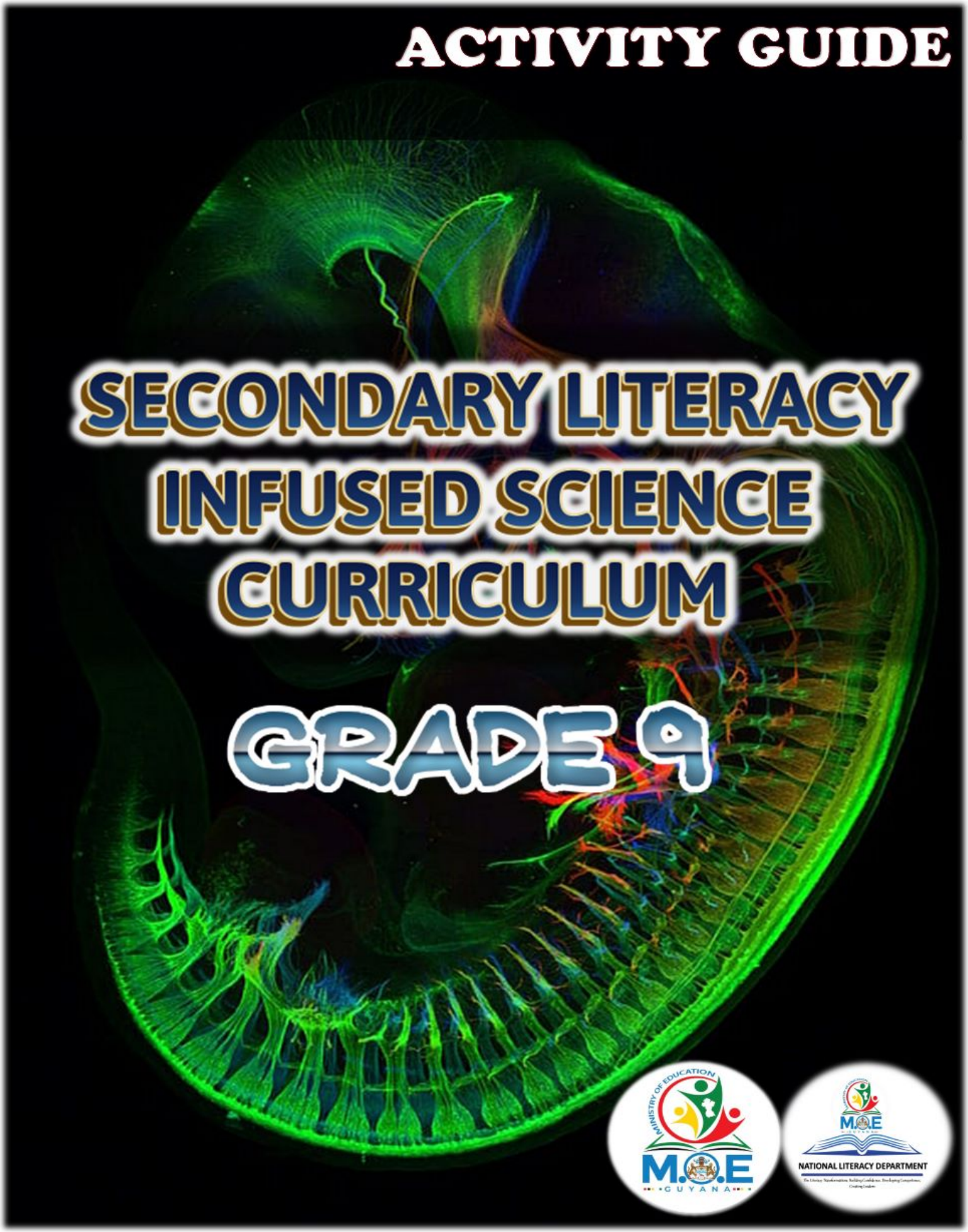
ACTIVITY GUIDE



SECONDARY LITERACY INFUSED SCIENCE CURRICULUM

GRADE 9

MINISTRY OF EDUCATION
M.O.E
GUYANA

M.O.E
NATIONAL LITERACY DEPARTMENT

Note to the Teacher

The Literacy Infused Curriculum-Activity Guide, is a document crafted by the Ministry of Education- National Literacy Department in collaboration with the Peace Corp Guyana. This document provides guidance for Science teachers on activities and how the literacy skills can be developed using subject specific content and concept related activities.

The use of this guide allows teachers to present lessons that are student centred and addresses immediate literacy development needs. It is advised that this activity guide be used as a support to Consolidated Curriculum. Woven into the activities are the essential literacy skills that are needed by learners to become functionally literate.

This guide is in-keeping with the Ministry of Education's Objective to ensure that every possible opportunity is explored and made available to learners, so that they can achieve expected educational outcomes. The Infused Curriculum activities, provides opportunity for Reading, Vocabulary development, Critical Thinking and development of Writing Skills. Learners will be able to understand concepts and content better while completing activities geared to their level.

Content

Grade 9 Science

Pre-Unit Activity to address spelling/comprehension of words

(**You could choose to continue to use the pre-unit activity for each grade**)

(Have students complete this activity before each unit using textbooks or handouts being used for the lessons – keep a journal of the work for future review). Do the individual or group activity as below. Possibly switch it up with each unit or do both.

Individual Activity

1. Read the text and think about the overall meaning. Ask yourself the following questions:
   a. What does the teacher want me to understand?
   b. What are the main points of this topic?
   ** Have a group discussion with the students to see how they answer these questions to determine if they understand the concepts behind the work being presented to them**

2. Identify the words that are unfamiliar to you. Write down at least three of those words and write the definition of these words. Practise writing these words using the following format:

COPY	TRACE	RECALL
Look at the word and copy it down on the paper. Example Science	Spell out the word with one letter missing each time – use a piece of a paper to cover the previous word. Fill in the missing letter. Example Science Scienc_ Scien_ _ Scie_ _ _ Sci_ _ _ _ Sc _ _ _ _ _ S _ _ _ _ _ _ _ _ _ _ _ _ _	Try to remember how to spell the word on its own. Read the word then fold over the copy and trace columns and try to write the word from memory.

