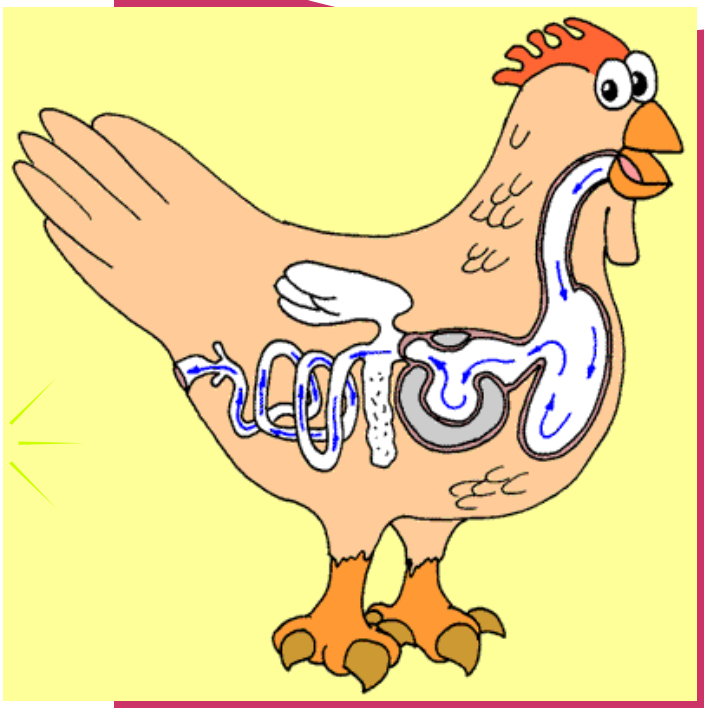
Chemistry of Life: Digestion

Nutrition and Your Digestive System



Menu Packet

Independent Learning Menu

Name: _____

Body Systems Rubric

	Criteria				Points
	4	**3**	**2**	**1**	
Quiet Work Time	The student is **always** quiet.	The student is quiet the **majority** of the time.	The student needs **frequent reminders** to remain quiet.	The student **is not** quiet even with reminders.	____
Following Directions	The student follows directions **immediately.**	The student follows directions.	The student follows directions **with a reminder.**	The student follows directions when the teacher calls his/her name.	____
Cooperation With Others	The student uses polite words when he/she cooperates with partner(s).	The student cooperates with partner.	The student teases partner or draws partner off task.	The student **often** picks on partner, teases partner, and draws partner off task.	____
Job Completion	The student gets the job done **quietly and quickly.**	The student gets the job done.	The student **needs reminders or help** to get the job done.	The student **does not** get the job done and is **off task.**	____
Treatment Of Materials	The student **always** treats materials with care.	The student treats **most** materials with care.	The student treats **few** materials with care.	The student throws or breaks materials.	____
Preparation	Student is **almost always** prepared for class with assignments and required class materials.	Student is **usually** prepared for class with assignments and required class materials.	Student is **rarely** prepared for class with assignments and required class materials.	Student is **almost never** prepared for class with assignments and required class materials.	____
Behavior	Student **almost never** displays disruptive behavior during class.	Student **rarely** displays disruptive behavior during class.	Student **occasionally** displays disruptive behavior during class.	Student **almost always** displays disruptive behavior during class.	____
Independence	Student requires **no assistance** from the teacher.	Student requires **minimal** assistance from the teacher.	The student requires **frequent** assistance from the teacher.	The student is very **demanding** of the teacher's time.	____
				Total	____

Confused about the Independent Learning Menu? (ILM)

Don't be! Here's what you need to know….

- Each Menu covers 4 class days. One day of group activity or lab, followed by three days of YOU working independently to get to **the level (and grade) that you want**. (LAB DAY plus DAYS 1-3).
- You MUST get a perfect score (100%) on each of the Level 1 and Level 2 quizzes (on the computer) to **fully** complete that level. **You have 3 tries for each quiz**.
- Grading works like this:
  - **Complete Level 1 work** & then get a perfect score on the **Level 1 Mastery Quiz** = **75%** *(3 retakes allowed)*
  - + **Level 2 Question Sheet done** = **80%**
  - + **Complete Level 2 work** (quest. sheet & 2 activities from menu) = **90%**
  - + Get a perfect score on **Level 2 Mastery Quiz** = **95%** *(3 retakes allowed)*
  - + Complete any **Level 3 activity** for 1-5 points = up to **100%**
- **YOU decide what to do for homework each night.** The menu is **your guide** so you know what you have to complete to reach Level 1, 2, or 3. **It's all up to you**!
- You can **ONLY** take the Level 1 and Level 2 mastery quizzes *(on the testing station computers)* **during class-time**.
- You may hand in work from Day 3 (last day) the day after the menu is done, and it will still count.
- **TIP:** For Level 1, the **Question Sheet and Background Reading** should be started IMMEDIATELY. Do not delay in starting this, or you will find yourself having lots of problems. ***See your teacher if you want some advice or strategies for doing the reading and questions.***

Practice Quizzes are on Mr. Young's site – not Science 7 site (password = "body")

My Independent Work Plan

I would like to reach Level 1 2 3 and earn a grade of _____

Work Day 1 _____

In class I will complete…

_____ ☐
_____ ☐
_____ ☐
_____ ☐

At home I will complete…

_____ ☐
_____ ☐
_____ ☐
_____ ☐

Work Day 2 _____

In class I will complete…

_____ ☐
_____ ☐
_____ ☐
_____ ☐

At home I will complete…

_____ ☐
_____ ☐
_____ ☐
_____ ☐

Work Day 3 _____

In class I will complete…

_____ ☐
_____ ☐
_____ ☐
_____ ☐

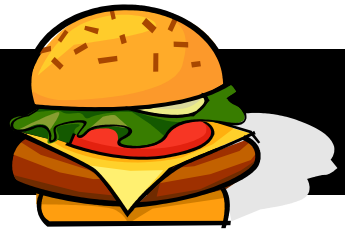
At home I will complete…

_____ ☐
_____ ☐
_____ ☐
_____ ☐

Human Body Unit: Digestion

Important: If you can definitely say **YES** to each of these objectives, then you are probably ready to take the Level 1 quiz.

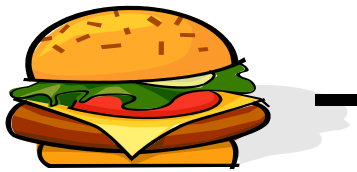
		Digestive System OBJECTIVES – LEVEL 1		
Yes	No		Yes	No
		• I can describe the levels of organization from smallest (atom) to largest (organ system).		
		• I can define the term atom.		
		• I can explain the difference between and element and a compound.		
		• I know where chemical energy is stored in molecules.		
		• I can define the term digestion.		
		• I know where digestion begins.		
		• I can define the term nutrient.		
		• I can name the smaller units (molecules) that make up carbohydrates.		
		• I can name the smaller units (molecules) that make up proteins.		
		• I can explain the difference between mechanical and chemical digestion.		
		• I can give examples of mechanical and chemical digestion.		
		• I can define the term enzyme.		
		• I can define the term gland.		
		• I can define the term diffusion.		
		• I can describe where diffusion happens to get nutrients out of the digestive system and headed to all the cells that need them.		
		• I can name the liquid that ***transports*** nutrients to all cells in the body.		
		• I can label (IN ORDER) the organs that food passes through on a diagram: mouth, esophagus, stomach, small intestine, large intestine, rectum, anus.		
		• I can describe the function of the following organs of the digestive system: mouth, stomach, small intestine, large intestine.		

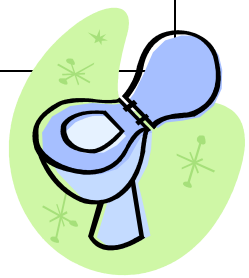


From Food to Feces!

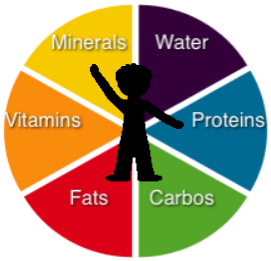
Organ	Event	Does food pass through?	Mechanical/Chemical digestion?
Mouth		☐ YES ☐ NO	☐ Mechanical ☐ None ☐ Chemical of _____
Esophagus		☐ YES ☐ NO	☐ Mechanical ☐ None ☐ Chemical of _____
Stomach		☐ YES ☐ NO	☐ Mechanical ☐ None ☐ Chemical of _____
Small Intestine		☐ YES ☐ NO	☐ Mechanical ☐ None ☐ Chemical of _____
Liver/Pancreas		☐ YES ☐ NO	☐ Mechanical ☐ None ☐ Chemical of _____
Large Intestine		☐ YES ☐ NO	☐ Mechanical ☐ None ☐ Chemical of _____
Rectum/Anus		☐ YES ☐ NO	☐ Mechanical ☐ None ☐ Chemical of _____

Hamburger Ingredients	Nutrient	Important Information
Bun		
Meat		
Cheese		





The Digestive System (& Nutrition)



Nutrients are the **molecules** that living organisms need to grow and survive. There are six essential nutrients that your body needs on a daily basis. **We get these nutrients from the foods** we eat. **Digestion** is a process that breaks down the foods that we eat into **nutrients** – molecules small enough to be **absorbed** (taken in) by cells. **The six essential nutrients are:**

1. Carbohydrates

There are three types of carbohydrates. They are sugars, starches, and fiber. Carbohydrates can be broken down into smaller "simple sugar" molecules, such as **glucose** ($C_6H_{12}O_6$). Carbohydrates are the main source of **energy** for your body. They are found in foods like bread, potatoes, pasta, rice, cereal, candy & more.

2. Proteins

Proteins are made up of smaller molecules known as **amino acids**. Proteins help to build muscle, replace & repair body cells and for growth. Protein is in foods like meat, cheese, beans & milk.

3. Fats (Lipids)

The body needs fat to absorb vitamins and minerals and to insulate its inner organs. Fat is also used by the body to store energy. Cheese, nuts, cooking oil etc. are high in fat content. Too much fat in your diet can cause you health problems. (Saturated fats are very bad for you, but unsaturated fats are needed for health.)

