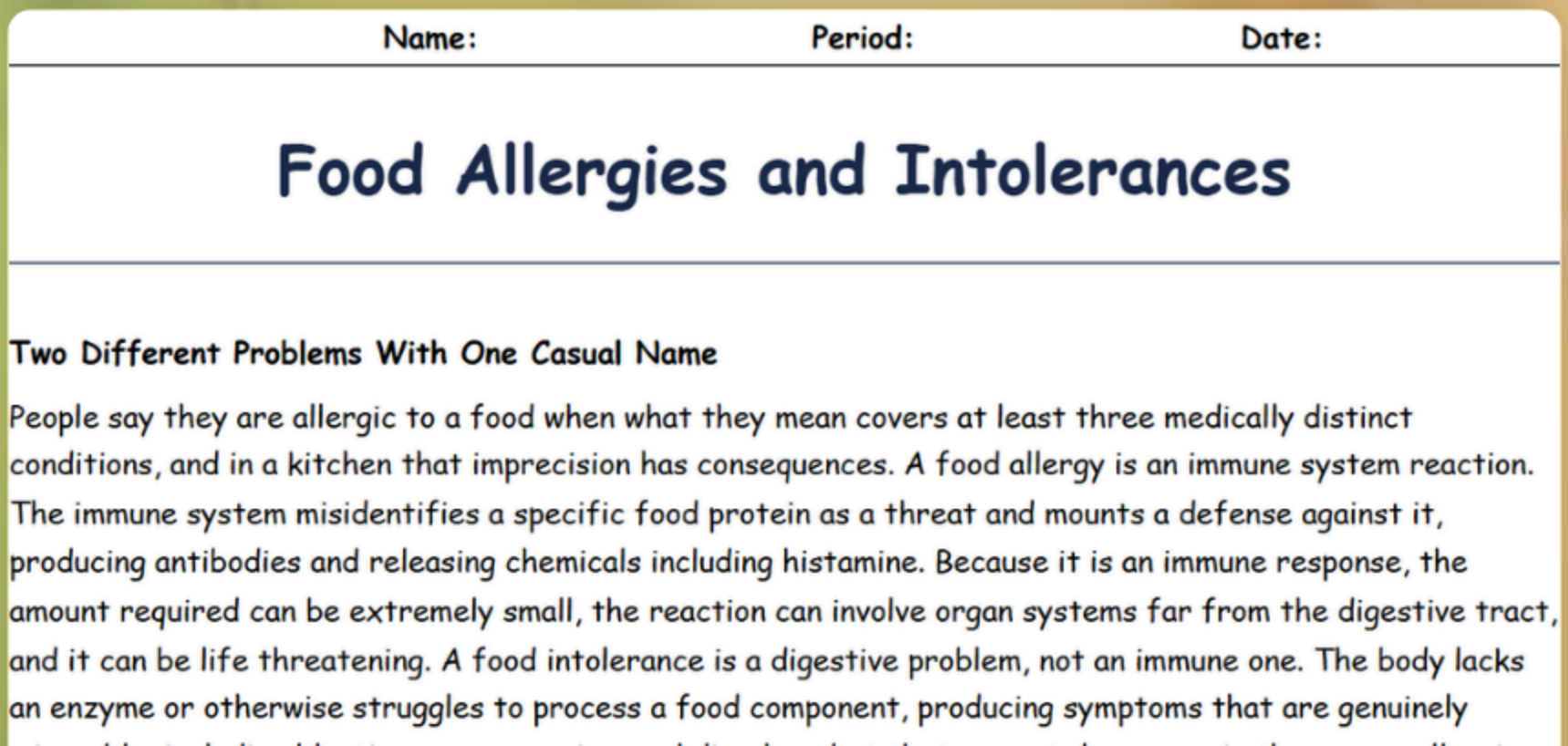
NO PREP

Food Allergies and Intolerances

Includes: Student reading, case study, differentiated questions, teacher key



Name: Period: Date:

Food Allergies and Intolerances

Two Different Problems With One Casual Name

People say they are allergic to a food when what they mean covers at least three medically distinct conditions, and in a kitchen that imprecision has consequences. A food allergy is an immune system reaction. The immune system misidentifies a specific food protein as a threat and mounts a defense against it, producing antibodies and releasing chemicals including histamine. Because it is an immune response, the amount required can be extremely small, the reaction can involve organ systems far from the digestive tract, and it can be life threatening. A food intolerance is a digestive problem, not an immune one. The body lacks an enzyme or otherwise struggles to process a food component, producing symptoms that are genuinely