Keep a word journal with all of these words, so that you can review the words when you need to and at the end of the school year you will get to see how many new words you learned!

Additional activity - Compare your words with your classmates words and see if there are other words you can learn!

** Group Activity**

1. Have the teacher ask the class which words they do not know/understand.
2. The teacher writes the words down on the board.
3. The students break up into groups and the teacher divides the unknown words evenly amongst the groups. The groups look up the definitions to present the words to the class.
4. Presentation consists of:
    1. Word with definition: The student will present and the teacher will write what the student says on the board. The rest of the students will write down the word and the definition of the word to add to their word list. They will then complete the trace, copy, recall activity later.
    2. Example, including visual aid if needed/possible. If using a text book – have students share where in the textbook or handouts they can find an example of the word.
    3. How the student(s) think about and share how they may use this word in their work.

    Example:

    1. Beaker - a lipped cylindrical glass container for laboratory use.
    2. 
    3. I will use a beaker in class to measure liquids.
5. Have students keep a word journal. They will use the same notebook each time to continue a list of words they learned in each class. They can then go back and review the words they learned at any time.

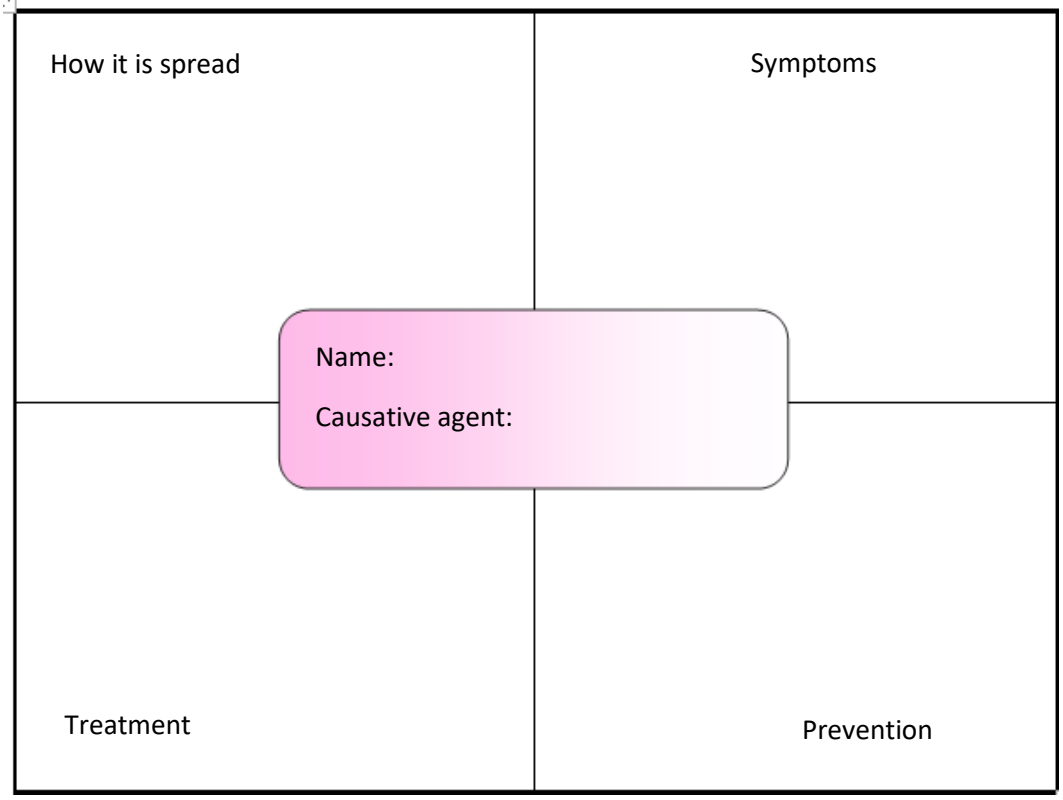
In addition to using the Pre-Unit activity in Grade 9 like in Grades 7 and 8, Frayer cards will continue to be a useful tool.