4-5. Vitamins & Minerals

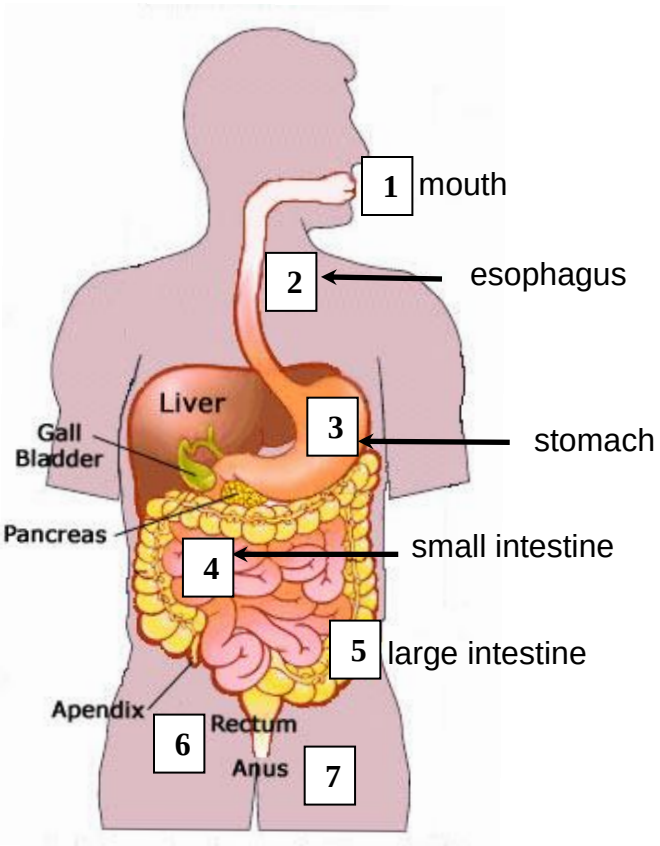
These are both needed in small amounts for growth, to regulate body functions, to be used in making cells/tissues, and to prevent some diseases. Some vitamins are vitamin A, B, C & D. Some minerals are calcium, potassium, iodine & iron.

6. Water

Water is the most important nutrient, as it provides the fluid to carry materials around the body. The human body is about 60% water! A person can only live a few days without water. Water's chemical formula is H_2O.

The Human Digestive System is a tract (a long tubular pathway) about 9 meters (30 feet) in length. Food passes through these organs in this order:

1. **mouth**
2. **esophagus** *(muscular tube from mouth to stomach)*
3. **stomach**
4. **small intestine**
5. **large intestine** *(removes excess water)*
6. **rectum** *(stores feces before it exits)*
7. **anus** *(the hole that feces exits through)*



Enzymes Are Chemical Helpers!

Enzymes are special chemicals that speed up chemical reactions. Enzymes speed up the chemical reactions that **digest** food – breaking it down into the nutrients (smaller molecules) that can be used by your cells.

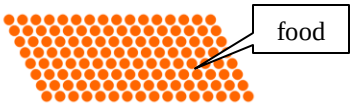
Enzymes are made in special organs called **glands**, such as the **liver** and **pancreas**. *Food does not pass through your glands – they just make the helpful enzymes and **secrete** (squirt) them into the digestive organs.*

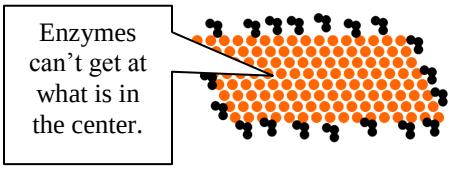
*The gall bladder stores the enzyme **bile** which is made in the **liver** and breaks down fat. The pancreas makes several enzymes including **insulin** for balancing blood sugar levels.*

2 Kinds of Digestion – Mechanical & Chemical

Why do we have 2 kinds of digestion? First our bodies have to break food into small pieces by chewing, chomping, and mashing (**mechanical digestion**), and then our **enzymes** can more easily break it into tiny nutrient molecules (**chemical digestion**) for our cells.

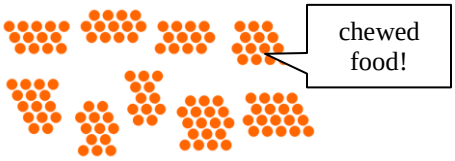
1) A piece of food is very big compared to your cells. Food needs to be broken apart (**digested**) into **nutrient** molecules so your cells can use them.

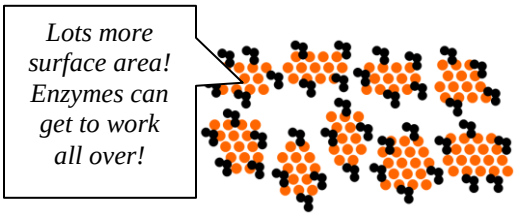




2) A piece of food would take a LONG time to be digested only by **enzymes**, because the **enzymes** can only work on the surface.

3) **Mechanical digestion** breaks food into smaller pieces by chewing & mashing in the mouth & stomach.

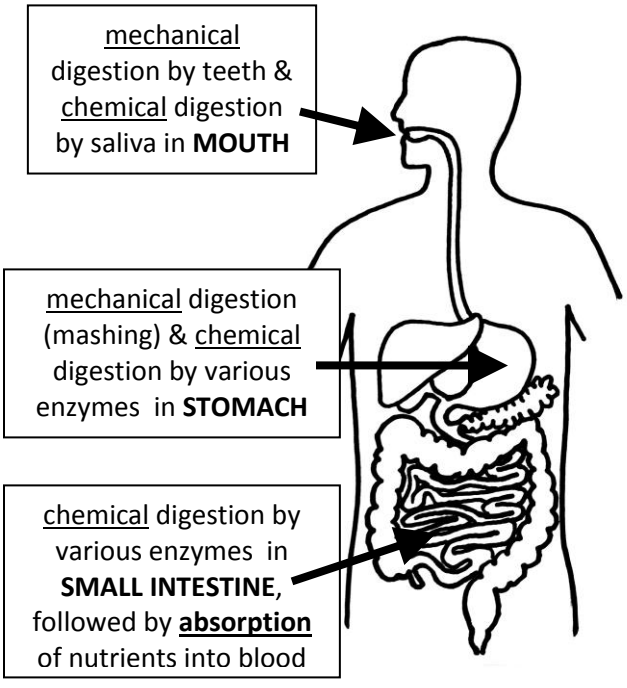




4) Now the **enzymes** can get at more food surfaces! *There is MUCH more surface area when food is broken apart, for **enzymes** to do their work of **chemical digestion**.*

Digestion **begins in the mouth** where food is cut & chewed by the teeth into smaller pieces. (This will make it easier for **enzymes** to later break it down even more.) This physical breakdown of food by chewing, grinding, & mixing is called **mechanical digestion**.

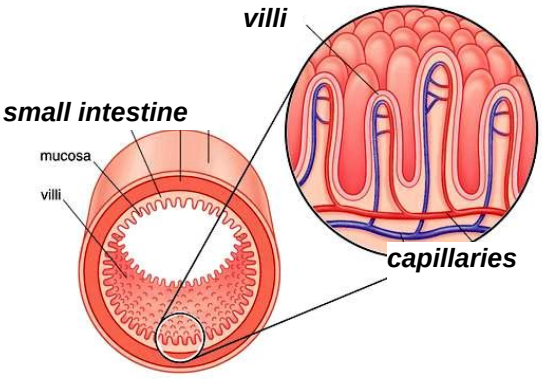
While in the mouth, **saliva** is added to the food. Saliva (spit) contains **enzymes** to break down the food, and it also makes the food easy to swallow. Enzymes are types of proteins that speed up the rate of chemical reactions – such as breaking apart food into nutrients. The process of breaking food into small molecules by **enzymes** is called **chemical digestion.** *Saliva contains enzymes that start the digestion of starch (a **carbohydrate**). Chemical digestion continues with many other enzymes in the **stomach** and **small intestine**.*



During swallowing, the chewed food is pushed (by the tongue) into the **esophagus**, the muscular tube that leads to the **stomach**. *The walls of **the esophagus contain smooth muscle tissue** that contracts (squeezes) in waves. This cooperation between the muscular & digestive systems is called **peristalsis** – waves of muscle squeezing that move the food from esophagus to stomach to small intestine to large intestine to rectum and out of the body.*

Once in the **stomach** (a pouch-like muscular organ) food gets churned more & mixed with gastric juices (a mixture of more **enzymes** & hydrochloric acid). *This thin and watery mixture of food & gastric juices is called **chyme**. Chyme is the product of both **mechanical & chemical digestion** in the stomach. Hydrochloric acid, a strong acid, is one of the things that make up the gastric juice. Hydrochloric acid is important because it kills most bacteria in food, including ones that could make you sick. Chemical digestion of **proteins** first happens in the stomach.*

VOCAB ALERT: Diffusion is movement of molecules across a membrane. This is how nutrient molecules get into cells and waste molecules get out of cells – across the **cell membranes**.



Your **small intestine** is about as skinny as your thumb – but hollow. The small intestine is **VERY** important. It is the place where those nutrients are then **absorbed into the blood** – then your blood **transports (carries)** the nutrients to all the cells in your body.

The walls of the small intestine contain many **capillaries** (the tiniest blood vessels). The nutrient molecules move by **diffusion** out of the cells in the wall of the small intestine, and then the nutrients move by **diffusion** into the capillaries. **Your capillaries pick up nutrients at the small intestine, so your blood can carry the nutrients to all other cells in the body.** Capillaries let the nutrient molecules move by **diffusion** through their walls into the blood, and then by **diffusion** again out into all the cells of the body.

*The small intestine is the **last place where any digestion occurs** (breaking food down into nutrients) – and it is where the actual absorption of nutrients into the blood occurs. The inside wall of the small intestine is covered with **villi**. **Villi** are finger-like projections that increase the surface area of the small intestine. All the villi are full of **capillaries** (microscopic blood vessels) – the nutrient molecules move by **diffusion** right through the cell walls of the villi into the bloodstream.*

***Looking Ahead:** Your **circulatory** system includes the **heart**, **blood** & **blood vessels**. Blood is a liquid tissue that transports (carries) many substances (nutrients, oxygen, hormones, cellular wastes & more) to & from all cells of the body. Blood vessels such as arteries & veins & capillaries are the tubes that blood moves through to get to your cells. The heart is the pump that keeps the blood moving through the blood vessels all around the body.*

By the time digested food gets to the <u>end</u> of the small intestine, all the nutrients have been absorbed into the blood, to be transported to cells all over your body. *Remember, **carbohydrates** begin their digestion in the mouth, while **proteins** begin their digestion in the stomach. **Fats** begin and end their digestion in the small intestine.*

The nutrient-free chyme then moves to the **large intestine**. **In the large intestine, extra water is re-absorbed from the chyme and sent back to the body cells**. This happens by **diffusion of water** across cell membranes. The leftover waste material is now called **feces**. You may know this material by other names such as poop, BM, or #2! **Feces** is stored in the **rectum** before it is released out the **anus**.

