

Read the article and complete the activities that follow.

PHYSICAL SCIENCE: Chemical Reactions

EXTREME CANDY

Here's how food scientists create the most extreme Halloween treats.

Can You Take the Heat?

Atomic FireBall candies are famous for their red-hot flavor. To achieve that fiery heat, candy makers use two ingredients that affect your mouth in different ways.

First, the candy delivers a blast of spice. This comes from a chemical called cinnamaldehyde (sihn-uh-MAL-duh-hyde). It's the same oil that gives cinnamon its flavor. Cinnamaldehyde triggers special cells on your tongue, called taste receptors that sense irritating compounds.

After the cinnamon flavor comes a deeper heat. That heat comes from capsaicin (kap-SAY-uh-suhn), the compound that makes chili peppers spicy. Capsaicin triggers taste receptors on your tongue that detect temperatures higher than 109°F. It tricks your brain into thinking that you're eating something super hot. You may sweat to try to cool down, even though your body is not actually overheating.





Pucker Power

A lot of candies make your mouth pucker. But Warheads are some of the sourest sweets. The secret to their extreme flavor is a mix of substances called **acids**.

Warheads' first sour blast comes from citric acid. This mildly sour acid is found in citrus fruits, like lemons and oranges. It triggers special taste receptors cells on your tongue. "Citric acid gets your mouth ready to be tortured with more sour goodness," says Kerri Harold, a spokesperson for Impact Confections, the maker of Warheads.

A sour jolt comes from malic acid—the same **compound** that makes Granny Smith apples tart. Warheads also have two other acids: ascorbic (ah-SKOR-bik) acid and fumaric (few-MER-ik) acid. Your saliva dissolves each acid in Warheads at a different rate. The combination gives the candies their sour taste from beginning to end.



Crackling Candy

Pour a pack of Pop Rocks into your mouth and the bits of candy start to crackle and jump around on your tongue. But how?

All hard candy is made by mixing sugar, corn syrup, water, and flavoring. The mixture is boiled. As it cools, the mix hardens. Pop Rocks are made the same way—but with one more special ingredient: Candymakers add some carbon dioxide (CO_2) **gas** to the sugary mix.

When the candy hardens, tiny bubbles stay trapped inside. As the candy dissolves in your mouth, the bubbles burst! That causes the popping sensation you feel in your mouth.

—Hailes Romain

WORDS TO KNOW

acids: substances that tend to eat away at other substances

compound: a substance formed from two or more chemical elements

gas: an air-like state of matter that has no fixed shape

Name: _____

MEASURING ACIDS

The pH scale measures acidity, or the strength of the acid contained in a substance. Acids and their counterparts, bases, react easily with other substances. Water is neutral—neither an acid nor a base.



QUICK QUIZ: Answer the following questions using what you learned from the article and the diagram (above).

- Which of the following is the most acidic?
 A bleach C soap
 B lemon juice D water
- Which of the following is the least acidic?
 A apple juice C milk
 B lemon juice D vinegar
- Which of the following is the best definition of **compound**?
 A a substance made from one chemical element
 B a solid object
 C a substance made from more than one chemical element
 D an air-like state of matter that has no fixed shape
- How does capsaicin in Atomic FireBalls make you feel like you are eating something hot?
 A It gets very warm when it makes contact with the saliva in your mouth.
 B It makes your brain think that you are touching fire.
 C It releases heat as it dissolves.
 D It triggers taste receptors on your tongue that detect hot temperatures.
- Which of the following is correctly ordered from most to least acidic?
 A bleach, milk, soap, apple juice
 B lemon juice, soap, milk, water
 C vinegar, milk, soap, bleach
 D vinegar, lemon juice, bleach, milk

Clear Answers

Name: _____

DESCRIPTIVE DEVICES

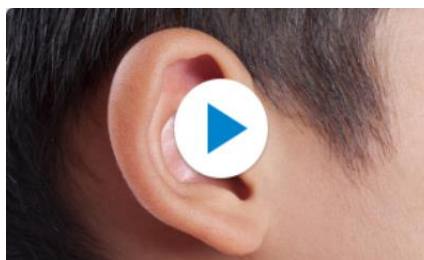
In "Extreme Candy," the author uses sensory details to describe different types of candy. Sensory details are words or phrases that describe something you can detect with one or more of your five senses. These details make descriptions more interesting by helping readers imagine how something looks, sounds, feels, smells, or tastes. The following sentences from the article contain sensory details. Identify the sensory details in each sentence and write down which sense or senses they describe. Then write a short essay using different sensory details. We've done the first item for you.

1. "A lot of candies make your mouth pucker. But Warheads are some of the sourest sweets."
sensory detail(s): "mouth pucker," "sourest sweets"
Sense(s) described: taste
2. "Pour a pack of Pop Rocks into your mouth and the bits of candy start to crackle and jump around on your tongue."
sensory detail(s): _____
Sense(s) described: _____
3. "As the candy dissolves in your mouth, the bubbles burst!"
sensory detail(s): _____
Sense(s) described: _____
4. "First, the candy delivers a blast of spice."
sensory detail(s): _____
Sense(s) described: _____
5. "You may sweat to try to cool down, even though your body is not actually overheating."
sensory detail(s): _____
Sense(s) described: _____

6. Use at least three types of sensory details to describe the experience of eating your favorite food. How does it look, sound, feel, smell, and taste?