SEXUALLY TRANSMITTED DISEASES

Sexually transmitted diseases

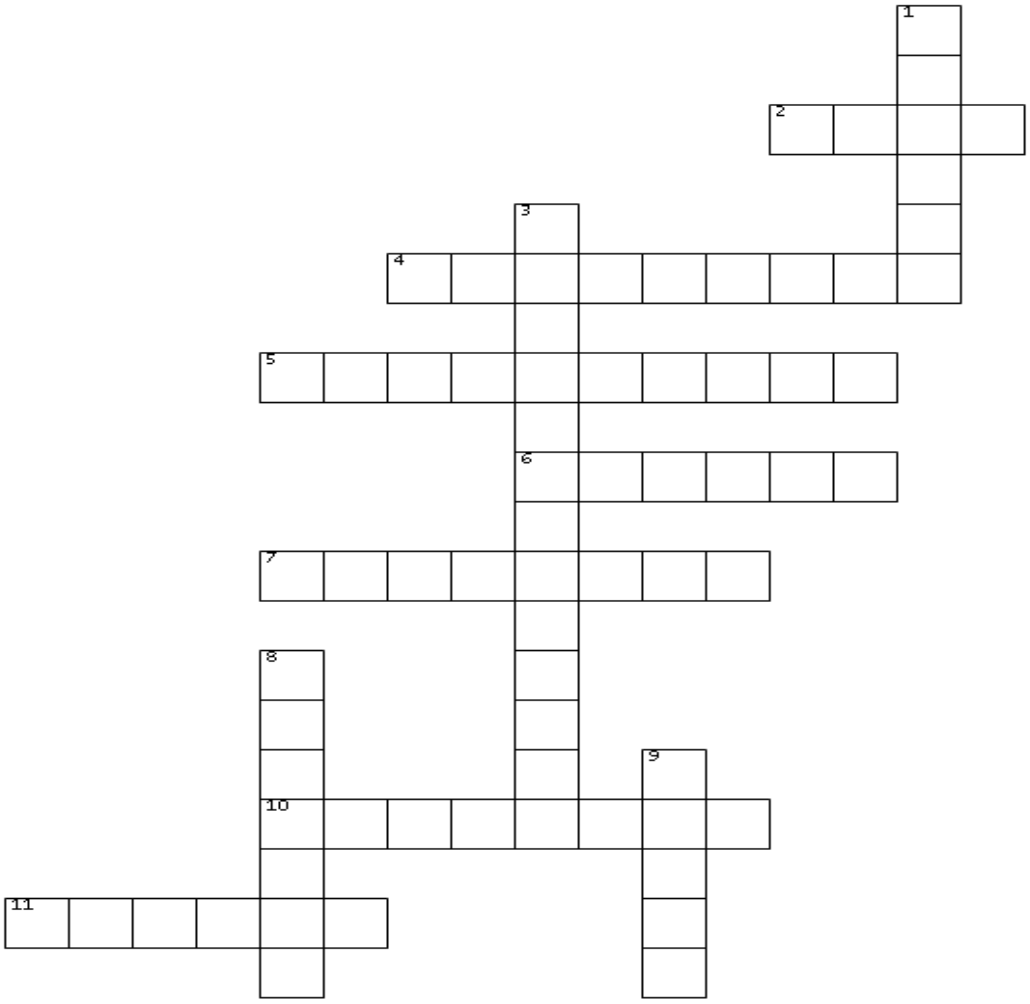
Frayer cards that include – Name of STD in the middle and what causes the STD i.e.

Syphilis - Treponema pallidum, how It's spread, symptoms, treatment, prevention.



NUTRITION IN ANIMALS

__Mammalian dentition

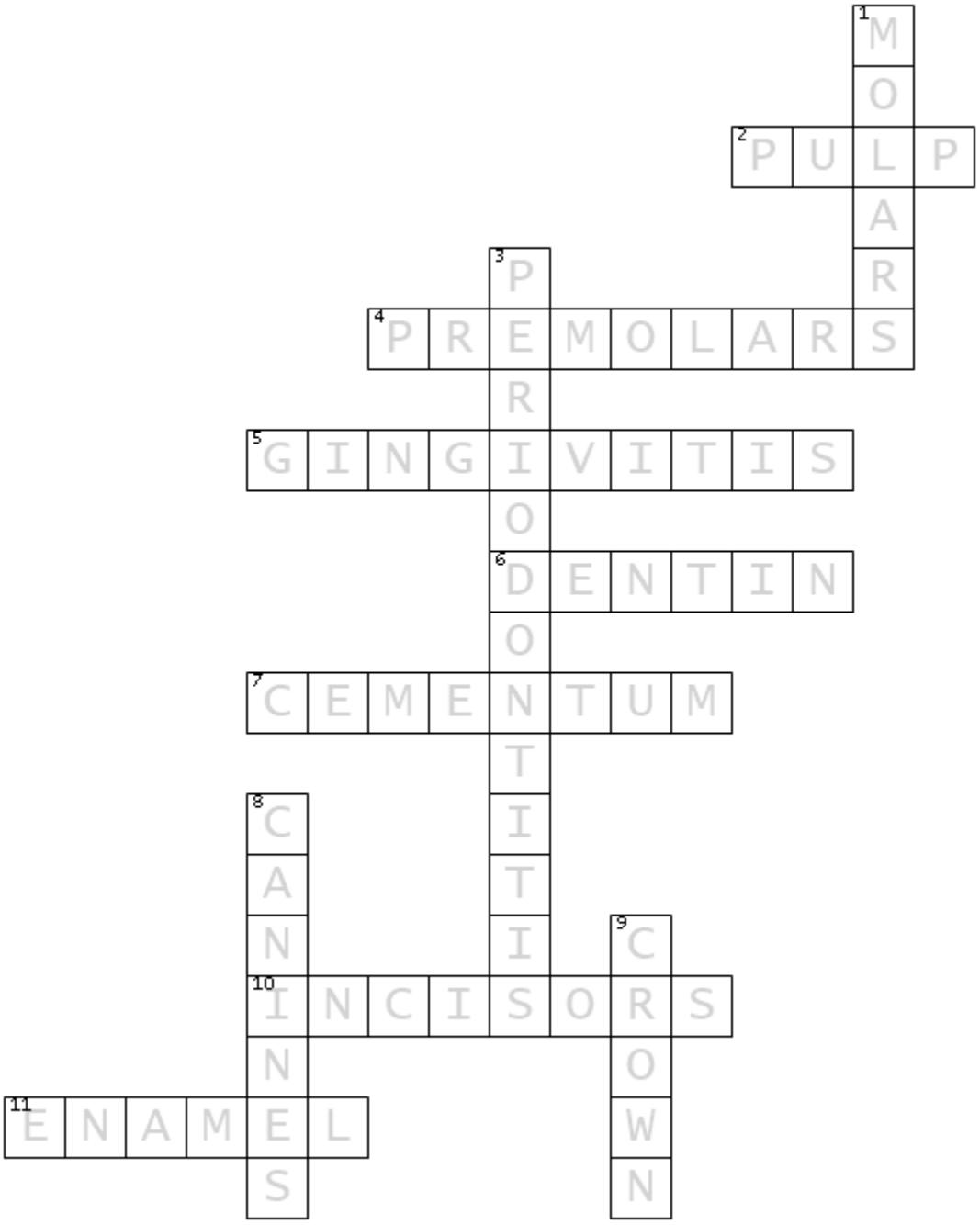


ACROSS

2. Centre of the tooth, directly beneath the layer of dentin
4. situated in front of or preceding the molar teeth
5. a common and mild form of gum disease (periodontal disease) that causes irritation, redness and swelling (inflammation) of your gingiva, the part of your gum around the base of your teeth
6. the part of the tooth that is beneath enamel and cementum
7. A hard layer of tissue that helps the periodontal ligament attach firmly to a tooth
10. a front tooth adapted for cutting
11. the thin outer covering of a tooth

DOWN

1. a tooth with a rounded or flattened surface adapted for grinding
3. a severe gum infection that can lead to tooth loss and other serious health complications.
8. - The pointed teeth in the front of the mouth (two on the top and two on the bottom) next to the incisors
9. a tooth-shaped "cap" that is placed over a tooth



OUR DIGESTIVE SYSTEM

Have students label the parts of the digestive system. Then have them pick their favourite food and write an explanation of what happens to that food as it travels through the digestive system.