*If your large intestine re-absorbs too much water by, the feces become too hard. This is called **constipation**. Other times the small intestine re-absorbs too little water, leaving the feces runny. This is known as **diarrhea**.*

Organ	Does food pass through it?	Does it make enzymes?	The type of digestion that happens in this organ or gland
mouth	yes	yes – *enzymes in saliva*	**mechanical** & **chemical** digestion *(carbs start chemical digestion)*
esophagus	yes	no	none – just a muscular tube
stomach	yes	yes – *enzymes in gastric juices*	**mechanical** & **chemical** digestion *(proteins start chemical digestion)*
liver & pancreas	no	yes – *bile & insulin & more*	no digestion, but **these 2 glands produce enzymes** for use in the small intestine
small intestine	yes	no	**chemical** digestion and **<u>absorption</u>** (by **<u>diffusion</u>**) *(fats start chemical digestion)*
large intestine	yes	no	**no digestion**, *but re-absorbs water by diffusion*
rectum	yes	no	**no digestion** - the rectum is a waiting room for feces before it exits
anus	yes	no	**no digestion** – the anus is the exit hole for feces

Connections to the Chemistry of Life

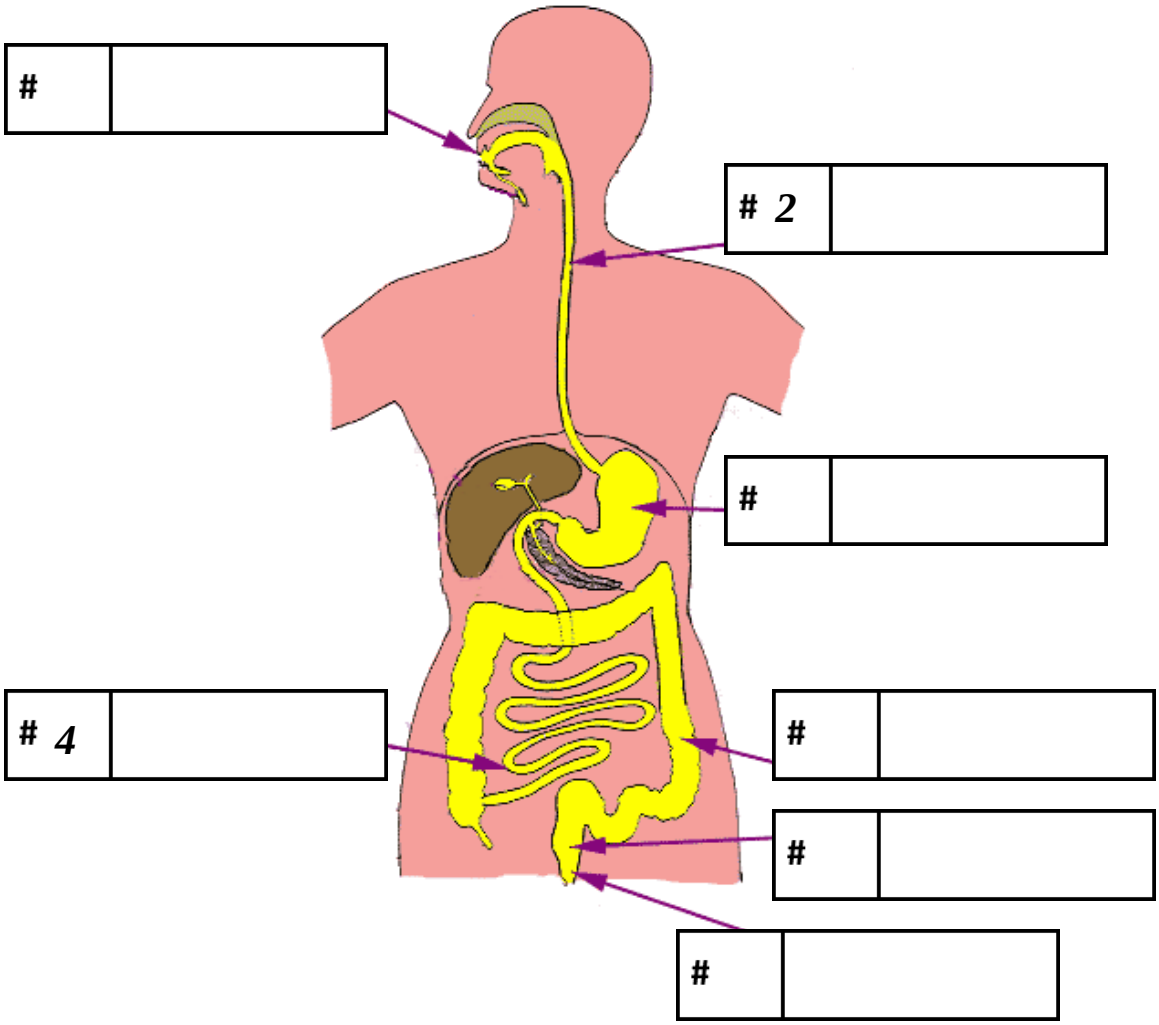
- **Chemical digestion** happens AFTER mechanical digestion. It is when small pieces of food are dissolved and broken apart into **nutrient molecules** by chemical reactions. *(For example, **starches** in a saltine cracker are broken down into **simple sugar** molecules like **glucose – $C_6H_{12}O_6$**.)*
- **Enzymes** are the helper chemicals that speed up the chemical reactions that break apart food into nutrient molecules.
- **Diffusion** (molecules moving across membranes) is how nutrients get from your small intestine into your bloodstream, AND it's how the nutrients get from your blood into your cells. It's also how excess water gets out of the large intestine.
- **Energy** is stored in the **chemical bonds** between the **atoms** of nutrient **molecules**. *Sugars and fats are two types of molecules that contain lots of energy for cells in the body.*
- Water is a **nutrient**, as well as a very common chemical **compound**. Its formula is H_2O. This formula means that each molecule of water has 2 atoms of hydrogen and one atom of oxygen.

Level 1 Question Sheet – Digestive System **Name** _____

1. What is a nutrient?	
2. Define digestion:	
3. When carbohydrates are broken down, what are the smaller molecules called?	
4. When proteins are broken down, what are the smaller molecules called?	
5. Where does digestion begin?	
6. Define chemical & mechanical digestion and give an example of each.	*Chemical digestion is…* *Example:*
	Mechanical digestion is… *Example:*
7. Define the term enzyme:	
8. Define the term gland:	
9. Explain what enzymes do to help the digestive system:	
10. Which type of digestion involves enzymes?	
11. What digestive organ is the location where nutrients move into the bloodstream?	
12. What is the job of capillaries?	
13. What is the name of the process where nutrients move into and out of cells, across the cell membrane?	

14: LABELS: **Label the organs** of the digestive system – **AND put numbers** to indicate the order in which food travels through this system.

15. **PUT A STAR** next to the organ that is the place where nutrients move by **diffusion** into the bloodstream.



DIGESTIVE SYSTEM

Date:_____

Name:_____

Class:_____

1 **Why do we need to break apart the food we eat?**

A So it can fit into our stomachs

B So our bodies can use the nutrients from the food

C So liquids can be separated from solids

D So that our bodies' enzymes have something to do

2 **Where does digestion begin?**

A 

B 

C 

D 

3 **Chewing is an example of what kind of digestion?**

A Dental

B Fragmentary

C Chemical

D Mechanical

4 **If you wanted to find the glands that produce salivary amylase, where would you look?**

A In your mouth

B In your throat

C In your intestines

D In your stomach

5 **Place the following events in sequence: A) Food enters your large intestine; B) Food enters your small intestine; C) Food enters your esophagus**

A A, B, C

B C, B, A

C C, A, B

D B, A, C

6  **Hydrochloric acid is a caustic chemical that can burn your skin – and yet it exists in your stomach. How can this be?**

A Your small intestines absorb all the hydrochloric acid

B The food in your stomach absorbs all the acid

C Your stomach lining protects you against burns

D The hydrochloric acid in your stomach is different from the hydrochloric acid you'd find in a chemistry lab

7 **What is chyme?**

A A particular type of digestive enzyme

B What food is called after it's been digested by the stomach

C A chemically active part of the small intestines

D The passage that leads from the small intestine to the large intestine

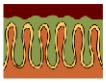
8 **What might happen if you had your pancreas removed?**

A Your intestines might have trouble breaking down food

B Your stomach might have trouble producing hydrochloric acid

C You would not be able to chew properly

D You would have trouble producing saliva

9  **What is the main function of villi?**

A They move food from the stomach to the small intestine

B They absorb nutrients into the bloodstream

C They absorb water from chyme

D They move food from the small intestine to the large intestine

10 **What might happen if your large intestine did not absorb water from chyme?**

A You couldn't digest food

B You wouldn't be able to go to the bathroom

C You'd become dehydrated

D Solid waste couldn't be moved to the rectum

BODY CHEMISTRY

Date:_____

Name:_____

Class:_____

1 **Water is the most abundant molecule in the human body. What does "most abundant" mean?**

A Most useful

B Most common

C Smallest

D Simplest

2  **What might happen if you did not consume carbohydrates?**

A Your body would dry out

B You would die from a lack of oxygen

C You wouldn't get the energy you needed to function

D Your body wouldn't be able to build new muscle mass

3 **The four elements that make up 95 percent of the body's weight are carbon, hydrogen, oxygen, and:**

A Nitrogen

B Nickel

C Iron

D Calcium

4 **If the human body were a car, glucose would be:**

A The engine

B The motor oil

C The wheels

D The gasoline

5 **What might happen if you didn't consume enough lipids?**

A You would die of dehydration

B Your body might not be able to store energy

C You might not be able to go to the bathroom

D Your cells would not be able to break down sugars

6 **What might happen if you consumed too many lipids?**

A You might develop heart disease

B Your cells might swell up with too much water

C You might get a very high fever

D You might wind up with too much energy

7 **In your body, where can you find protein?**

A Only in your hair and nails

B Only within your bones

C Only in tissues and cartilage

D Just about everywhere

8 **What are nucleic acids responsible for?**

A Removing wastes from the body

B Providing short bursts of energy

C Encoding information used for the body's functions and growth

D Delivering chemical messages between the brain and the body

9 **How would a chemical reaction that includes an enzyme differ from a chemical reaction that takes place without an enzyme?**

A The reaction with the enzyme would be faster

B The reaction with the enzyme would be slower

C The reaction with the enzyme would require more energy

D The reaction with the enzyme would require less energy

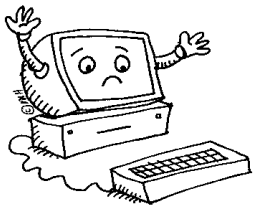
10 **Why should you eat right?**

A Because it'll make you thin and good-looking

B Because your doctor and parents say so

C Because your body will gradually lose water if you don't

D To provide your body with the proper raw materials it needs to function



Paper Study Stack
Vocabulary and Definitions

NOTICE: This sheet is only needed if you do not currently have Internet access.