Here is the link: Password: wings34

<https://sciencespin36.scholastic.com/issues/2020-21/100120/Extreme-Candy.html?lmode=1&share-video=5293400513001>



The Five Senses

PHYSICAL SCIENCE

Here is a fun video on how jellybeans are made. Don't forget the password to access the video is: wings34

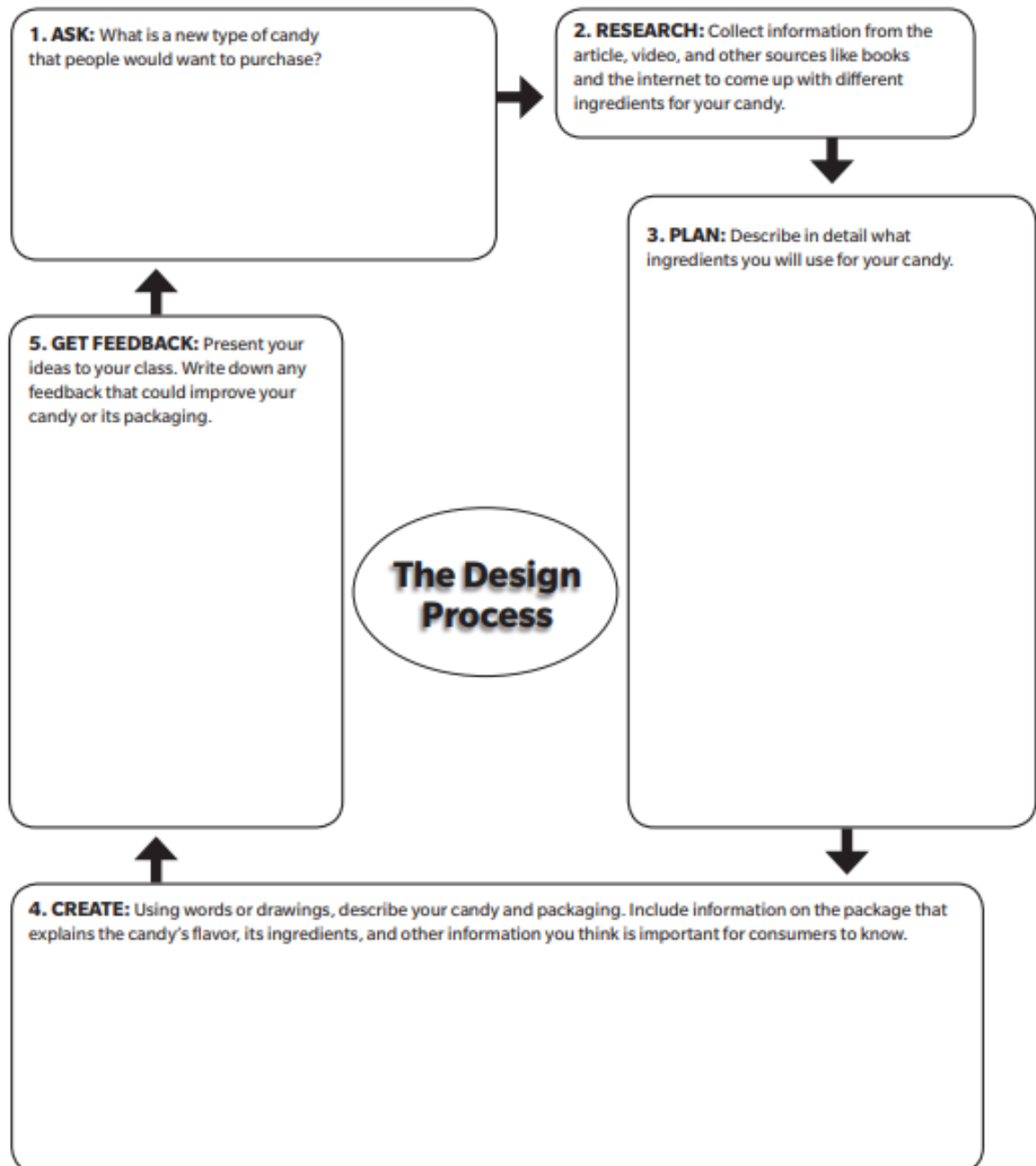
<https://sciencespin36.scholastic.com/issues/2020-21/100120/Extreme-Candy.html?lmode=1&share-video=6073766707001>



How Jelly Beans are Made
PHYSICAL SCIENCE

Candy Design

When people design new products, they often use a design process like the one outlined in the steps below. Fill in the boxes to describe how you would design a new candy and its packaging. You may need to use separate pieces of paper to complete this activity.



Draw a picture of your candy and the wrapper!

Have fun! Hope to see you tomorrow!