

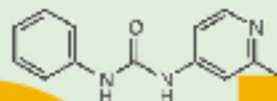
# THE CHEMISTRY OF WATERMELON

## COLOUR & AROMA

Watermelon has a sweet taste and a refreshing aroma. The red color is due to the presence of lycopene, a natural pigment. The green rind is due to the presence of chlorophyll. The white pith is due to the presence of cellulose and pectin.



## EXPLODING WATERMELONS



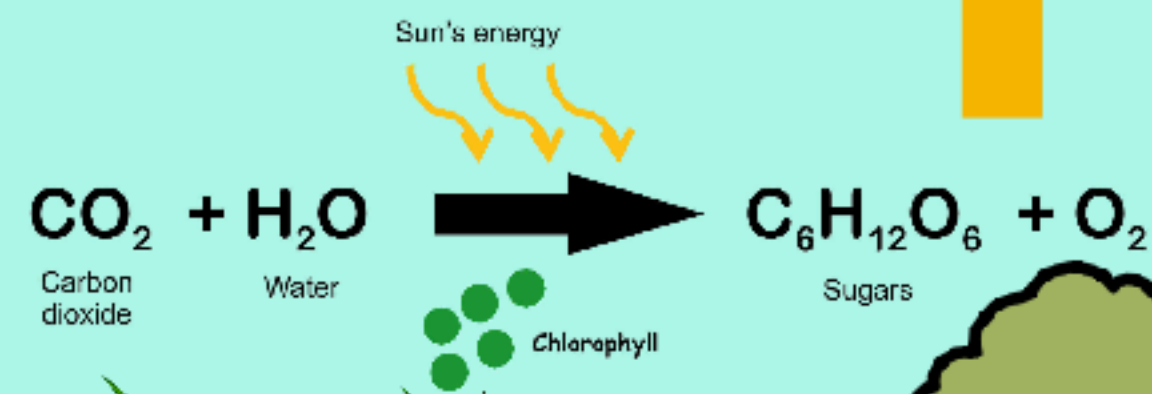
Watermelon is a natural source of antioxidants, including lycopene and beta-carotene. These compounds help protect cells from damage caused by free radicals.

Try to find all the smiley faces in the presentation!!!!

You can find the Chemistry of plants here:  
<https://www.instagram.com/compoundchem/>  
<https://www.compoundchem.com/>

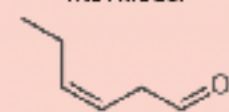
# Plants

By Iris, Alex, and Aarya



# THE CHEMISTRY OF TOMATOES

## SHOULD TOMATOES BE STORED IN THE FRIDGE?



(E)-3-Hexenal  
 A volatile compound in tomatoes

Chilling causes cell membrane damage and releases volatile compounds like (E)-3-hexenal, which can lead to a loss of volatile compounds. Some of these, such as (E)-3-hexenal, are responsible for the characteristic tomato aroma. Chilling can also lead to a loss of volatile compounds, which can affect the flavor and aroma of the fruit.

Taking tomatoes out of the fridge for 24 hours can help to restore some of the volatile compounds. However, though only with a week of fridge storage. If you want to keep the tomatoes in the fridge, you can obviously be better off storing them in a cool, dry place.