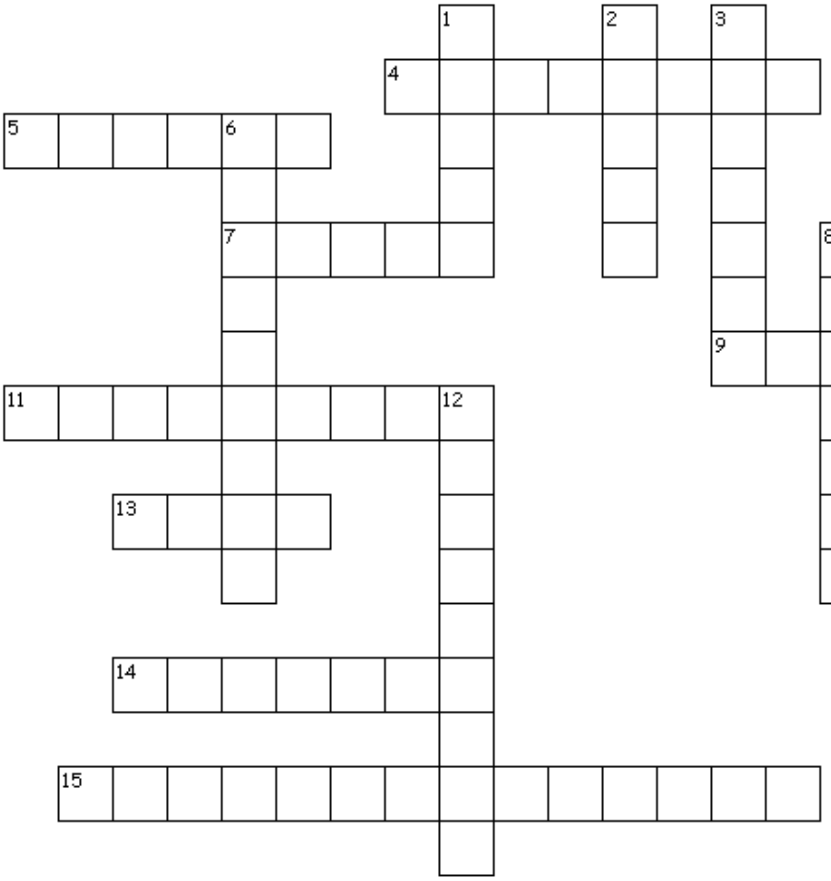
If you do not currently have access to the Internet from home, and cannot access the 7th Grade Science Website (or the Study Stacks), you can use this sheet to create your own flash cards.

This sheet contains all the terms and definitions that are in the Study Stack listed at the right.

UNIT	**Human Body**
SECTION	**Digestive System**
STUDY STACK NAME	**Digestive Level 1**

Term	Definition
nutrients	Substances found in the environment that living organisms need to grow and survive. The 6 types are water, fat, proteins, carbohydrates, vitamins, and minerals.
digestion	A process that breaks down the foods that we eat into molecules small enough to be absorbed (taken in) by cells. It can be mechanical or chemical.
mechanical digestion	The physical breakdown of food into smaller pieces, by chewing, grinding, mixing.
chemical digestion	The process of digesting (breaking down) food into small molecules by enzymes.
enzymes	Special chemicals that speed up chemical reactions.
glands	The special organs where enzymes are made.
mouth	The place where mechanical AND chemical digestion begins. Mechanical: teeth cut and chop food. Chemical: enzymes in saliva start to digest carbohydrates (starch).
esophagus	The tube that leads from the mouth to the stomach.
stomach	The pouch-like muscular organ where food gets mixed with gastric juices and churned into a watery paste. Both mechanical & chemical digestion occur here.
small intestine	The organ after the stomach where chemical digestion occurs. Also where nutrients are absorbed into the blood by diffusion to go to the cells.
large intestine	The organ where extra water is removed from the nutrient-free mixture, to be sent back to the body.
feces	The waste material left over after nutrients have been absorbed from food, and the extra water has been absorbed by the large intestine.
carbohydrate	A nutrient that is made of simple sugars like glucose.
protein	A nutrient that is made of amino acids
diffusion	Movement of molecules across a membrane – like into and out of cells
blood	A red liquid that is considered a tissue. It carries nutrients (and other substances) to all the cells of the body. It is part of the circulatory system, but works with many other systems.
tissues	A group of similar cells working together, like muscle or skin.
organs	Special structures in a body made up of tissues. Each has a specific job or jobs.
atom	The smallest unit of matter.
molecule	It is made of 2 or more atoms held together by bonds, like O_2 or H_2O
element	Substance made of only one type of atom, like C or Mg or O_2
compound	Substance made of 2 (or more) different types of atoms like H_2O or $C_6H_{12}O_6$
bonds	The attractions (forces) that hold atoms together to make molecules. They contain energy!

Digestive Level 1 Vocabulary



Note: some answers are 2 words long, with **no** space in between, like *largeintestine*.

Across

4. A substance made of 2 different types of atoms bonded together
5. The special organs where enzymes are made.
7. The waste material that's left over after nutrients have been absorbed from food, and the extra water has been absorbed by the large intestine.
9. The pouch-like muscular organ where food gets mixed with gastric juices and churned into a watery paste. Both mechanical & chemical digestion occur here.
11. A process that breaks down the foods that we eat into molecules small enough to be absorbed (taken in) by cells. It can be mechanical or chemical.
13. The smallest unit of matter.
14. A nutrient that is made of simple sugars.
15. The organ after the stomach where chemical digestion occurs. Also the place where nutrients move by diffusion into the blood to go to the cells.

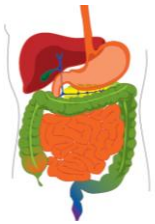
Down

1. The attractions (forces) that hold atoms together to make molecules. They contain energy!
2. The place where mechanical and chemical digestion begins, by teeth and saliva
3. Special chemicals that speed up chemical reactions (like reactions that break down food)
6. Movement of molecules across a membrane – like into and out of cells
8. A nutrient that is made of amino acids
10. The hole at the end of the rectum where food exits the body.
12. Substances found in the environment that living organisms need to grow and survive.

Digestive System Word Puzzle

(Follow the arrows to make sentences.)

Name _____



digestion

means breaking down food so our bodies can absorb

by chewing and squeezing is called

by acids and enzymes is called

uses

enzymes

are made in

starts in

starts in

the mouth

is made in

leads to

is a tube that leads to

the stomach

leads to

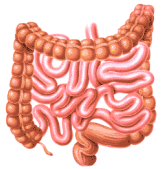
contains

enzymes

is a hole that lets feces out of

the rectum

is a spot where feces waits after going through



leads to

leads to

occurs in the

is when molecules cross a

allows nutrients into the

bloodstream

are made of

amino acids

are

are

are made of

WORD BANK	
	membrane ~~enzymes~~ ~~enzymes~~ "chemical digestion" ~~the rectum~~ ~~the mouth~~ the esophagus "~~amino acids~~" nutrients saliva ~~the stomach~~ ~~digestion~~ carbohydrates proteins glands ~~bloodstream~~ "simple sugars" the anus the small intestine "mechanical digestion" the large intestine diffusion

Name:		Class:			
Digestive System – CLOZE page 1					
Use the words in the Word Bank to fill the blanks in the reading. Check the words off as you use them. You will use each word one time.					
Word Bank					
	mouth		digestion		saliva
	amino acids		stomach		pancreas
	esophagus		chemical		large
	small		carbohydrates		compounds
	glands		nutrients		feces
	rectum				mechanical

_____ is the process of breaking food down into _____ that the body can use. It starts as soon as you take a bite of food. Your teeth crunch the food into smaller pieces, which is called _____ digestion. The liquid in your _____, called _____, mixes with the food. This liquid contains chemicals called ***enzymes*** which speed up the reactions of digestion – this is called _____ digestion. The mushy food leaves your mouth and travels down the _____ to the pouch-like muscular organ called the _____.

After the stomach, the next part of the digestive tract is the _____ intestine, and then comes the **large intestine**, and then the _____, and then out through the **anus**.

Enzymes that aid with digestion are made in special organs called _____. One of these glands is the _____ which makes insulin. Enzymes help to break _____ down into **simple sugars** (like glucose). **Proteins** are broken down into smaller units called _____**.** Glucose ($C_6H_{12}O_6$) and glycine (an amino acid with the formula $C_2H_5NO_2$) are considered _____, not elements, because they have more than one type of atom in their molecular structure.

In the **small intestine**, the **nutrients** are absorbed into the blood so they can be carried to all of the cells of the body. After the nutrients have been removed, the leftovers are called _____. The _____ intestine is the place where extra water is removed from the feces.

Name:		Class:			
Digestive System – CLOZE page 2					
Use the words in the Word Bank to fill the blanks in the sentences. Check the words off as you use them. You will use each word one time.					
Word Bank					
	mouth		digestion		large
	proteins		stomach		compound
	feces		chemical		anus
	small		simple sugars		mechanical
	glands		nutrients		rectum

1. _____ is a process that breaks down the foods that we eat into molecules small enough to be absorbed by cells – it can be chemical or mechanical.
2. Enzymes are made in special organs known as **_____.**
3. After the large intestine removes extra water from the digested food, the leftover material is called **_____**.
4. Food goes down the esophagus to the **_____,** where it is churned (mechanical digestion) and mixed with gastric juices (chemical digestion).
5. Feces is stored in the **_____,** and then exits the body through a hole called the **_____.**
6. The _____ is the place where mechanical AND chemical digestion both begin. Mechanical: teeth cut and chop food. Chemical: enzymes in saliva start to digest carbohydrates.
7. _____digestion is the process of breaking down food into small molecules – by reactions that are speeded up using chemicals called enzymes.
8. _____ are digested (broken down) into smaller units called amino acids.
9. Carbohydrates are digested into smaller units called _____ (such as glucose).
10. _____ are compounds found in the environment that living organisms need to grow and survive. The 6 types are: water, fat, proteins, carbohydrates, vitamins and minerals.
11. _____ digestion is the physical breakdown of food into smaller pieces by biting and grinding, which increases the surface area to better allow chemical reactions to act on it.
12. A molecule made of 2 or more kinds of elements (like CO2) is called a **_____.**
13. Food enters the _____ intestine after leaving the stomach.