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The Nine Foods That Cause Most Reactions

More than 160 foods have been documented as causing allergic reactions, but a short list accounts for the large majority of them. United States law identifies nine major food allergens: milk, eggs, fish, crustacean shellfish, tree nuts, peanuts, wheat, soybeans, and sesame. The first eight were established by the Food Allergen Labeling and Consumer Protection Act of 2004. Sesame was added by the FASTER Act and became the ninth major allergen effective January 1, 2023, after years of

advocacy from families who could not reliably identify it on ingredient lists. Together these nine are estimated to account for around ninety percent of documented food allergic reactions in the country. The labeling law is the practical result and it is worth understanding as a shopper. Packaged foods regulated by the FDA must declare the presence of a major allergen in plain English, either within the ingredient list or in a separate Contains statement, so that a parent does not have to know that casein and whey are milk or that albumin is egg. That requirement is genuinely useful. What the law does not regulate is the advisory statement, meaning phrases such as may contain tree nuts or processed in a facility that also processes peanuts. Those statements are entirely voluntary, are not standardized, and their absence does not prove a food is safe. A person managing a serious allergy generally treats advisory language as a warning and its absence as unproven rather than as an all clear.

Anaphylaxis and Why Minutes Matter

Most allergic reactions to food are mild and stay that way, involving hives, an itchy mouth, swelling, or stomach upset. Anaphylaxis is the reaction that makes food allergy a medical emergency rather than an inconvenience. It is a severe, rapid-onset reaction involving more than one body system at once, and it can begin within seconds to minutes of exposure. The signs worth recognizing include swelling of the lips, tongue, or throat, difficulty breathing or a hoarse voice, widespread hives, repetitive vomiting, dizziness or fainting, and a sense that something is very wrong. The first-line treatment is epinephrine, delivered by an auto-injector into the outer thigh, and the timing of that injection is the single largest factor in how the episode goes. Delay is the most common and most serious mistake. Antihistamines such as diphenhydramine are not a treatment for anaphylaxis and should never be used in its place, because they may reduce hives and itching while doing nothing about airway swelling or falling blood pressure. Emergency services should be called after epinephrine is given, every time, even if the person appears to recover completely, because a second wave of symptoms can occur hours later. Many states allow schools to stock undesignated epinephrine and permit trained staff to administer it. For a foods class specifically, the practical lesson is that recognizing the signs and acting quickly matters more than knowing which food caused it, and hesitating in order to be certain is the behavior that turns a survivable reaction into a fatal one.

Cross-Contact Is Not the Same as Cross-Contamination

Food safety training teaches cross-contamination, meaning the transfer of bacteria from raw food to ready-to-eat food, and it teaches that heat solves it. Allergen management uses a different term, cross-contact, and the difference is the entire point. Cross-contact is the transfer of an allergen protein from one food to another, and cooking does not destroy it. Searing a steak kills bacteria. Searing a steak in a pan that held peanut sauce does not remove the peanut protein. That single fact drives every kitchen practice around allergens. The amounts involved can be very small. Traces sufficient to trigger a reaction in a highly sensitive person can transfer through a shared cutting board, a knife wiped rather than washed, a colander, tongs, a shared fryer, flour dust in the air of a bakery, a scoop moved between bulk bins, or crumbs in a jar of peanut butter. In practical terms, the defenses are physical separation and thorough washing rather than temperature. Preparing allergen-free food first, before the allergen is opened, is one of the most effective habits available in a school lab. Washing hands with soap and water works, while hand sanitizer does not, because sanitizer kills germs and does not remove protein. Equipment needs washing with soap and hot water rather than a wipe with a towel. Separate labeled cutting boards and utensils help. For a person cooking for someone else with a serious allergy, reading the ingredient label every single time matters, because manufacturers reformulate products without announcing it.