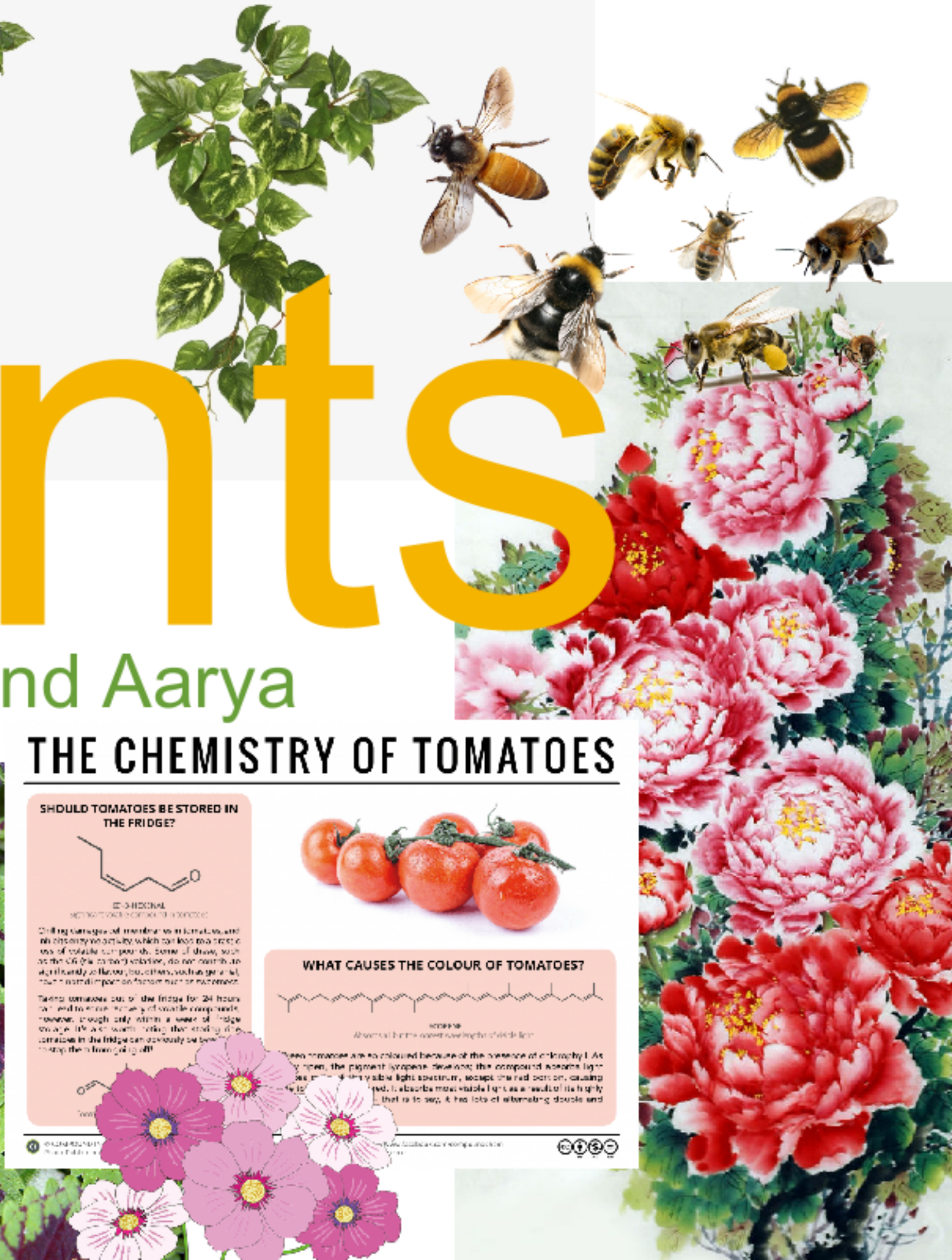


## WHAT CAUSES THE COLOUR OF TOMATOES?



Lycopene  
 A long-chain tetraterpene hydrocarbon

Tomatoes are so colored because of the presence of lycopene. As they ripen, the pigment lycopene develops. This compound absorbs light in the blue and violet regions of the visible light spectrum, except the red portion, causing the fruit to appear red. Lycopene absorbs more visible light as a result of its highly conjugated system, which is to say, it has lots of alternating double and single bonds.