Name _____ Class_____

True/False Vocabulary Practice

Directions: Cut out each of the statement (on the dotted line). Read each statement and decide if it is TRUE or FALSE. Place it in the appropriate spot on the TRUE/FALSE template. Do this until you have placed all the statements.

For each statement that is FALSE, rewrite it in the proper spot on the template so that it is true. You will need to change one or more of the underlined words to make the statements TRUE.

Tissues are made up of organs, and atoms are made of organelles.
Mechanical digestion means physically breaking food down (chewing, grinding).
Glands are the special chemicals that speed up chemical reactions.
Carbohydrates are made up of amino acids.
Chemical digestion is done with the help of enzymes.
The process of moving molecules across a membrane (into and out of cells) is called digestion.
The esophagus is a tube that leads from the stomach to the large intestine.
Nutrients are in foods, and are necessary for the proper functioning of the body.
Capillaries are the smallest blood vessels that absorb nutrients in the small intestine.
The mouth is the place where digestion begins.
Elements have only one type of atom, but compounds are made of 2 or more different types of atoms.
In the mouth, there is one type of digestion – mechanical.
Mechanical digestion involves enzymes in order to break down food.
Another name for feces is poop.
The pancreas is a gland that produces enzymes.

Name _____ Class _____

FALSE statements: TEMPLATE

TRUE statements: TEMPLATE

Name _____ **Class** _____

FALSE statement REWRITES: TEMPLATE **Make all the FALSE statements TRUE by changing one or more of the underlined words.**

Human Body Unit: Digestion

Important: If you can definitely say **YES** to each of these objectives, then you are probably ready to take the Level 2 quiz.

		Digestive System OBJECTIVES – LEVEL 2		
Yes	No		Yes	No
		• I can name at least 3 foods that contain carbohydrates.		
		• I can name at least 3 foods that contain proteins.		
		• I can name the 6 main types of nutrients.		
		• I can explain what enzymes do in the digestive system.		
		• I can explain why both mechanical & chemical digestion are needed.		
		• I can name one enzyme produced by the liver and one produced by the pancreas.		
		• I can write out the chemical formula for glucose and name the elements in it.		
		• I can describe the process of peristalsis and where it occurs.		
		• I can explain how the digestive & the muscular systems work together.		
		• I can define the term diffusion and explain why it is important to cells.		
		• I know where villi are found, what they have in them, and what they do.		
		• I can explain how nutrients get from the digestive system to all the cells of the body, by the cooperation of 2 specific systems.		
		• I can describe the role of the large intestine.		
		• I can describe 2 problems that can happen if the large intestine does not work right.		
		• I can label all these organs on a diagram: mouth, esophagus, stomach, small intestine, large intestine, rectum, anus, ***liver, pancreas***		
		• I can describe the function of the following organs of the digestive system: mouth, esophagus, stomach, small intestine, large intestine, rectum, anus.		

Level 2 Question Sheet – Digestive System **Name** _____

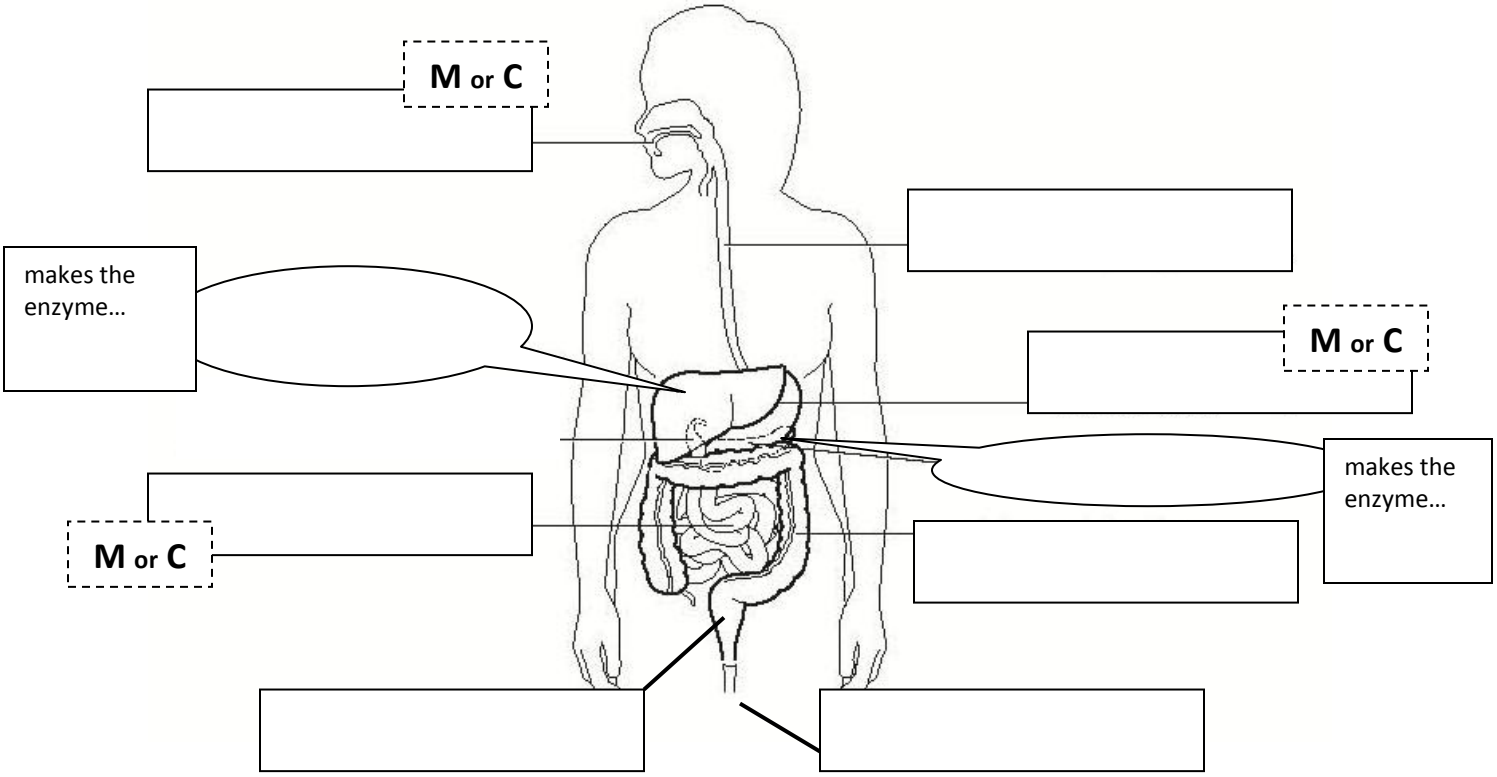
1. Name 3 foods that contain carbohydrates.			
2. Name 3 foods that contain proteins.			
3. What are the 6 types of nutrients?			
4. What are 2 glands and what enzyme is made by each?	*gland:* *enzyme:*	*gland:* *enzyme:*	
5. How are enzymes involved in the process of digestion?			
6. Why does mechanical digestion happen before chemical digestion?			
7. Define the term peristalsis.			
8. What type of tissue is involved in making peristalsis happen?			
9. What is the chemical formula for glucose **AND** what elements does it contain?	*Formula:* *Elements in glucose:*		
10. What organ does all the absorption of nutrients in the body by diffusion?			
11. Where are in the villi and why are they so important?			
12. What two systems are cooperating to **break food** into nutrients and then **transport** the nutrients to all cells of the body?			
13. How does excess water move from the large intestine back into the cells of the body?			
14. What might happen if the large intestine does not do its job correctly? (two things) **Explain each problem.**			

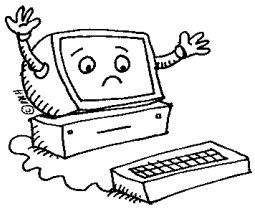
12: Label all the organs in the diagram below. (Ovals are for **glands** that make **enzymes**.)

13: Circle M (**mechanical** digestion) or C (**chemical** digestion) to show which type of digestion the organs are involved with. **(NOTE**! Some organs provide **<u>BOTH</u> mechanical & chemical.)**

14: Put a **star** next to the organ that is involved in the **diffusion** of nutrients into the blood.

15: Write in the name of one **enzyme** made in each gland.





Paper Study Stack
Vocabulary and Definitions

NOTICE: This sheet is only needed if you do not currently have Internet access.

If you do not currently have access to the Internet from home, and cannot access the 7th Grade Science Website (or the Study Stacks), you can use this sheet to create your own flash cards.

This sheet contains all the terms and definitions that are in the Study Stack listed at the right.

UNIT	**Human Body**
SECTION	**Digestive System**
STUDY STACK NAME	**Digestive Level 2**

Term	Definition
nutrients	Compounds found in the environment that living organisms need to grow and survive. The 6 types are water, fat, proteins, carbohydrates, vitamins, and minerals.
carbohydrates	A nutrient that the body breaks down into simple sugars like glucose. Foods containing these include bread, pasta, candy, grains, rice, cereal, etc.
glucose	A simple sugar with the chemical formula $C_6H_{12}O_6$
proteins	A nutrient that the body breaks down into amino acids. Foods containing these include meat, beans, cheese, milk, tofu, etc.
enzymes	Special chemicals that speed up chemical reactions.
glands	The special organs where enzymes are made. Examples include the liver and pancreas.
pancreas	A gland that produces the enzymes insulin and glucagon.
liver	A gland/organ that produces the enzyme bile to break down fats.
peristalsis	The waves of muscle squeezing that move food through the digestive system. Happens in the esophagus, stomach, both intestine, rectum and out the anus.
muscle	A type of tissue that can cause movement by squeezing or by pulling on bones.
chyme	The watery mixture of food and gastric juices in the stomach.
absorption	Taking something in. In the body, it is the process of taking nutrients into the bloodstream. Nutrient molecules move right through the walls of the small intestine in this process.
villi	Tiny finger-like projections on the walls of the small intestine, full of tiny blood vessels (capillaries), where nutrients are absorbed into the bloodstream.
large intestine	The organ where extra water is removed from the nutrient-free mixture, to be sent back to the body.
diarrhea	Condition when too little water is removed from chyme in large intestine; watery feces.
constipation	Condition when too much water is absorbed from chyme in large intestine; hard feces.
rectum	The organ where feces is stored before being removed from the body through the anus.
anus	The hole at the end of the rectum where food exits the body.

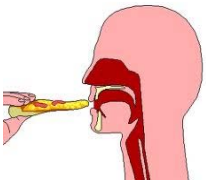
Name: _____ Class: _____ **Hillendale Health – Digestive System Webquest** **LEVEL 2**

Click on the link:
What is Digestion

1 *Read "**What is Digestion**"*

Write down at least two facts found in the "What is Digestion" paragraph.

