2022 MCAS Sample Student Work and Scoring Guide

High School Biology
Question 20: Constructed-Response

Reporting Category: Molecules to Organisms
Practice Category: Evidence, Reasoning, and Modeling
Standard: HS.LS.1.6 - Construct an explanation based on evidence that organic molecules are primarily composed of six elements, where carbon, hydrogen, and oxygen atoms may combine with nitrogen, sulfur, and phosphorus to form monomers that can further combine to form large carbon-based macromolecules.
Item Description: Use models to identify which monomers make up organic macromolecules and describe how these organic macromolecules are used in cells.

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Scoring Guide

Select a score point in the table below to view the sample student response.

Score*	Description
4A	The response demonstrates a thorough understanding of monomers that can further combine to form large carbon-based macromolecules. The response correctly identifies the types of monomers that make up carbohydrates, nucleic acids, and lipids and clearly describes one way cells use each of these macromolecules.
4B	
3	The response demonstrates a general understanding of monomers that can further combine to form large carbon-based macromolecules.
2	The response demonstrates a limited understanding of monomers that can further combine to form large carbon-based macromolecules.
1	The response demonstrates a minimal understanding of monomers that can further combine to form large carbon-based macromolecules.
0	The response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

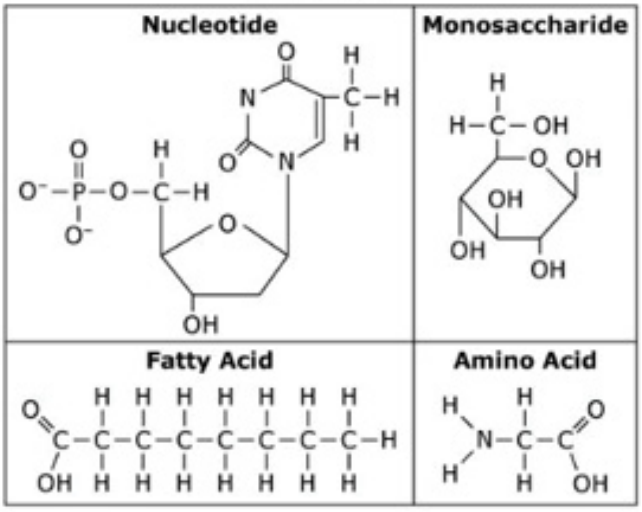
*Letters are used to distinguish between sample student responses that earned the same score (e.g., 4A and 4B).

Score Point 4A

This question has three parts.

The diagram shows four monomers that make up organic macromolecules.

Monomers



Part A

Identify the monomer that makes up carbohydrates. Describe one way cells use carbohydrates.

The monomer that makes up carbohydrates is a monosaccharide. Cells use carbohydrates as their main source of energy.

Part B

Identify the monomer that makes up nucleic acids. Describe one way cells use nucleic acids.

The monomer that makes up nucleic acids is a nucleotide. Cells use nucleic acids to store genetic information in their DNA and RNA.

Part C

Identify the monomer that makes up lipids. Describe one way cells use lipids.

The monomer that makes up lipids is a fatty acid. Cells use lipids to form the cell membrane.

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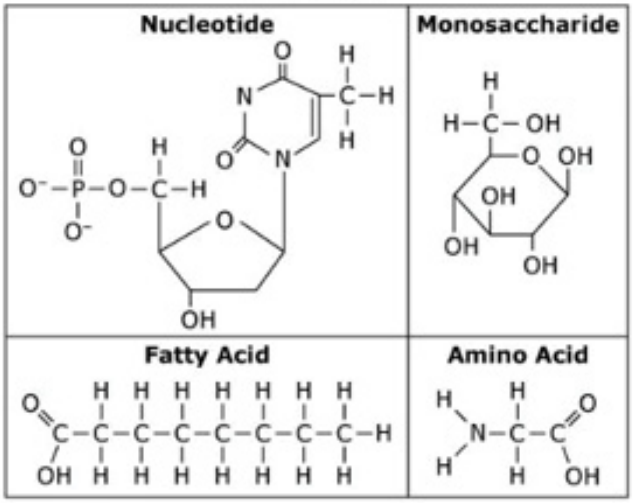
Score Point 4B

This question has three parts.

