

Lesson 4 Quiz: How do food molecules provide organisms with building materials?

You will be given a collection of items to model the breakdown of large food molecules. You may choose the type of large molecule to model. Your model should be clearly labeled and use arrows or other symbols to show your thinking. You can use the back if needed.

A

Word Bank

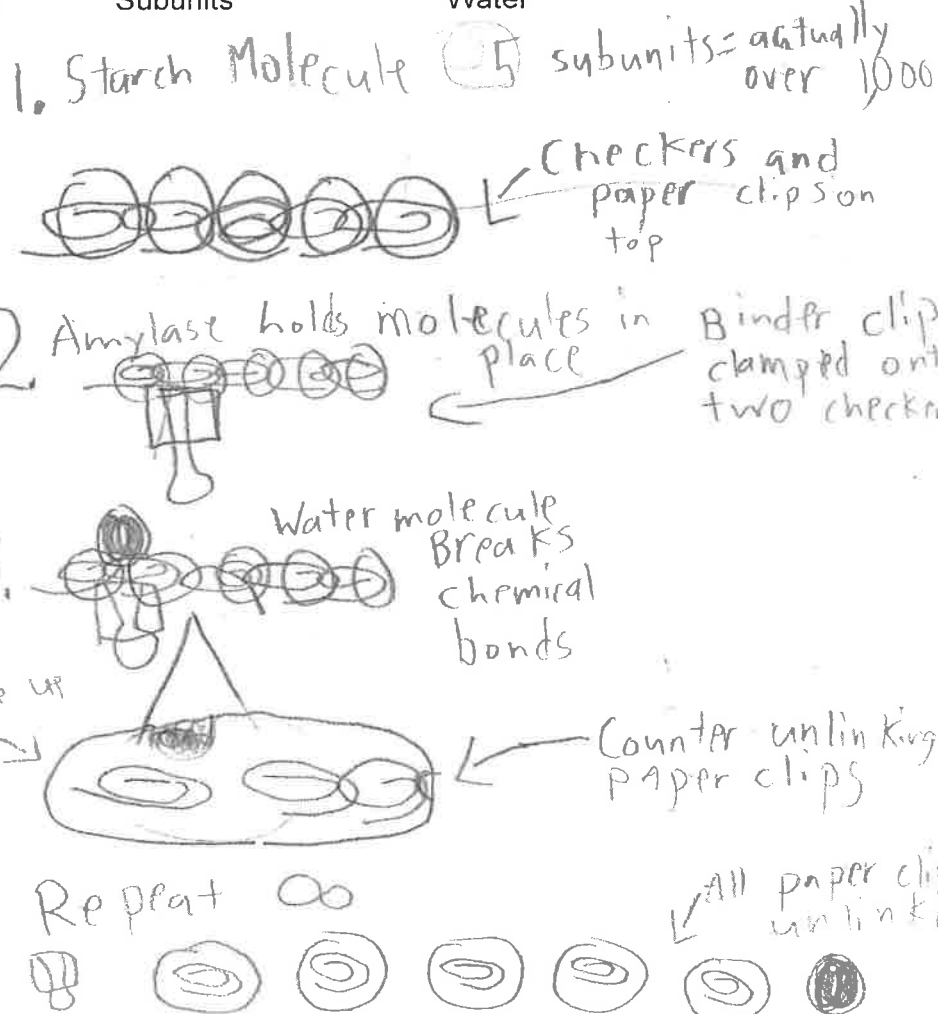
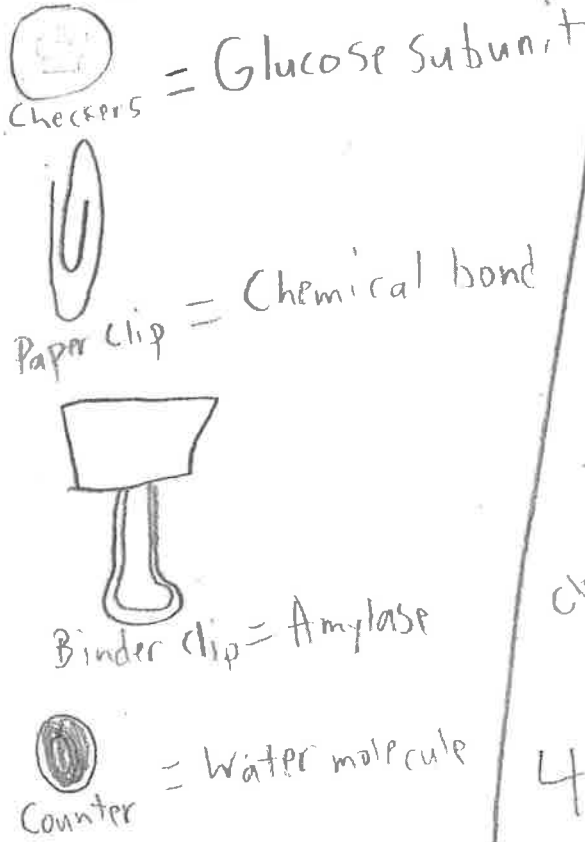
Starch
Amino Acids
Hydrolysis