- _____
  _____
- _____
  _____



Click 2
Back to Contents
then **click**
How does digestion begin?

3 *Read **"How does digestion begin?"***

Digestion is _____.

Your _____ help break food apart. Food is softened with _____, and pushed down the throat by the _____.

*Re**ad "Where does food go…"*** 4

What is the tube that takes food from the mouth to the stomach?

_____

How is the food moved through this tube? _____

_____

_____

5 **What allows you to swallow even if you are upside-down?**

_____

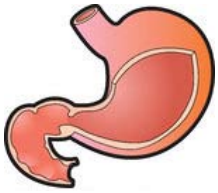
_____

_____

_____

6 **Click**
What about the stomach?

*and **read that section***



7 **What are digestive juices?**

_____

_____

8 Where is the stomach located?

_____

What is the name of the thick paste made of food and digestive juices?

_____

Click Back to Contents then click Where does the food go after it leaves the stomach? and *read the section*. 9

Describe the **small intestine** (length, shape, location): _____

_____

_____

What are the tiny projections in your small intestine called? _____

What do these projections do? _____

_____

Click 10
Back to Contents

then **click**

Does the body use all the food we eat?

Where does undigested food go after leaving the small intestine?

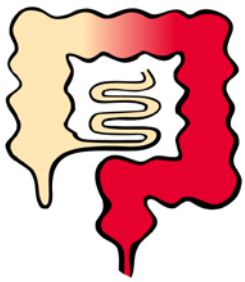
_____

Describe this organ (length, thickness, location): _____

_____ 11

Read *"So what does the large intestine do to the undigested food?"*

12



Food leaves the _____ intestine and then enters the large intestine as a _____ _____.

13

After _____ is removed, it becomes _____ _____.

The solid waste collects in the _____ and then eventually leaves the body through an opening called the _____.

What causes our stomachs to growl?

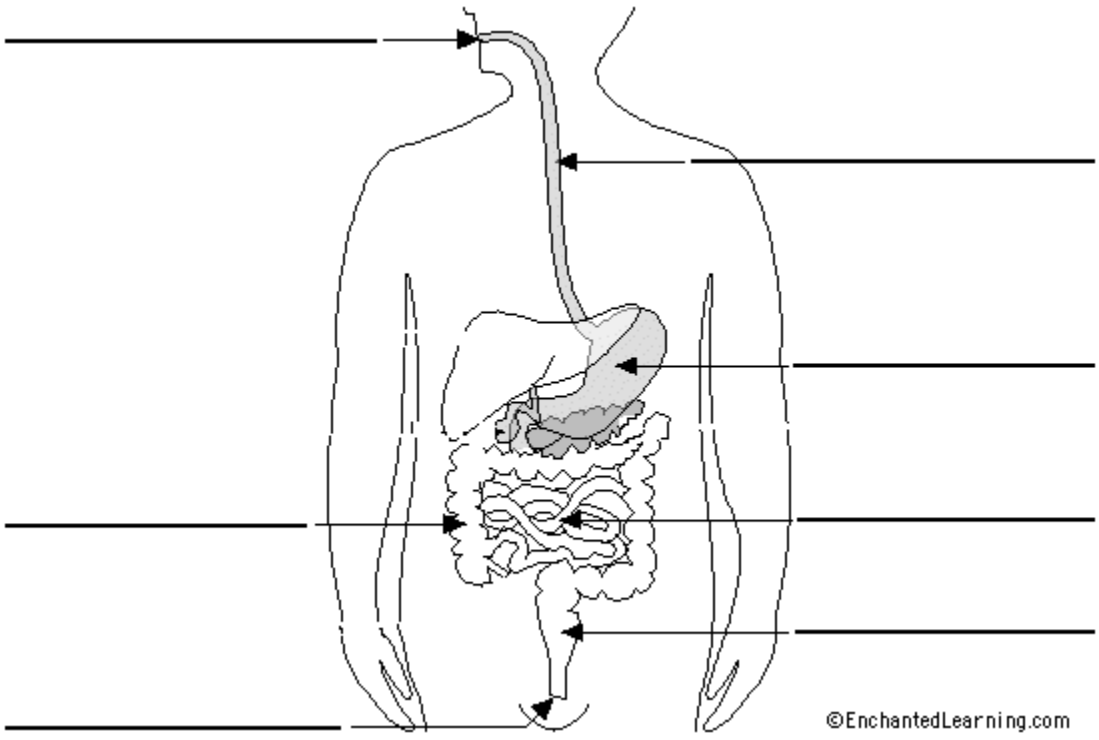
14

_____

_____

_____

15 Label the parts of the digestive system that you just learned about.



16 Click **Back to Contents**, then quiz yourself using these four activities (follow the links):

Can YOU trace the Digestive Pathway?

Are you READY for a QUIZ?

Play the Digestive System MATCH GAME

Review the Digestive System with the Digestion MAP!

Name: _____ Class: _____

LEVEL 2 – Digestion Animation

1

Click on the link: Digestion Animation.

Read " Your Body's Fuel Factory."

Write down at least two facts found in the paragraph.

- _____
  _____
- _____
  _____

2

Click

Next: Digestive System Anatomy

3

Down the Hatch

The alimentary canal begins with the _____, where food enters the body and ends with the _____, where _____ wastes are _____.

4

Mouth and Throat

What is the scientific name for the throat?

_____

The three parts of the mouth are:

- _____
- _____
- _____

5

Click on Salivary Glands

What are the three ingredients in saliva?

- _____
- _____
- _____

What is the role (job) of enzymes in the saliva?

_____

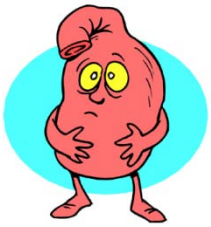
_____

6

Click on Esophagus

How long is food in the esophagus?

_____



7

Click on Stomach Area

What do the gastric acids do for the body?

_____

_____

_____

8

Click on Liver

The liver _____ the blood and makes _____.

It is the _____ gland in the body.

9

Click on Gallbladder

Where is the gallbladder found in the body? _____

_____

What does it do? _____

_____

10

Click on Pancreas

Describe the pancreas. _____

_____

What two jobs does the pancreas do for the body?

- _____
  _____
- _____

11

Click on Intestines

What do the villi do? _____

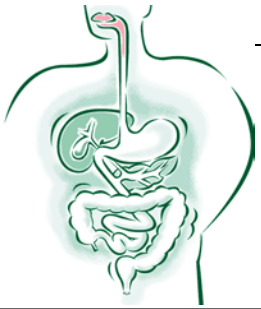
_____

Where are villi found? _____

Click on Feed the System

True or False: All food is digested the same way.

12



Click on the Bread

13

What type of nutrient is bread? _____

Where does digestion of the bread begin? _____

How long does the stomach churn the bread? _____

In the small intestine, the bread is turned into _____, which is _____ through the walls.

The glucose enters the _____ and is stored in the _____ until needed.

Click on the Steak

14

What type of nutrient is steak? _____

Mechanical digestion of the steak begins in the mouth. Where does the chemical digestion of the steak begin?

_____

What gets absorbed through the walls of the small intestine? _____

The bloodstream carries the protein products to all the _____ in the body.

Click on the Broccoli

15

What type of nutrient is broccoli? _____ and _____

Vitamin _____ is absorbed through the walls of the small intestine.

The bloodstream carries the vitamin to all cells for use in the:

- _____
- _____
- _____
- _____

True or False: Vitamin C is water soluble.

Click on the Ice Cream

16

Ice cream is a sugar and fat rich food. Both sugar and fat are sources of _____.

What is the role of bile in the digestion of ice cream?

_____

_____

_____

Materials not digested will travel to the _____ _____ and later excreted as _____.

True or False

17

Digestion of all these food types begins in the mouth. _____

Different foods provide the body with different nutrients. _____

Mechanical digestion occurs in the stomach. _____

Blood carries nutrients. _____

18 **Describe one way that "all food is not treated equally." (Hint: Click back to Feed The System)**

_____

_____

_____

Virtual Body <u>Digestive Tract</u> Webquest

A. Go to http://medtropolis.com/vbody.aspx
B. Choose "**English**", then click on "**Digestive Tract**".
C. Now click on "**Guided Tour**".

1. What is the purpose of the digestive system?

2. What is **<u>another name</u>** for the "tube" that starts at the mouth and ends at the anus – and **<u>HOW LONG IS IT</u>**?

   Name _____ ***Length*** _____

3. What is the role (job) of **saliva** in digestion?

4. What is the name for a "mass" or a blob of moistened food?

5. What happens after the food is pushed down the throat before it reaches the stomach?

6. What happens in the stomach?

7. What is the name for food that is mixed with gastric juices?

8. How does chyme move from the stomach to the small intestine?

9. What two organs release enzymes into the small intestine?

10. What substance does bile break down?

11. How do the nutrients from food get into the blood?

12. Where does carbohydrate digestion begin?

13. Where does protein digestion begin?

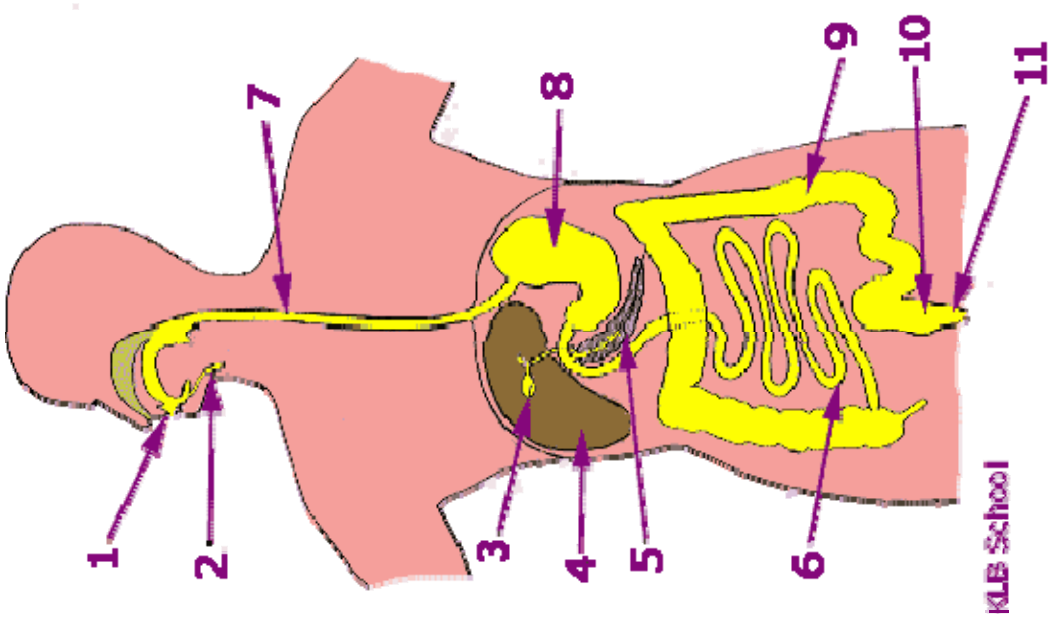
14. How long is the small intestine?