The diagram shows four monomers that make up organic macromolecules.

Monomers



Part A

Identify the monomer that makes up carbohydrates. Describe one way cells use carbohydrates.

The monomer that makes up carbohydrates is the monosaccharide. Cells use carbohydrates for quick energy in cellular processes

Part B

Identify the monomer that makes up nucleic acids. Describe one way cells use nucleic acids.

The monomer that makes up nucleic acids the nucleotide. Cells use nucleic acids to store genetic information.

Part C

Identify the monomer that makes up lipids. Describe one way cells use lipids.

The monomer that makes up lipids is the fatty acid. Cells use lipids for long-term energy and storage.

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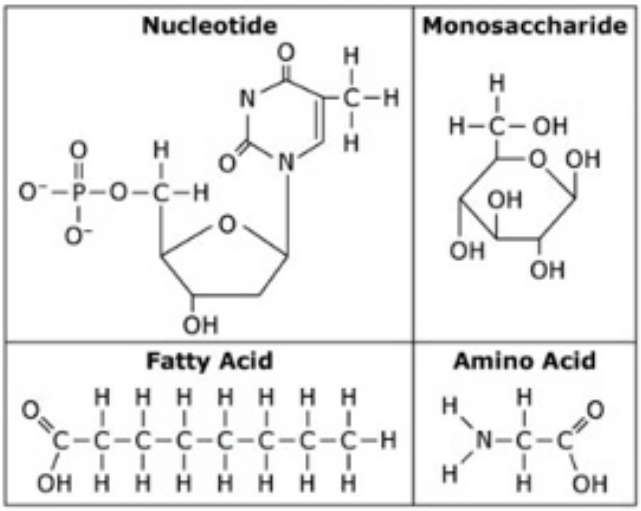
Score Point 3

This question has three parts.

The diagram shows four monomers that make up organic macromolecules.

Monomers



Part A

Identify the monomer that makes up carbohydrates. Describe one way cells use carbohydrates.

Monosachoride is the monomer of a carbohydrate. Carbohydrates can be used to store short term energy.

Part B

Identify the monomer that makes up nucleic acids. Describe one way cells use nucleic acids.

The monomer that makes up nucleic acids are nucleotides. Cells can use nucleic acids to help in transportation.

Part C

Identify the monomer that makes up lipids. Describe one way cells use lipids.

The monomer that makes up lipids are fatty acids. Cells use these to store long term energy.

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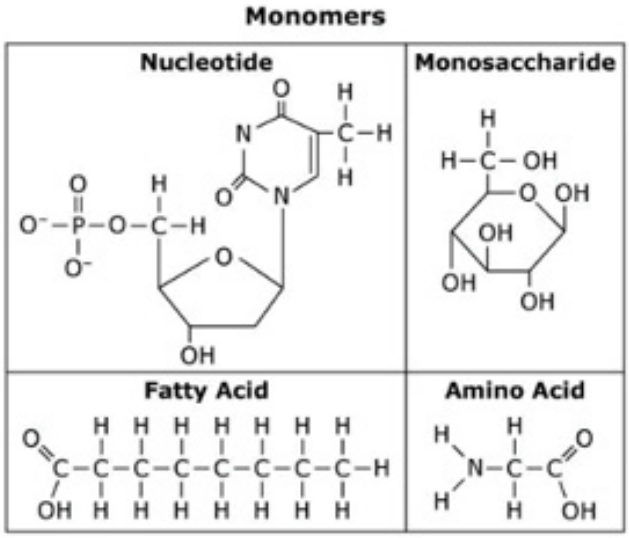
Score Point 2

This question has three parts.

The diagram shows four monomers that make up organic macromolecules.



Part A

Identify the monomer that makes up carbohydrates. Describe one way cells use carbohydrates.