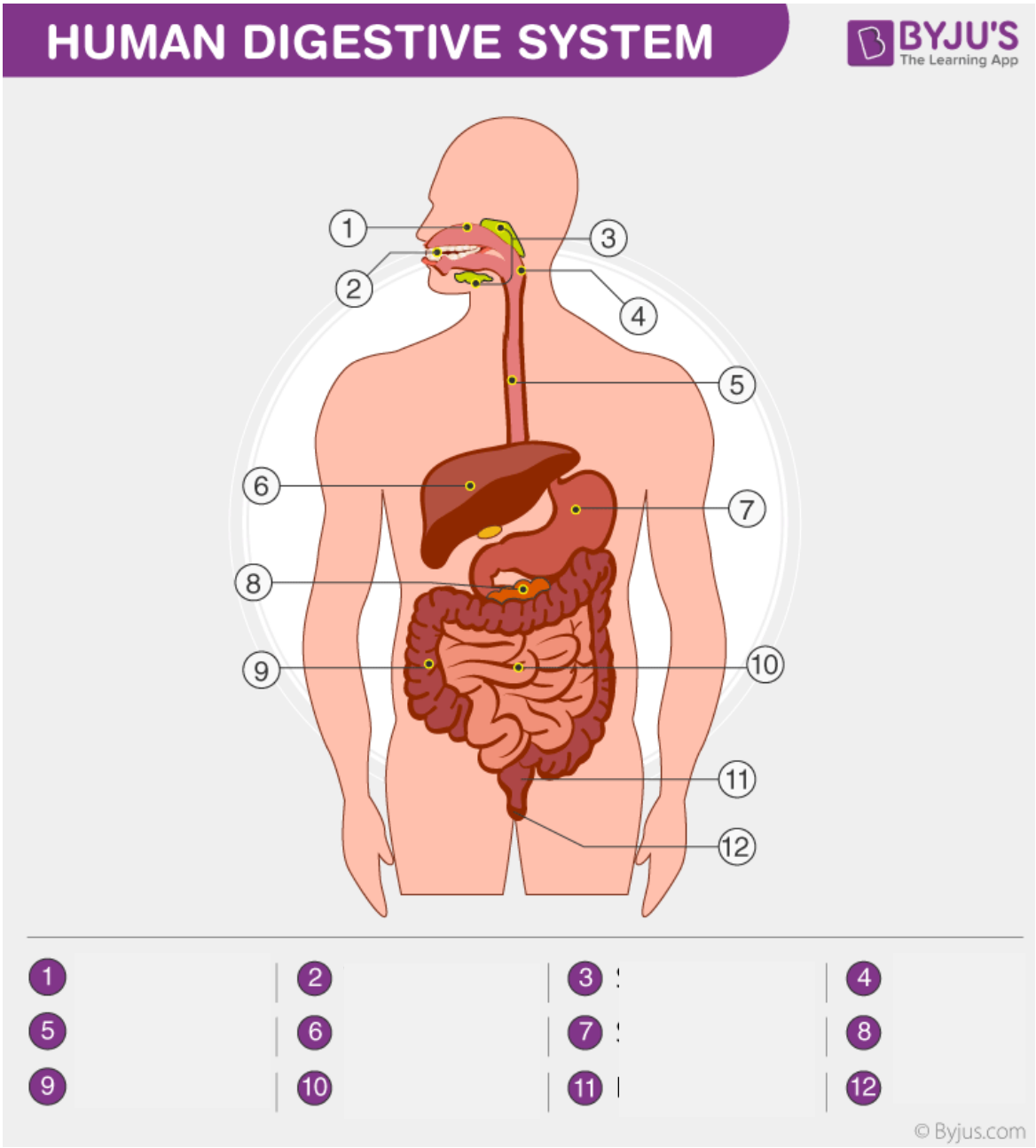
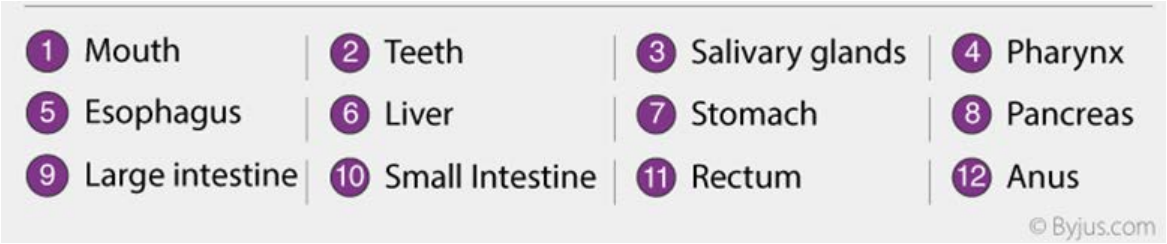


