

Protein Practice Sheet

Wait, what are proteins again?

Proteins are **chemicals** that make up things like muscle and hair, and they are **made of amino acids**. Just like a brick house is built with bricks, proteins are built with amino acids.

That means that **amino acids** are the building blocks of proteins. Proteins are usually 1000's of amino acids long chained together. Strangely, or conveniently, there are only **20 amino acids** to choose from, but they can be arranged in millions of ways.

Examine figure 1, which is an amino acid and answer the questions.

<ol style="list-style-type: none"> 1. Name the four elements present in this amino acid. _____ 2. Why do you think we call amino acids "amino acids"? _____ _____ 	<p>Figure 1</p> <div style="text-align: center; border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p>Amino Acid Structure</p> <p style="font-size: small; margin: 0;">Amino Group Acid Group</p> </div>
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Amino acids chemically bond together just like carbohydrates!

3. What is the chemical reaction called that joins monosaccharides (carbohydrates) together?
4. What molecule is removed when two monosaccharides join?

Draw four amino acids just like the one above. Join the OH and H ends.

5. How many molecules of water are removed when you join them?
6. What is the difference between a monosaccharide and a polysaccharide?

7. What is the difference between an amino acid and a protein?

There are thousand of different kinds of proteins. How are they different? If you switch the order of amino acids, you switch the protein.

Remember there are only 20 amino acids, but there are millions of combinations you can make.

Construct two different proteins using the four amino acids shown. One example of a protein using these four amino acids is:

threonine – glycine – alanine – valine

8. Now create two proteins that are different than the one above:

1) _____

2) _____

More questions:

9. How many amino acids are there?

10. How are amino acids used by living things?

11. Name the two special groups on an amino acid that make it unique.

12. What are proteins made of?

13. What does a positive test for protein look like when using biuret?

14. If the following substance would test positive for protein, place a check next to it.

a. hamburger		e. liver	
b. chicken		f. dog hair	
c. sugar		g. propel sports drink	
d. vegetable oil		h. 207 amino acids joined together	