The monomer that makes up carbohydrates are monosaccharidesCells use carbohydrates to complete or perform certain processes.

Part B

Identify the monomer that makes up nucleic acids. Describe one way cells use nucleic acids.

The monomer that makes up nucleic acids are nucleotides. Cells use nucleic acids to fight harmful infections/diseases in your system.

Part C

Identify the monomer that makes up lipids. Describe one way cells use lipids.

The monomer that makes up lipids are fatty acids. Cells use lipids to hold fats and other types of products in your cells and systems.

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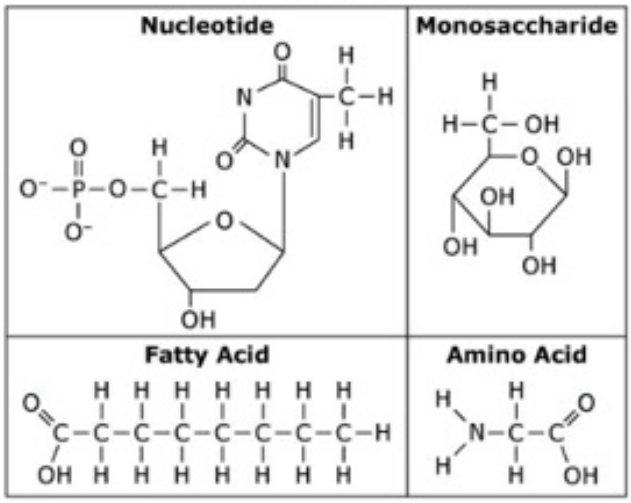
Score Point 1

This question has three parts.

The diagram shows four monomers that make up organic macromolecules.

Monomers



Part A

Identify the monomer that makes up carbohydrates. Describe one way cells use carbohydrates.

The monomer used to make up carbohydrates is Fatty Acids. The carbohydrates give the body energy, making it important for the body to have. Eating food that contains carbohydrates allows the cells to use it as food and create ATP.

Part B

Identify the monomer that makes up nucleic acids. Describe one way cells use nucleic acids.

Nucleotides make up Nucleic Acids. Cells use nucleic acids to help move products through the body.

Part C

Identify the monomer that makes up lipids. Describe one way cells use lipids.

Amino Acids make up lipids. The lipids are used to break down food in the cell and carry it to the stomach.

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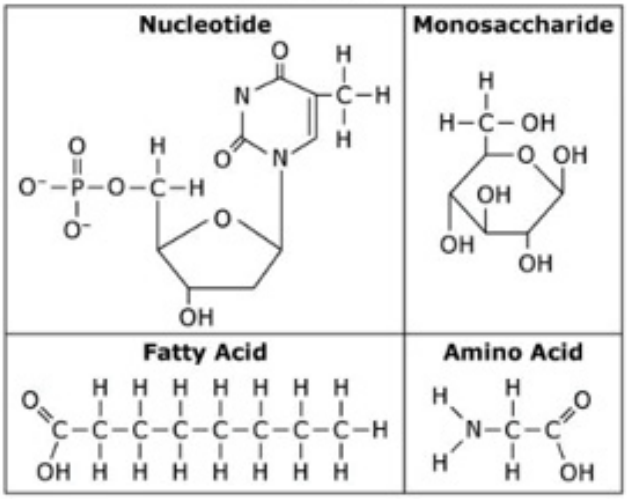
Score Point 0

This question has three parts.

The diagram shows four monomers that make up organic macromolecules.

Monomers



Part A

Identify the monomer that makes up carbohydrates. Describe one way cells use carbohydrates.

The monomer that makes up carbohydrates is nucleotide. Cells use carbohydrates by forming the nucleotide to help produce oxygen.

Part B

Identify the monomer that makes up nucleic acids. Describe one way cells use nucleic acids.

The monomer that makes up nucleic acids are fatty acid. Nucleic acid is used to help make energy.

Part C

Identify the monomer that makes up lipids. Describe one way cells use lipids.

The monomer that makes up lipids is amino acid. Amino acid helps make up DNA.

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