Image from: https://byjus.com/biology/human-digestive-system/

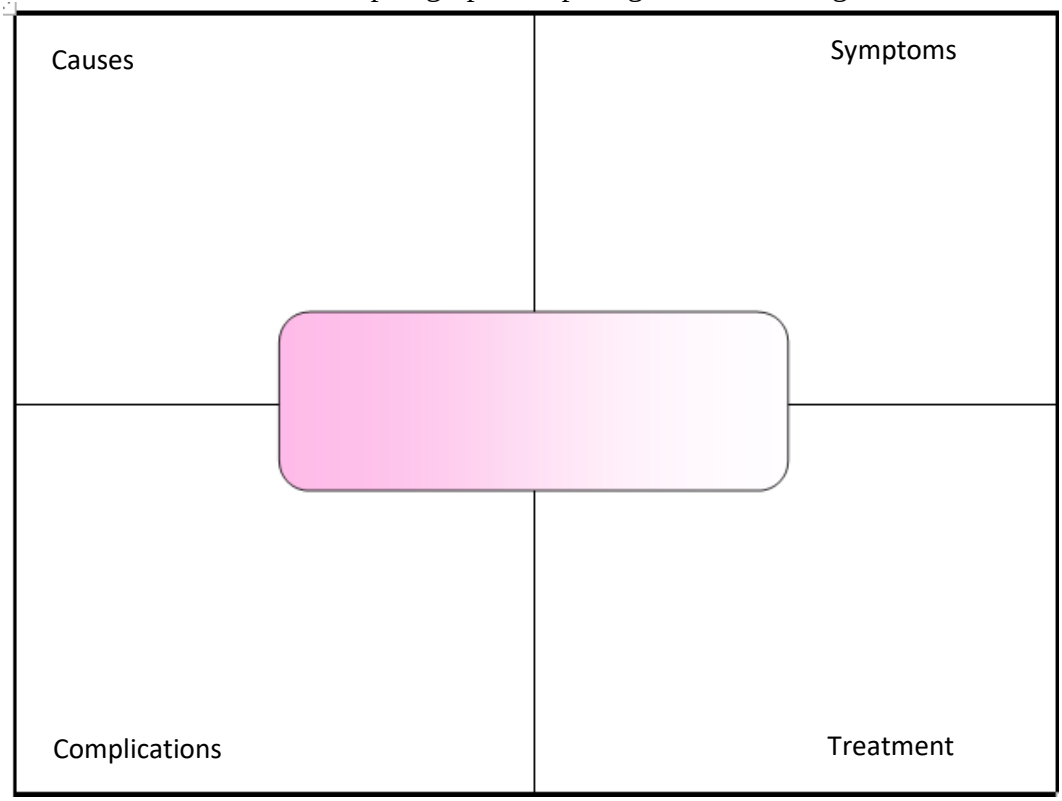
Answers:



__Nourishment

Causes, symptoms, complications, treatment

Have students complete Frayer cards on beriberi and kwashiorkor. After completing the cards, have them write a paragraph comparing and contrasting the two.



__Enzymes

1. Have students complete the following information:
    1. Starch is broken down to glucose using which enzyme? (Answer = Carbohydrase)
    2. Protein is broken down to amino acids using which enzyme? (Answer = Protease)
    3. Lipids (fat) are broken down to glyceral (3 chain fatty acid) using which enzyme? (Answer = Lipase)
2. Have students complete the following grid regarding where each enzyme is found:

Enzymes	**Mouth**	**Stomach**	**Small Intestine**	**Pancreas**
Carbohydrase				
Protease				
Lipase				

Answer key:

Enzymes	**Mouth**	**Stomach**	**Small Intestine**	**Pancreas**
Carbohydrase	Yes	No	Yes	Yes
Protease	No	No	Yes	Yes
Lipase	No	Yes	Yes	Yes

3. Have students explain which enzymes will be used when their favourite food, discussed earlier, is digested.

NUTRITION IN PLANTS

__Photosynthesis

Have students write a letter to a student in the grade below them in which they explain photosynthesis. Have them include, give examples and draw diagrams where appropriate.

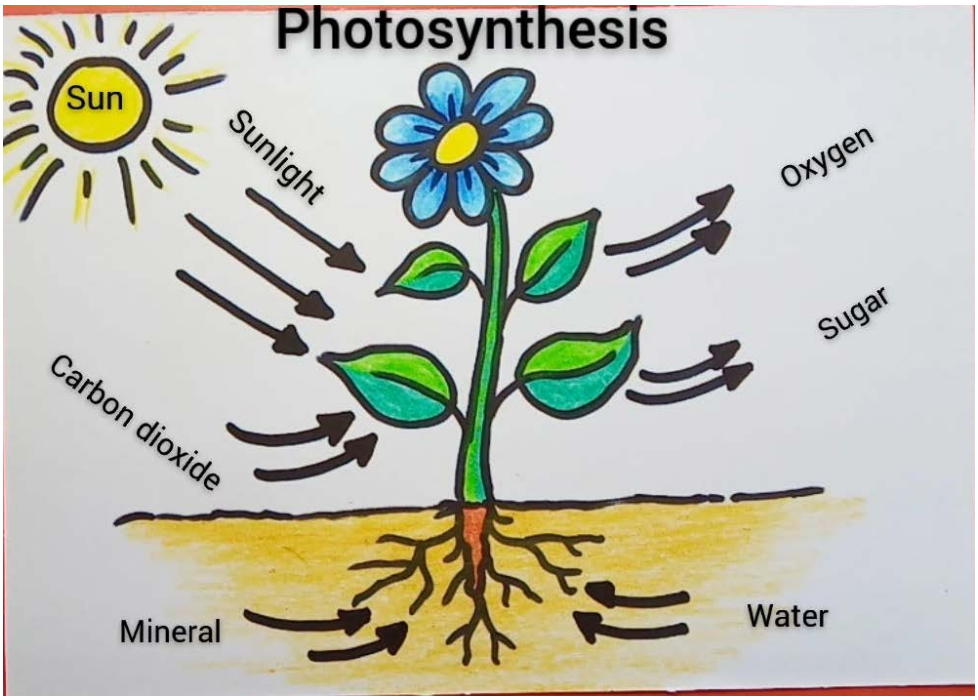


Diagram of the Photosynthesis Process.