15. What 3 nutrients are digested in the small intestine?

16. What happens in the large intestine?

17. Play the **"Organize Your Organs"** game.

18. **Zoom in** to see the parts of the digestive system and **<u>then label the diagram below</u>**.



Burps & Farts & Poop

Tour de Stink Worksheet – Level 2

BURP LINK ON SCI 7 SITE

TOUR DE STINK: Why do people burp?
https://web.archive.org/web/20121213171449/http://www.uskidsmags.com/blog/2011/02/25/adc-why-do-people-burp

1 **Explain the process that causes a burp:**

-
-
-

2 **What happens to swallowed air that does not get burped out?**

3 **Why is burping helpful to our bodies?**

4 **What is the loudest burp on record?**

FART LINKS ON SCI 7 SITE

TOUR DE STINK: Why do people fart?
https://web.archive.org/web/20130404170749/http://www.uskidsmags.com/blog/2011/03/04/adc-why-do-people-fart/
TOUR DE STINK: What's a fart?
http://kidshealth.org/kid/talk/yucky/fart.html#cat118

5 **Explain the process that creates farts:**

-
-
-

6 **Name 3 odorless gases that are found in farts:**

What is the main stinky gas in farts? 7

8 How many times a day does the average 7th grader fart?

What is the scientific name for the loud rumbling noise of gases and liquids moving through your stomach and intestines? 9

POOP LINKS ON SCI 7 SITE

TOUR DE STINK: Are your bowels moving?
http://kidshealth.org/kid/stay_healthy/body/bowel.html#cat118
TOUR DE STINK: Dr. Tummy's Guide to Poop?
https://web.archive.org/web/20101125003623/http://drtummy.com/index.php?option=com_content&view=article&id=338:poop&catid=88:headers&Itemid=58

10 What does the phrase "moving your bowels" mean?

11 What things help to prevent constipation?

Eat less… Eat more…

12 What are the 6 main components of poop?

1.
2.
3.
4.
5.
6.

13 Which component of poop makes it less sticky, so it can slide out?

Which component of poop is a digestive enzyme that is made in the liver? 14

FATS

Date:_____

Name:_____

Class:_____

1 Why is fat an important part of our diet?

A Because it tastes good

B Because it carries so much energy

C Because it contains nutrients you can't get from anything else

D Because it contains oxygen atoms

2 What do carbohydrates and fats have in common?

A They're both sources of glucose

B They're both sources of protein

C They're both sources of fatty acids

D They're both sources of glycerol

3 What might happen if you didn't get enough fatty acids in your diet?

A Your brain wouldn't have enough energy

B Your muscles wouldn't have enough energy

C Your kidneys and liver might not function properly

D Your bones might become brittle

4 A sedentary lifestyle can cause glucose to turn into body fat. What is the best synonym for "sedentary?"

A Healthy

B Hyperactive

C Sleep-deprived

D Inactive

5 Which of the following items might be high in saturated fat?

A 

B 

C 

D 

6  **Why is saturated fat found in so many animal products?**

A Because it's part of the cell membranes of animal tissues

B Because animals must eat saturated fat in order to survive

C Because proteins are broken down into saturated fat when animals die

D Because saturated fat is a key component of animal bones

7 If you eat too much saturated fat, cholesterol might build up:

A In your brain

B In your liver

C In your veins and arteries

D In your bones

8 What is a key difference between saturated and unsaturated fats?

A Saturated fats are usually liquid at room temperature; unsaturated fats are usually solid

B Saturated fats stay solid at room temperature; unsaturated fats are usually liquid

C Saturated fats can be found in vegetable oils; unsaturated fats can be found in animal products

D Saturated fats are healthier than unsaturated fats

9 A product that contains lots of hydrogenated oils is probably rich in:

A Saturated fat

B Unsaturated fat

C Monosaturated fat

D Trans fat

10 Why shouldn't you worry about getting enough fat in your diet?

A Because all fat is bad for you

B Because it's found in so many foods

C Because you don't need any fat at all in your diet

D Because you can take it as a vitamin if you don't eat it

CARBOHYDRATES

Date:_____

Name:_____

Class:_____

1 What might happen if you didn't eat enough carbohydrates?

A Your body wouldn't be able to build muscle

B Your body wouldn't have enough energy to function

C You'd develop serious vitamin deficiencies

D Your bones and teeth would become weaker

2 Carbohydrates are to the human body as what is to a car?

A Transmission fluid

B Antifreeze

C Motor oil

D Gasoline

3 What suffix indicates that a chemical is a sugar?

A -ose

B -ase

C -ate

D -ite

4 Which of the following contains complex carbohydrates?

A 

B 

C 

D 

5 How is fiber different from most other foods you eat?

A It doesn't contain any sugars at all

B Consuming it robs your body of nutrients

C Your body can't digest it

D It contains elements of all the major food groups

6 Which food contains the most starch?

A Pasta

B Broccoli

C Table sugar

D Steak

7 Where in your body are complex carbohydrates broken down into simple sugars?

A In your bloodstream

B In your intestines

C In your mouth

D In your liver

8 If you're hungry, but don't want your blood sugar to spike, what should you eat?

A A baked potato

B An apple

C Sushi with white rice

D A candy bar

9 Which of the following breads is the healthiest?

A White

B Italian

C Whole wheat

D Sourdough

10 Your body breaks down most complex carbohydrates into:

A Fructose

B Sucrose

C Glucose

D Starch

TASTE

Date:_____

Name:_____

Class:_____

1 When are you most likely to salivate?

A When you wake up in the morning

B When you walk into your favorite restaurant

C When you hear your favorite song on the radio

D When you drink a glass of water

2 Up close, papillae look most like:

A The dimples on a golf ball

B The bumps on a basketball

C The stitches on a baseball

D The laces on a football

3 How are your salivary glands like your sweat glands?

A They're both part of your circulatory system

B They both produce liquids under particular circumstances

C They're both stimulated by your sense of smell

D They're both enclosed in structures called papillae

4 The proteins in your saliva _____ bits of food.

A Moisten

B Eliminate

C Dissolve

D Taste

5 Place the following events in sequence: A) Your taste buds send a signal to your brain; B) You begin salivating; C) Your teeth break food down into small bits

A B, C, A

B C, B, A

C C, A, B

D B, A, C

6 Salivating is to drooling as eating is to:

A Chewing

B Digesting

C Starving

D Gorging

7 Which of the following fits the definition of "umami?"

A 

B 

C 

D 

8 Compared to your sense of taste, a baby's sense of taste is:

A More intense

B More refined

C Less strong

D More diverse

9 Humans have different taste preferences because of:

A Genetic factors

B Cultural factors

C Unknown factors

D Developmental factors

10 You put something in your mouth and it tastes absolutely terrible. What might be the cause of this?

A Your body is trying to tell you that it might make you fat

B Your body is trying to warn you that it's dangerous

C Your body is trying to tell you that you've already eaten too much

D Your taste buds are too undeveloped to appreciate it

NUTRITION

Date:_____

Name:_____

Class:_____

1 **In the phrase, "Unhealthy diets often contain disproportionate amounts of carbohydrates," what does "disproportionate" mean?**

A Dangerous

B Unbalanced

C Nutritious

D Perfect

2 **Which of the following is the healthiest type of carbohydrate?**

A Bread made with white flour

B Rice made with whole grains

C Cereal made with refined grains

D White rice

3 **What might happen if you didn't consume enough protein?**

A Your body wouldn't be able to build muscle mass

B You wouldn't have any energy at all

C You would feel really thirsty all the time

D You would become overweight

4 **Osteoporosis is a disorder that can be caused by not consuming enough calcium. What can you infer about osteoporosis?**

A It affects the nervous system

B It affects the skin

C It affects the stomach

D It affects the bones

5 **Which of these performs the same function as gasoline in a car?**

A Water

B Protein

C Carbohydrates

D Fats

6 **What do all heterotrophs have in common?**

A Their diets must include meat

B They must drink at least one liter of water each day to survive

C They must consume nutrients to survive

D They must breathe oxygen to survive

7 **Skim milk is better for you than whole milk. What can you infer about skim milk?**

A It's low in fat

B It's high in calories

C It's high in protein

D It's low in fiber

8 **Which is the healthiest type of meat?**

A Red meat

B Brown meat

C Raw meat

D Lean meat

9 **What does it mean that the blue portion of the plate is rather small?**

A Vegetables should be eaten in abundance

B You shouldn't consume all that much dairy

C You should consume a non-fat diet

D Fruits are a poor source of nutrients

10 **What's an example of consuming candy in moderation?**

A Eating a candy bar every day

B Eating a candy bar once a week

C Avoiding candy bars at all costs

D Eating candy bars whenever they're available

Name:

Level 2/Level 3
Virtual Pig Dissection

Use the link on the 7th grade website to access the Virtual Pig Dissection. Begin with the Study Guides section and click on digestive system. Start with the head. Complete all parts and answer the following questions:

1. What are the four sensations associated with food ingestion?

2. Where is the epiglottis and what does it do?

When through with the head, complete the parts of the abdominal cavity. Answer the following questions:

1. About how long is the small intestine of this fetal pig?
2. About how long is the large intestine of this fetal pig?
3. What is stored in the gall bladder?
4. What is the purpose of the pyloric sphincter?

5. What does the spleen do?

6. What is the pancreas responsible for?

Now go to the quizzes section. Complete the digestive system quiz. Record your score in the box below:

Number of correct responses: ☐ Number of incorrect responses: ☐

We hope you enjoyed the experience.

Patient Profile: Digestive Diseases

DIRECTIONS: ***Research*** a digestive disease and ***prepare*** a patient profile:

Patient Personal Information

Patient Name _____

Gender_____ Date of Birth _____ Age _____

Patient's Disease _____

You should make up the name, age, gender & birthdate, but EVERYTHING ELSE must be based on what you learned from your research. Using more details increases your chance of a 5/5 grade.