Intolerance, and the Most Common One in the World

Lactose intolerance is the most common food intolerance globally and a useful model for how intolerances behave. Lactose is the sugar found in milk, and digesting it requires lactase, an enzyme produced in the small intestine. Most humans produce plenty of lactase in infancy and produce progressively less after weaning, which is the ancestral pattern for the species. The ability to keep producing lactase into adulthood, called lactase persistence, is a genetic trait that is common in populations with long histories of dairy farming and much less common elsewhere, which is why prevalence varies dramatically by ancestry. When undigested lactose reaches the large intestine, gut bacteria ferment it, producing the gas, bloating, cramping, and diarrhea that define the condition. It is uncomfortable and it is not dangerous, and that distinction matters in a kitchen. A trace of milk in a sauce is a medical emergency for a person with a milk allergy and a non-event for a person with lactose

intolerance. Management is also different. Lactose intolerance is usually dose dependent, so many people tolerate small amounts, and it is often easier with aged cheeses and yogurt, where bacteria have already broken down much of the lactose. Lactase enzyme tablets taken with a meal help, and lactose-free milk is ordinary milk with the enzyme already added, retaining the full nutrient profile. Anyone cutting out dairy entirely needs another reliable source of calcium and vitamin D, which is where an intolerance can quietly become a nutrition problem if it is managed carelessly.

Key Information: Food Allergies and Intolerances

Detail	Information
Food Allergy	An immune reaction to a food protein; can be life threatening
Food Intolerance	A digestive problem, often dose dependent, not life threatening
Celiac Disease	An autoimmune reaction to gluten that damages the small intestine
Nine Major Allergens	Milk, egg, fish, crustacean shellfish, tree nut, peanut, wheat, soy, sesame
Sesame	Became the ninth major allergen effective January 1, 2023
Anaphylaxis Treatment	Epinephrine into the outer thigh first, then call 911
Cross-Contact	Transfer of allergen protein; cooking does not destroy it
Lactose Intolerance	Too little lactase enzyme; managed by dose, tablets, or lactose-free milk

Case Study: The Cutting Board in Station Four

Amari has a peanut allergy and carries an epinephrine auto-injector in the front pocket of his bag. His foods class was making two dishes that day, a noodle salad with peanut sauce at stations one through three and a plain sesame version at station four, where Amari worked. His group washed their board with a dry towel between tasks because the sink line was long. Ms. Whitaker stopped the class before anyone plated anything. "A towel moves protein around," she said. "It does not remove it." She had them redo every board with soap and hot water, and she pointed out that hand sanitizer on the wall would not have helped either, because it kills germs rather than washing protein away. Then she changed the schedule permanently. From that week on, allergen-free dishes are prepped first, before the allergen container is opened at all. "I wasn't worried about the sauce," Amari said afterward. "I was worried about the board nobody was thinking about."

1. Ms. Whitaker said a towel moves protein around rather than removing it. Explain why this is a bigger problem for allergens than for bacteria.

2. Explain why prepping allergen-free dishes first is more effective than cleaning carefully afterward.

Multiple Choice

1. The main difference between a food allergy and a food intolerance is that an allergy:

a) Produces symptoms only in the stomach and intestines

b) Involves the immune system and can be life threatening

c) Develops only during childhood and is outgrown by adulthood

d) Is caused by eating too much of one food at one time

2. Why does cooking fail to make a pan safe after it has held an allergen?

a) Cooking converts allergen protein into a stronger form

b) Heat destroys bacteria but does not destroy allergen protein

c) Heat spreads the allergen more evenly around the cooking pan

d) Allergens survive only in metal cookware, not in glass

3. A person shows throat swelling and trouble breathing after eating. The correct first action is to:

a) Have the person drink water to clear the airway

b) Identify which food caused it before treating anything

c) Give epinephrine in the outer thigh, then call 911

d) Give an antihistamine and watch for fifteen minutes

Matching

Write the letter of the correct definition on the line next to each term.

Term	Definition
1. ___ Food Allergy	A) Allergen protein moving between foods, unaffected by cooking
2. ___ Food Intolerance	B) A rapid severe reaction across body systems needing epinephrine
3. ___ Anaphylaxis	C) The enzyme needed to break down the sugar found in milk
4. ___ Cross-Contact	D) An immune response to a food protein that can turn dangerous fast
5. ___ Lactase	E) A digestive difficulty that is uncomfortable but not life threatening

Fill-in-the-Blank

1. United States law identifies _____ major food allergens.

2. The first treatment for anaphylaxis is _____.

3. Removing allergen protein requires soap and _____.

Short Answer

Answer each question in 2-4 complete sentences.

1. Explain why a may contain warning is treated differently from a Contains statement.

_____

_____

_____

2. Explain why an antihistamine should never replace epinephrine during anaphylaxis.

3. Explain how lactose intolerance can become a nutrition problem if managed carelessly.