OUR ENVIRONMENT

Have teachers lead a Bingo game (Bingo card maker: https://bingobaker.com/ - one example below of 7 cards. There is also a list of the words for the teacher. The idea is that the teacher will read the definitions of the words after completion of the "Our environment" unit and students will have to find the word. Example, the teacher will say "the series of processes by which food is grown or produced, sold, and eventually consumed" and the students will have to find the word "food chain" on the bingo card.

B	I	N	G	O
leaching	decomposers	greenhouse effect	protozoa	pollutant
pollutants	carnivore	predator	prey	herbivore
food chain	omnivore	Free!	soil erosion	fungi
pollution	ozone	bacteria	actinomycetes	consumers
producers	producers	nematodes	ecosystem	food web

ozone	pollution	pollutant	herbivore	pollutants
decomposers	greenhouse effect	fungi	consumers	ecosystem
predator	protozoa	Free!	actinomycetes	omnivore
soil erosion	carnivore	food web	producers	bacteria
producers	nematodes	leaching	food chain	prey

bacteria	omnivore	pollutant	pollution	protozoa
ozone	producers	greenhouse effect	fungi	prey
pollutants	leaching	Free!	soil erosion	consumers
food chain	predator	nematodes	ecosystem	decomposers
herbivore	producers	food web	actinomycetes	carnivore

omnivore	ecosystem	pollutants	food chain	protozoa
actinomycetes	predator	prey	bacteria	greenhouse effect
food web	producers	Free!	decomposers	carnivore
pollution	consumers	pollutant	herbivore	nematodes
leaching	ozone	producers	soil erosion	fungi

nematodes	food web	pollutants	ecosystem	pollution
producers	food chain	leaching	carnivore	protozoa
producers	decomposers	Free!	soil erosion	bacteria
fungi	ozone	herbivore	pollutant	predator
omnivore	prey	consumers	actinomycetes	greenhouse effect

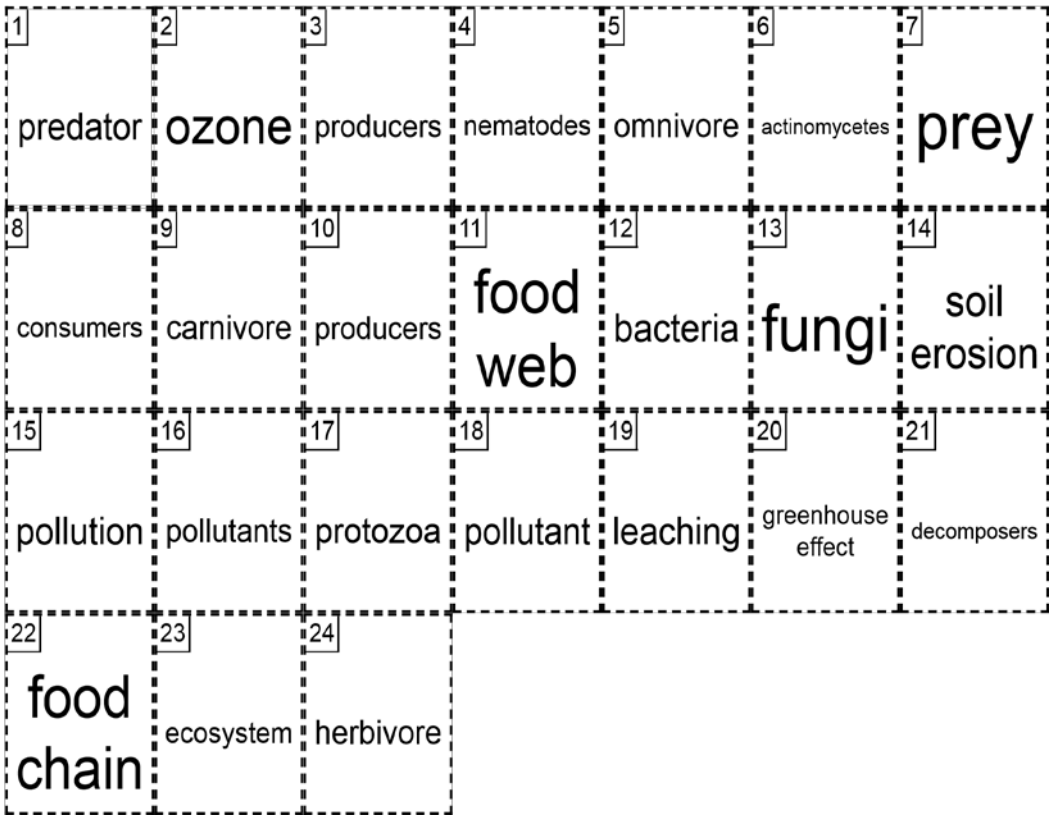
omnivore	bacteria	pollutants	consumers	protozoa
pollution	ecosystem	producers	carnivore	nematodes
greenhouse effect	predator	Free!	prey	leaching
actinomycetes	ozone	food chain	herbivore	pollutant
decomposers	fungi	food web	soil erosion	producers

nematodes	predator	fungi	actinomycetes	producers
food web	ecosystem	pollutant	greenhouse effect	consumers
protozoa	leaching	Free!	omnivore	prey
ozone	decomposers	bacteria	carnivore	soil erosion
pollutants	pollution	herbivore	food chain	producers

ozone	actinomycetes	carnivore	leaching	fungi

producers	omnivore	bacteria	soil erosion	ecosystem
producers	nematodes	Free!	pollutants	pollutant
protozoa	prey	consumers	pollution	herbivore
decomposers	greenhouse effect	food chain	food web	predator