Questions:

Who typically gets this disease? _____
_____
_____

Is this disease typical for this patient? Why or why not? _____
_____
_____

Health Profile

What are your patient's symptoms? _____
_____
_____
_____
_____
_____
_____
_____

How do you suspect the patient got this disease? _____
_____
_____
_____
_____

What will you recommend as treatment for this patient? _____
_____
_____
_____
_____
_____
_____

Disease Prevention

Could this disease have been prevented? How? _____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Could this disease be passed on to the patient's offspring? Why or why not? _____
_____
_____
_____
_____
_____
_____

3-2-1 Current Issues Article Summary

Your assignment is to read and summarize one of the given articles (see the appropriate section of the Science 7 website) in a clear and concise manner. Using ***complete sentences*****,** briefly describe:

- **3** of the **main points** of the article
- **2 interesting things** you learned from the article
- **1 problem that was overcome by scientists** *(sometimes the problem is not stated directly in the article and you need to think and possible infer the problem)*

DO NOT REPEAT your responses.

Title of article: _____

Author:_____

Source:_____

Date of article: _____

3 *3 of the main points of the article*	

2 *2 interesting things you learned from the article*	
1 *1 problem that was overcome by scientists, or will need to be overcome (you may need to brainstorm or infer for this part)*	

Name

Digestion and Nutrition Virtual Lab

How can you design a healthful diet?

Level 3

The following dietary guidelines were developed by the U.S. Department of Health and Human Services and the Department of Agriculture: eat a variety of foods to get the energy (measured in calories), protein, vitamins, minerals, and fiber that are needed for optimum health; maintain a healthy weight to reduce chances of high blood pressure, heart disease, stroke, cancer, and other health problems; choose a diet low in fat and cholesterol; choose a diet with plenty of vegetable, fruit, and grain products; use sugar, salt, and other forms of sodium only in moderation.

The U.S. Committee on Dietary Allowances provides guidelines for daily calorie consumption based on age and gender. Caloric requirements vary greatly according to an individual´s body type, metabolism, and amount of physical activity.

Because no one food has every nutrient, it is necessary to eat a variety of foods. Health experts and nutritionists have developed guidelines to help people plan diets required for good health. Their dietary guidelines outline six major food groups with daily serving suggestions as follows:

Bread, Cereal, Rice, and Pasta Group: 6—11 servings
Vegetable Group: 3—5 servings
Fruit Group: 2—4 servings
Milk, Yogurt, and Cheese Group: 2—3 servings
Meat, Poultry, Fish, Beans, Eggs, and Nuts Group: 2—3 servings
Fats, Oils, and Sweets Group: Use sparingly (no more than 30% of daily calories)

Eating the suggested daily servings from each food group and staying within the guidelines for daily calorie consumption based on age and gender will supply the body with the nutrients it needs for energy, health, and growth.

In this Virtual Lab you will design and evaluate the healthfulness of a daily diet based on current dietary guidelines.

Objectives:

·Identify the types of nutrients contained in certain foods and beverages.

·Determine the types of foods found in the six major food groups.

·Develop a healthful daily diet based on current dietary recommendations.

·Evaluate the healthfulness of various food choices.

Procedure:

1. Enter your gender by clicking the Female or Male symbol.

2. Enter your age by clicking the up and down arrows.

3. Examine the range of total daily recommended calories for your gender and age.

4. Design a daily menu for yourself. First, click a category—Breakfast Foods, Lunch Foods, Dinner Foods, Snack Foods, or Beverages.

5. Next, choose a food or beverage by clicking it. Examine the dietary information about the selected food or beverage. Click the Click Here to Select Food button to add the selected food or beverage to your daily menu. Enter the dietary information about the selected food or beverage in the Table. Repeat this step until you have added to your daily menu all the foods and beverages you want from the selected category.

6. Complete the design of your daily menu by repeating steps 4 and 5 for each remaining category.

7. Click the Daily Menu Diet Analysis button.

8. Evaluate the healthfulness of your daily menu. Compare the total calories from all the foods and beverages selected for your daily menu to the total daily recommended calories. Compare your daily servings from each food group with the recommended number of daily servings shown above.

9. Complete the Journal questions.

Table

Food Calories		Group 1 # of servings	Group 2 # of servings	Group 3 # of servings	Group 4 # of servings	Group 5 # of servings	Group 6 % of calories

Journal

1. What food items would provide a balanced breakfast?

   - ☐ _____
   - ☐ _____
   - ☐ _____

   Why?

2. Why do you think nutritionists and health experts recommend eating fatty and sweet foods only sparingly?

3. Make a detailed list of all of the foods and beverages you eat and drink in one day.

4. Do your choices make a healthful diet? _____

5. What types of foods do you think you need to add to your daily menu in offer to have a more healthful diet?

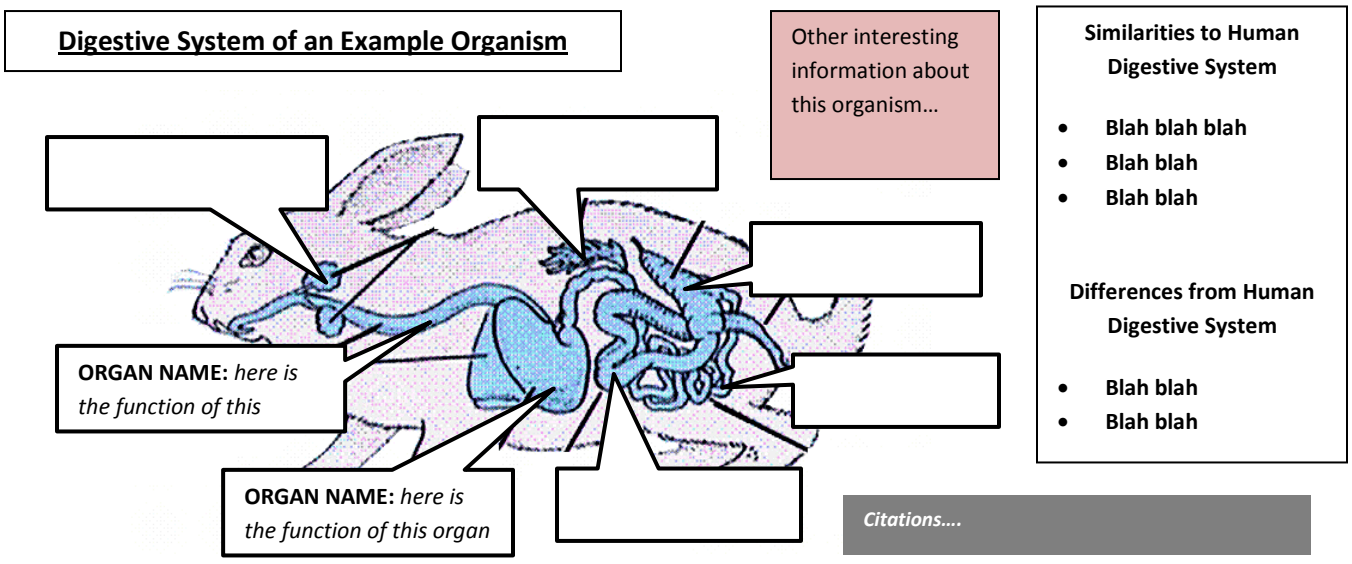
6. Which foods should you eat less of or eliminate?

7. Was the daily menu you chose from the vending machine a healthful diet? _____ Why or why not?

Animal Anatomy Project

For this project you will create a **<u>labeled diagram of the digestive system</u>** of a living organism other than a human being, in ***Google Slides or Google Drawing***.

1. You can draw the labeled diagram completely yourself **<u>or</u>** you can locate a diagram or illustration online and add labels and/or organs as needed.
2. You CANNOT simply hand in a pre-labeled diagram you find online – all the labels and function explanations must be created by you.
3. Your diagram/slideshow must contain ALL of these organs: **mouth, esophagus, stomach, small intestine, large intestine, rectum, anus, liver, pancreas.**
    a) If your organism has *additional* organs (not on the list) in its digestive system, these can be included. Do some research!
    b) If your organism is *missing* some of these organs, that must be explained somewhere on the diagram. (Do some research to be sure!)
4. The **<u>labels</u>** must also **<u>describe the function</u>** of each organ. *(This information can also **<u>be on a key</u>** somewhere on your diagram.)*
5. The diagram must have a **<u>meaningful title</u>** that includes the name of the body system and the type of organism.
6. The diagram must also include an **<u>informational section</u>** that describes:
    a) Three things the organism's digestive system has in common with humans.
    b) Two things that are different from a human's digestive system.
7. The source of your organism diagram/illustration (and any extra information you researched) must be cited. *(A good amount of your info can come from your menu packet.)*
8. You are expected to use complete sentences and ***follow all standard ELA rules*** for good grammar and writing for all parts of this project.



Level 3 – "No Worksheet" Instructions

If you choose a Level 3 Activity that has **no worksheet** *(you can tell this because it will have no page numbers on your menu)*, here is how to **show your teacher what you learned** from completing the activity and get your points (up to 5 points, based on quality and effort).

Step 1: Read or Watch or Complete the Activity (It may be an online article, or a longer video, or an interactive game or website, etc.) **All activity links are on the Science 7 website!!!**

Step 2: Choose from this list of mini-project ideas below:

a) **Make a CD Cover &** come up with 4 song titles and sample lyrics (at least four lines) for each song. The cover art and song lyrics should represent the science concepts that you learned.
b) **Draw a cartoon** – at least 6 frames with explanations to show all you learned. (Can be made on the computer or on paper.)
c) **Make a Worksheet!** Design a **worksheet and an answer key** to go along with the activity. Make sure that you get at the most important details by asking some harder questions that make your students think! Must have at least 6-7 questions.
d) **Construct a labeled model/ diagram/figure** that illustrates a science concept that was explored in the activity. Include an explanation of your creation and the various parts.
e) **Design a poster** that displays your new learning or promotes the important health issues related to the enrichment activity. Must be larger than notebook paper.
f) **Make a board game** or **card game** out of your enrichment activity. Include instructions & all materials needed to play.
g) **Make a video** starring you and your friends (or siblings or pets) – that shows all you learned from the activity.
h) **Chromebook Creativity:** Choose any Level 3 link (3-2-1 Articles, Patient Profiles, etc. *but not Brainpops*) and then use Google Drawing, Google Slides, PowToons, or some other App to create a project, diagram, slideshow, video, etc. that shows all that you learned from the activity. It should incorporate the most important ideas & vocabulary.
i) **Have another idea?** Ask your teacher to approve it!

Step 3: You may need to go back and re-read or re-watch and take some notes. **Now it's time to make your project!**

Step 4: Hand in your project – either by giving it to your teacher, or sharing it through Google Drive. Level 3 projects are due in class on the class day **AFTER** the last menu work day.