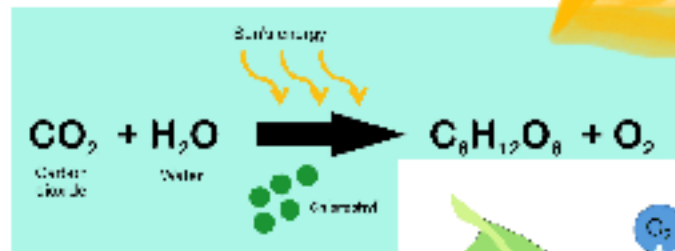


# Photosynthesis

## The Chemistry Behind Photosynthesis

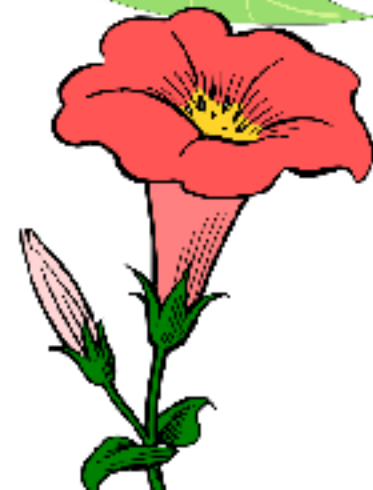
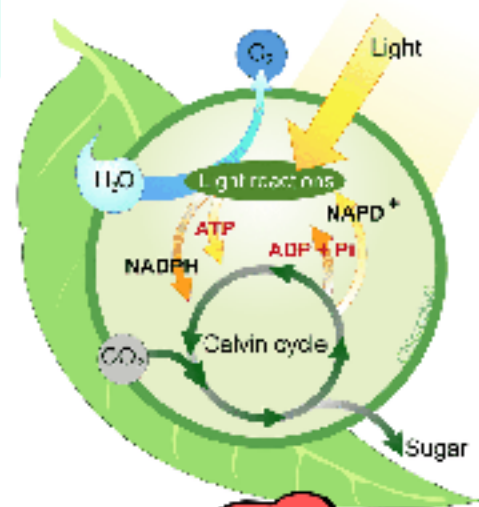
Chemistry plays a big part in photosynthesis. Many things from the creation of glucose, to the oxidation and reduction of both water and carbon dioxide are examples of chemical reactions.

Photosynthesis formula!!!!



## Fun Facts About Photosynthesis

- Most plants are green because of photosynthesis
- Photosynthesis is responsible for oxygen being present in our atmosphere
- Over half of the oxygen from photosynthesis comes from ocean plants

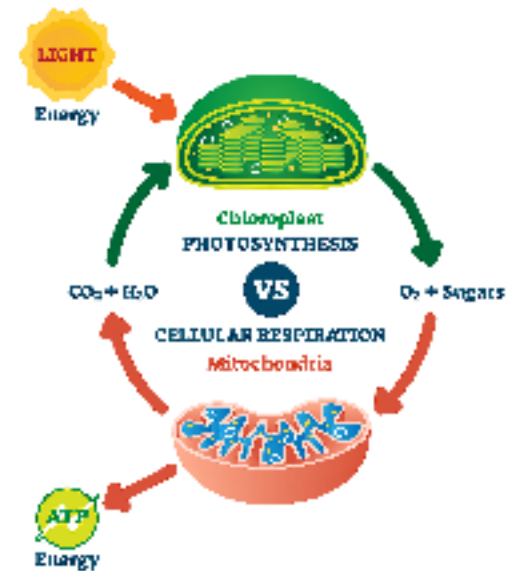
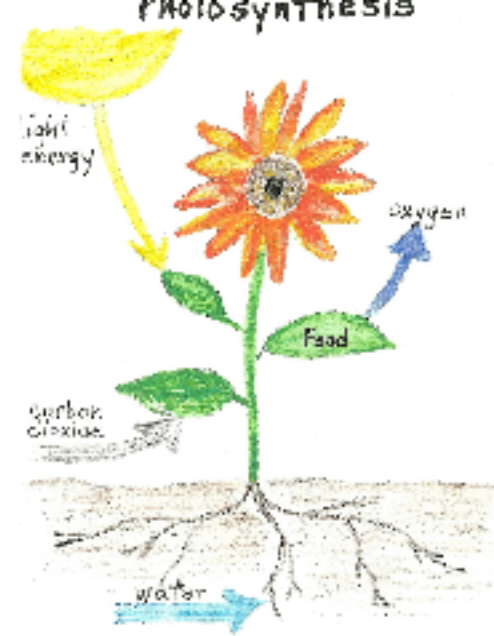


## Basic Introduction to Photosynthesis

Photosynthesis is basically how the majority of plants get food and release oxygen. The 3 main ingredients are sunlight, water, and carbon dioxide.

## Photosynthesis in Depth

Photosynthesis is the process in which plants use sunlight, water, and carbon dioxide in order to synthesize foods. Inside the plant, sunlight is used to oxidize water, making the water lose electrons and turning into oxygen, which is then released by the plant into the air while the carbon dioxide is reduced, gaining electrons and turning into glucose, which the plant uses for energy and to make other things. Photosynthesis is absolutely vital for survival on earth to other organisms, and the plants. It serves as a way to put oxygen, a vital gas needed for respiration into the air, and allows plants to survive in order to keep on photosynthesizing.



# Pollination



Sooo.... What is Pollination??

Pollination is the fertilization of plants by transferring pollen, dropping seeds, etc.