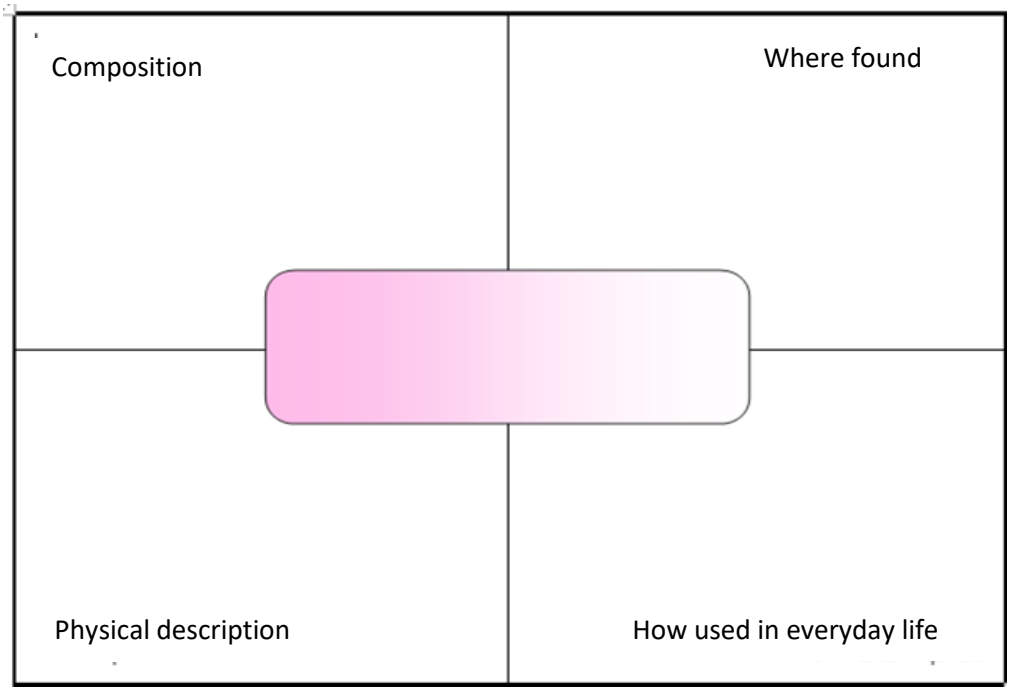
The words:


1 predator
2 ozone
3 producers
4 nematodes
5 omnivore
6 actinomycetes
7 prey
8 consumers
9 carnivore
10 producers
11 food web
12 bacteria
13 fungi
14 soil erosion
15 pollution
16 pollutants
17 protozoa
18 pollutant
19 leaching
20 greenhouse effect
21 decomposers
22 food chain
23 ecosystem
24 herbivore

OUR EARTH

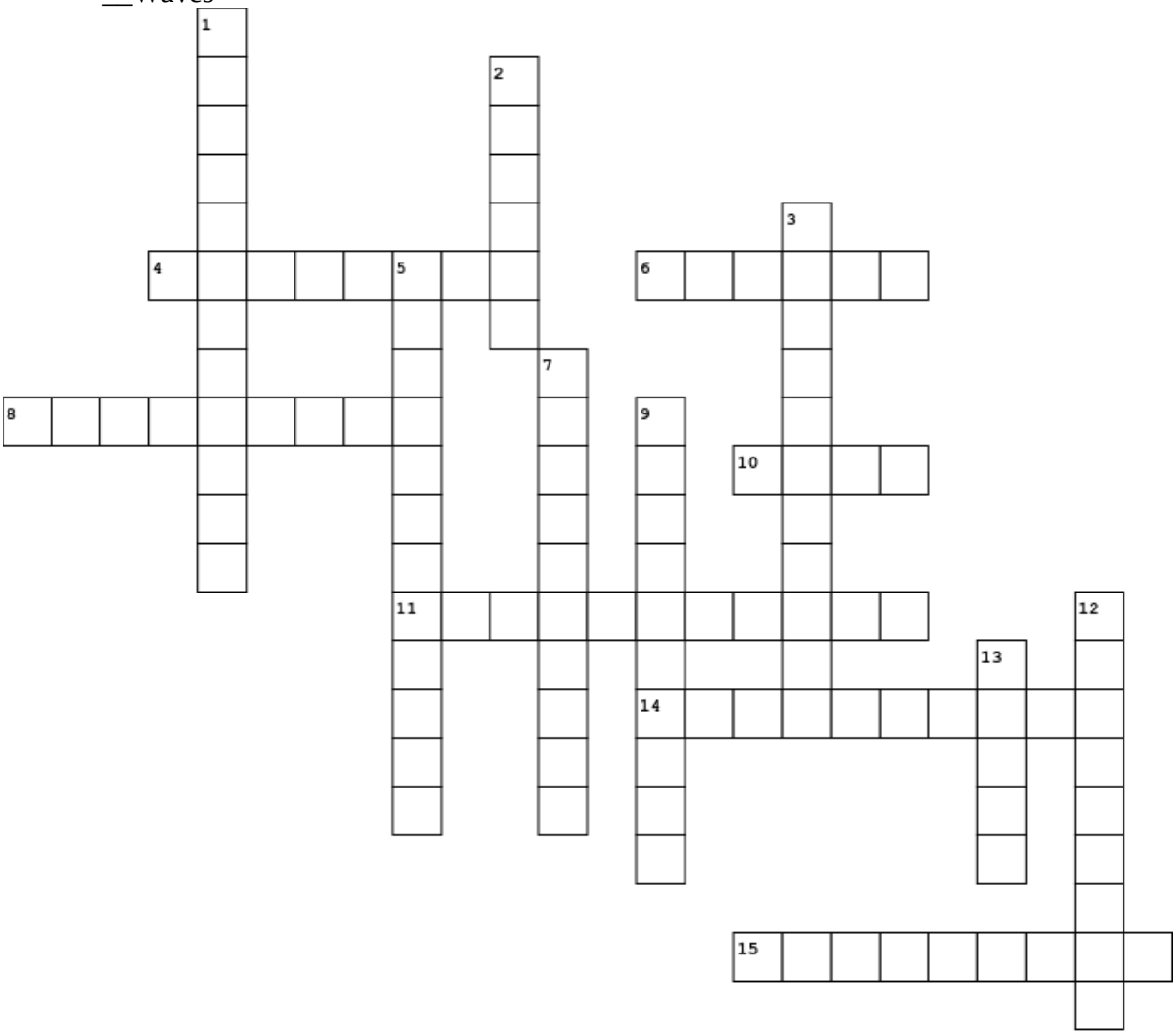
__Earth resources

Have students create Frayer cards of the minerals found in Guyana. Each card should have what the mineral is composed of, where they are found, physical description and how they may be used in everyday life.