Protein
Glucose (sugar)

Amylase
Subunits

Pepsin
Water

Diagram of model:



Explain your model with words (2-3 sentences) underline science words:

In my model, a starch molecule is made up of many subunits (checkers), that are linked together (paper clips). In a process called hydrolysis, water (counter) is added as well as an enzyme called amylase (binder clip). The enzyme holds the molecules in place while the water breaks the chemical bonds, and separates the subunits. The enzyme molecule is reused until all of the subunits are separated.

<p>2 Developing Does not answer the question; Content contains inaccurate information</p>	<p>3.5 Nearly Proficient On topic, but may not answer all parts of the question; Generally accurate.</p>	<p>4 Proficient Clearly addresses all parts of the question accurately; Uses science principles/ terms.</p>	<p>5 Highly Proficient Clearly addresses all parts of the question accurately; Uses science principles and terms to provide details.</p>
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B

Word Bank

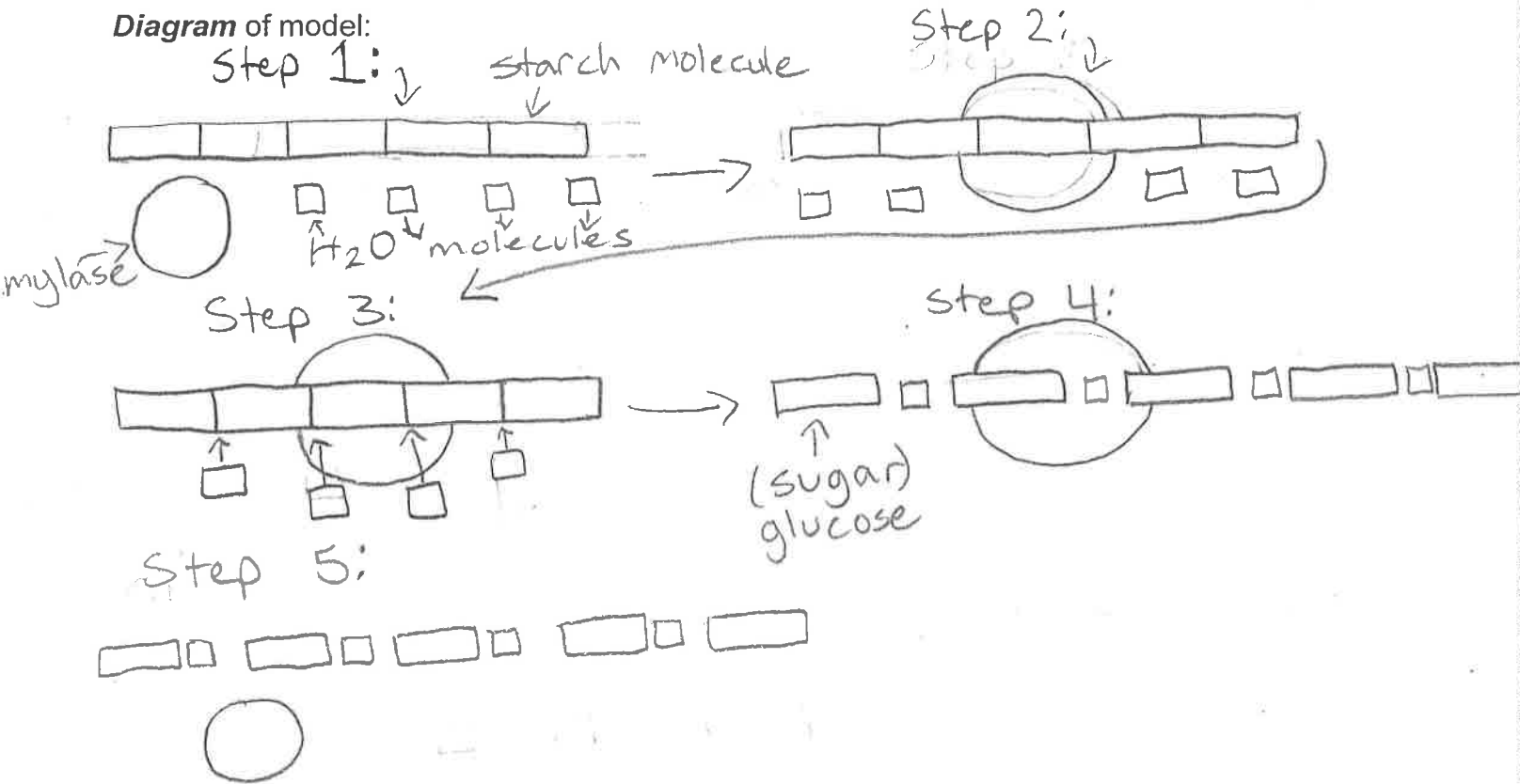
Starch
Amino Acids
Hydrolysis

Protein
Glucose (sugar)

Amylase
Subunits

Pepsin
Water

Diagram of model:



Explain your model with words (2-3 sentences) underline science words:

STEP 1: There is one large, 5 linked starch molecule, 4 water molecules and one amylase

STEP 2: The Amylase connects with the starch and weakens the bond between the subunits.

STEP 3: The H₂O molecules go in between each of the starch links and make smaller subunits

STEP 4: There is now 5 separate, small subunits that are called sugar or glucose in this case.

2 Developing	3.5 Nearly Proficient	4 Proficient	5 Highly Proficient
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STEP 5: The starch and water rearrange and make a new subunit (the sugar) and the Amylase has done its job

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✓ Starch
 ✓ Amino Acids
 ✓ Hydrolysis

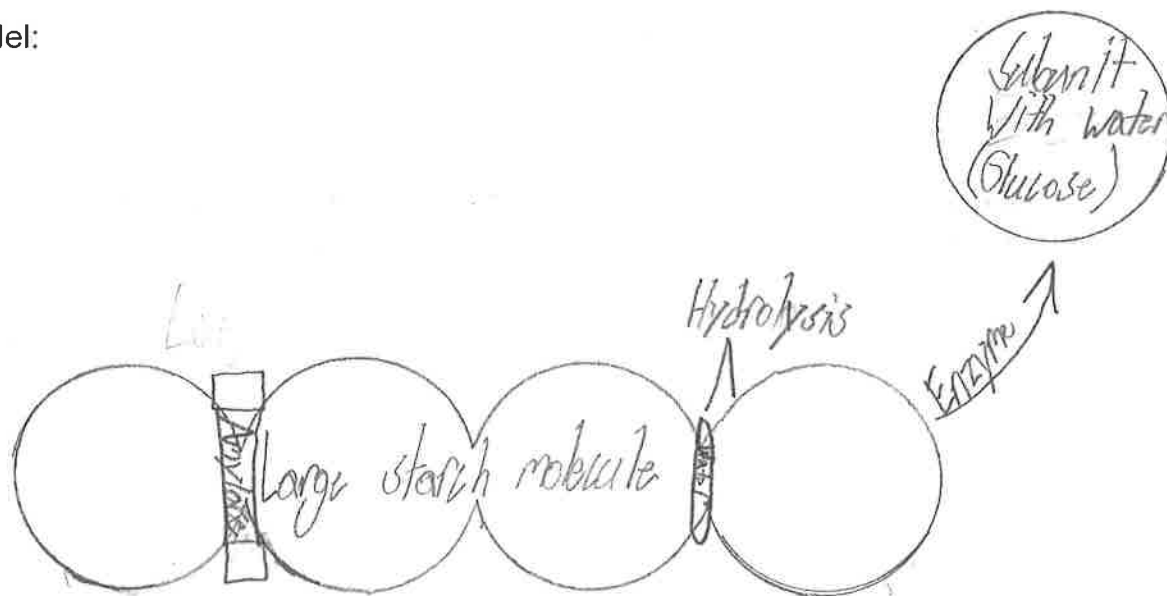
Protein
 ✓ Glucose (sugar)

Word Bank
 ✓ Amylase
 ✓ Subunits

Pepsin
 ✓ Water

C

Diagram of model:



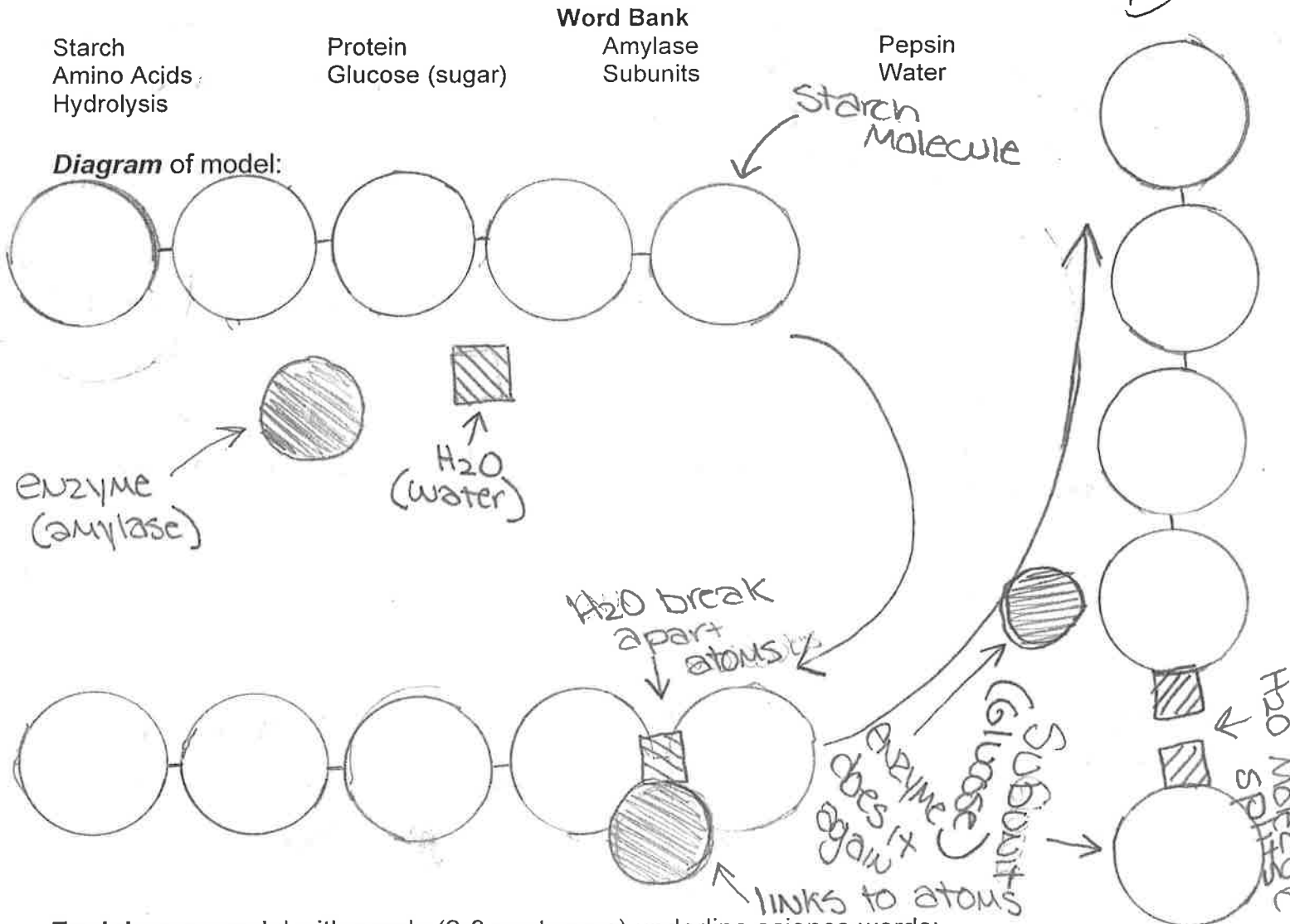
Explain your model with words (2-3 sentences) underline science words:

In this diagram I chose to explain the break down of big starch molecules to Glucose. You eat the starch molecule and when digesting the Amylase holds on to it and torques it so the water can break each little unit off and turn it into a subunit. Then the water conjoins with the subunit and turns the starch into Glucose or sugar.

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Explain your model with words (2-3 sentences) underline science words:

In my model, I showed what happens to a starch molecule in the mouth and when we digest the molecule. I showed the process hydrolysis. This process breaks down molecules using water. The amylase links on to two starch molecule atoms, and the water breaks them apart. The water then splits and both glucose and starch are shown. The hydrolysis process then starts again.

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Critique-E

Evaluate Model

1. What about the objects you were provided makes them a **good** item to model the breakdown of molecules?

The blocks represent a good starch molecule because they can connect and break apart. The binder clip is good for representing the amylase holding the subunit still because it can go on either side of blocks like it's holding it. The little circle is good for representing the water because it can go

2. What about the objects you were provided **limits** the ability to model the breakdown of molecules?

When the water molecule breaks apart the subunits, it breaks in half and we can't show that with the materials we were given.



3. Describe any improvements you would make to your model. Be specific.

I would like to use the magnetic cubes better than the cubes because they break apart easier.