Types

- A) Hypohydrophily :
  - Pollination that takes place with the help of water below the water surface in hydrophytes bearing submerged female flowers is called hypohydrophily. e.g. *Zostera* and *Ceratophyllum*.
- B) Epiphydrophily :
  - When pollination occurs on the surface of water, it is called epiphydrophily. e.g. *Vallisneria*

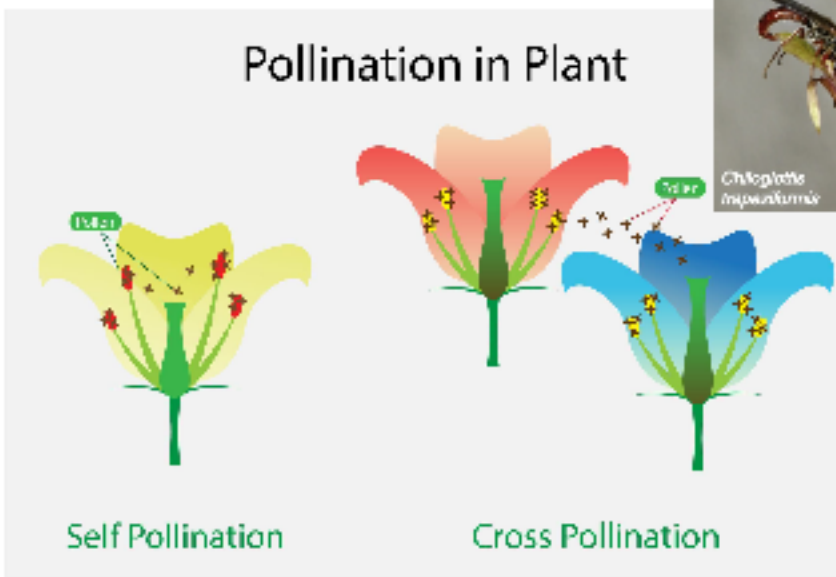
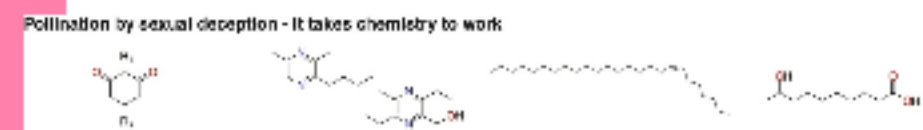


This is Bob. Bob, tell me why pollination is so important and beneficial to you and the plants.

Wait, so what does this have to do with Chemistry???!?!?!  
<https://www.youtube.com/watch?v=hml-rJuYAjw>

Plants can lure specific male insects as pollinators by chemical and physical mimicry of the female of the pollinator. This means that plants use chemistry by releasing certain chemicals, to lure specific male insects to pollinating them.

(Which is kind of gross)



Well, Pollination is vital to us, as it provides a food source (keeping us alive) while also helping plants thrive by reproducing, preventing extinction.

As you can see here, the plants are disguised as an insect, which can trick male insects into trying to mate with them.



Did you know that catnip is a member of the same plant family as mint. It affects cats but it can also be used as a mild sedative and anti - spasmodic agent in humans.

An anti - spasmodic agent is a pharmaceutical drug that suppresses muscle spasms. Catnip can also be used as insect repellent.

Did you know, the reason grass smells nice when cut, is because of the releasing of a host of different volatile chemicals, called Green Leaf Volatiles (GLV)?



# Fun Facts!

## THE CHEMISTRY OF THE COLOURS OF AUTUMN LEAVES

**Chlorophyll a**  
Type of Chlorophyll

**Carotenoids**  
Type of Carotenoid

**Flavonoids**  
Type of Flavonoid

**Anthocyanins**  
Type of Anthocyanin

**Chlorophyll** gives plants their green color. Plants require warm temperatures and sunlight to produce chlorophyll - in autumn, the amount produced begins to decrease. This makes the leaves' green color go away.

**Carotenoids** and flavonoid pigments are always present in leaves, but as chlorophyll is broken down in the autumn their colors start to come out. Xanthophylls, a subclass of carotenoids, are responsible for the yellows of autumn leaves.

**Carotenoids** can also contribute orange colors. Beta-carotene is one of the most common carotenoids in plants, and absorbs green and blue light strongly, reflecting red and yellow light and causing its orange appearance.

Unlike the carotenoids, **anthocyanin** synthesis is kick-started by the onset of autumn - as sugar concentration in the leaves increases, sunlight initiates anthocyanin production. The purpose they serve isn't clear, but it's been suggested that they help protect the leaves from excess light, prolonging the amount of time before they fall.



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### BLACKBERRY CHEMISTRY

Summer may now be past its peak, but blackberry season is now fast approaching. In this graphic we briefly look at the compounds that give blackberries their purple-black colour.