ENERGY

__Waves



Across

4. a wave pattern that forms when waves of equal wavelength and amplitude, but traveling in opposite directions, continuously interfere with each other and has points called nodes that do not move

6. matter in which a wave travels

8. maximum distance a wave causes the particles in a medium to move from the rest position

Down

1. a wave for which the matter in the medium moves back and forth along the direction that the wave travels

2. the lowest points on a transverse wave.

3. the bending of waves around an obstacle; can also occur when waves pass through a narrow opening

5. occurs when two or more waves overlap and combine to form a new wave

7. distance between one point on a wave and the nearest point just like it

10. a repeating disturbance or movement that transfers energy through matter or space

11. the least dense regions of a compressional wave

14. wave for which the matter in the medium moves back and forth at right angles to the direction the wave travels; has crests and troughs

15. the process by which an object is made to vibrate by absorbing energy at its natural frequencies

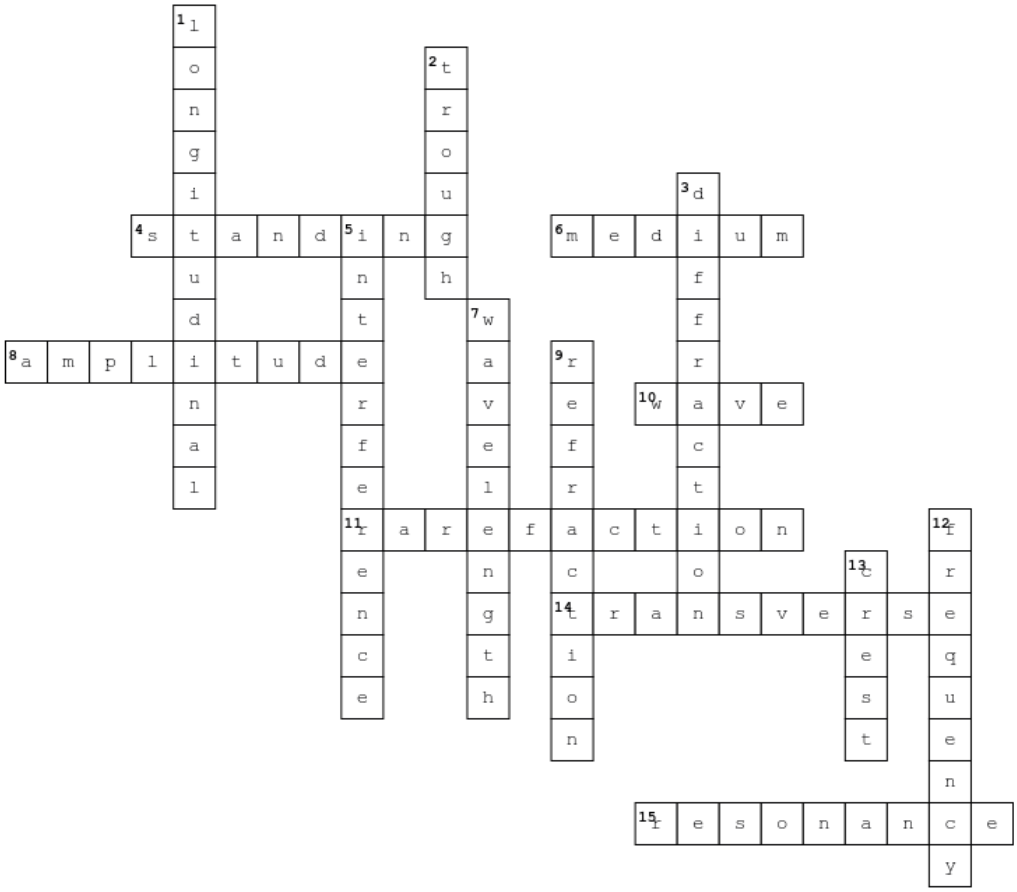
9. the bending of a wave as it changes speed in moving from one medium to another

12. the number of wavelengths that pass a fixed point each second; expressed in hertz (Hz)

13. the highest points on a transverse wave

Answer key:

Waves



__Electricity

Have students write a paragraph explaining –voltage, current, resistance, power and watt. Have them address how they are the same, how they are different and how they may work together.

__Heat energy

Have students write a paragraph comparing and contrasting conduction, convection and radiation.

__Heat and expansion

Have students write a paragraph discussing which state of matter (solid, liquid, gas) expand the most and the least when heated and why. Have them draw pictures showing each state before and after it is heated.

__Fuels as sources of energy

Have students create a chart that shows the different types of fuels used at home and school. For each fuel have them discuss how it is used (example gasoline in cars), the issue associated with using this kind of fuel (ex. Pollution) and an alternative to this type of fuel (ex. Electricity).

__Alternative sources of energy

Have students create flashcards of each of the alternative fuels in Guyana (solar power, wind power, hydropower, geothermal power, biogas and gasohol). On the front of the card write the name of the fuel and on the back of the card write 1) if they have seen this fuel used anywhere. 2) if they have- then where and if they have not – where do they think it could be used.

__Conservation of our forest resources

Have students read an article on the impact of deforestation to the environment in Guyana. Have them then create posters directed at the public educating them on what they can do to help with the issue of deforestation. For example, educating people on the issues with gold mining (https://news.mongabay.com/2017/01/guyana-focuses-deforestation-prevention-efforts-on-conservation-and-management/)