**CYANIDIN 3-GLUCOSIDE**

**CYANIDIN 3-DIKALLYLGLUCOSIDE**

Pigment compounds called anthocyanins give blackberries their purple to black colouration. They are a large group of pigments found in a number of other plants and flowers.

Cyanidin 3-glucoside is the predominant anthocyanin in blackberries, but they also contain cyanidin 3-dikallylglucoside, thought to be unique to blackberries.

### THE CHEMISTRY OF STRAWBERRIES

Summer is here, so here's a breakdown of the sweet berries and cream for dessert. Here, we'll look at the compounds we have to thank for the aroma, color, and sweetness of the strawberry.

**AROMA**

**COLOR**

**SWEETNESS & RIPENING**

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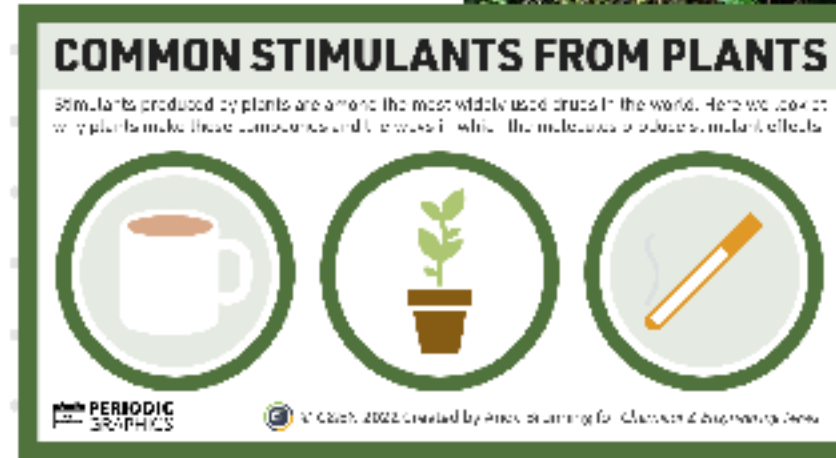
Hi!

# Practice Questions!!!

1.

What are the 3 main ingredients of photosynthesis?

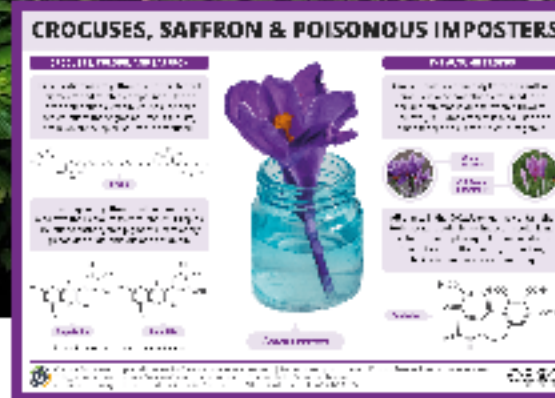
sunlight water and carbon dioxide



2.

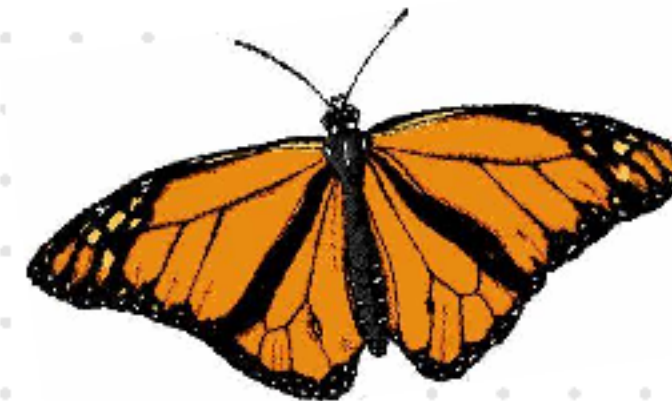
How is pollination beneficial to bees?

As a food source



What is the name of the chemicals that are released when grass is cut?

Green Leaf Volatiles (GLV)





# CREDITS YAY

Creators: Aarya, Alex, and Iris

Slide 1- Title Page: Alex and Iris

Slide 2- Photosynthesis: Alex

Slide 3- Pollination: Iris

Slide 4- Fun Facts: Aarya and Iris

Slide 5- Practice questions: Iris

Slide 6- Credits: Alex

All Slides- Smiley Faces: Alex 😊  
not the smiley on this slide :)

Slides 1, 2, 3, 4, 5 and 6 - Photos: Iris

Slides 1, 2, and 5 - Photos: Alex

