

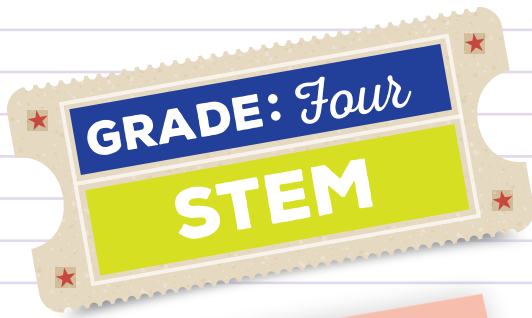
*The State Fair of*  
**TEXAS**  
*Curriculum*

**FAIR FOOD**  
**GRADE 4 STEM**

FRIED STUFF

THE SCIENCE BEHIND THE BATTER





## Fried Stuff

### The Science Behind the Batter



#### In this lesson students will:

- ★ Explore how matter changes when cold or heat is applied.
- ★ Identify the safety materials that may be needed when conducting experiments.
- ★ Create a triptych of the three states of matter of a chosen fair food.

Have you ever seen ice melt during a hot summer day or watched steam from a cup of hot cocoa? These are examples of changes in matter, due to heat or cold. Find out how vendors at the State Fair use changes in the properties of matter to make delicious fried fair foods!

### Standards

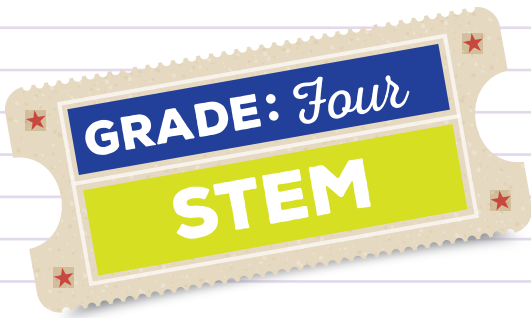
- ★ Math TEKS: 4.1(A), 4.1(B), 4.1(C), 4.4(D), 4.4(G), 4.4(H)
- ★ Science TEKS: 4.4(B), 4.5(B)
- ★ Art TEKS: 4.2(B), 4.3(A), 4.4(B)



### Before You Go

- \* Conduct a class demonstration on how matter changes when it is heated or cooled, using water. Make sure to use your safety equipment!





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- ★ Begin with a cup of ice water.
  - \* Put it in a sunny window and ask students to write their observations, at the beginning.
- ★ Use a hot plate or burner to heat more water until it boils.
  - \* Ask students to write down their observations.
- ★ Check out the cup of ice water after some time has passed.
  - \* Ask students to write down their observations (i.e., the ice is disappearing/turning into water, condensation is forming).
- ★ Discuss physical changes in matter.
  - \* What is the matter that is changing?
  - \* How is it changing?
- ★ Briefly discuss the objective of the State Fair visit with the students:
  - \* To discover how deep frying fair foods actually changes the properties of the matter being fried.



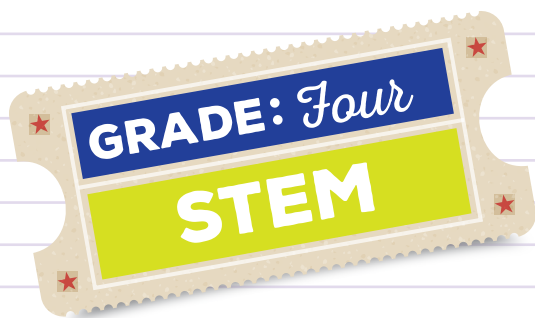
### Plan Your Route.

- ★ Begin at the Texas Star and make your way toward the food booths that serve deep-fried sweet tea, deep-fried milk and cookies on a stick, or other deep fried treats.
- ★ Then, use the map to find winners of the Big Tex Choice Awards.

### Optional Materials to Bring

- ★ Smart Phone or Tablet
- ★ Pencil & Notepad
- ★ Sketchbook





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#### While You're There

The objective of your visit is to discover how deep-frying fair foods actually changes the properties of the matter being fried.

#### LIQUID TO DELICIOUS SOLID

Observe the cooks as they create tasty treats for fairgoers.

- Vendors use liquids such as coke, milk, and sweet tea as well as the batter, itself! Write down the liquids used in the fried food you are observing.
- Take pictures or write observations in your notebook:
- What was the original state of the matter?
- ★ Was heat or cold applied?
- ★ How did this change the state of matter?
- ★ What safety gear does the cook use to keep from getting burned?
- ★ Be sure to make sketches of the foods before, during, and after being cooked, to help you with the Arts Connection!

#### BIG TEX CHOICE WINNERS

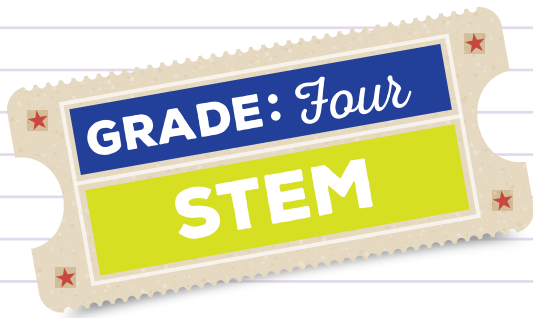
- ★ Interview food vendor finalists in the Big Tex Choice Awards.
- How would you describe the award-winning food?
- Is it a heterogeneous or homogeneous mixture?
- How do the vendors determine the amount of food to prepare each day?
- How much of the food is sold each day?
- Do they prepare the same number of servings every day?



#### After the Fair

When you return to class following your State Fair visit, you will:

- ★ Estimate the number of servings sold, in hundreds, of each food you saw at the Fair, based on your observations
- ★ Work with a team to invent your own State Fair food that involves changing matter.



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#### Fair Food Estimation

- ★ Step 1: Estimation: How many servings of each food are sold in one week?
- ★ Step 2: Making Predictions: The State Fair of Texas lasts for approximately four weeks.
  - \* Use the estimated amount from Step 1 to determine the number of servings sold over four weeks.
- ★ What conclusions can you draw from your observations?

#### Fair Food Creation

- ★ With your team, decide on a yummy Fried Thing to be your State Fair Food.
- ★ Research the temperature your food must reach in order for a change in matter to occur.
- ★ Present to the class what Fair Food your team would make!

#### Arts Connection: Triptych

- ★ Using the sketches you made at the Fair as inspiration, you will create a triptych of the three states of matter fair food that you create go through as it is being prepared.
- ★ A triptych is a series of 3 different artworks that are hung together as one piece. Therefore:
  - \* Your first artwork would be a drawing of the food before being cooked.
  - \* The second work would be a drawing of the food while being cooked.
  - \* The third work would be a drawing of the food after being cooked.
- ★ If your team is made up of three people, each of you could work on one part of the triptych.
- ★ Be sure to add color to your work.

- ★ Since there is one main focal point in each of these pieces, they should take up most of the space on your paper.
- ★ Have fun and be creative!
- ★ When you are finished, share your triptych with your classmates, and compare yours to theirs.
  - \* How are they the same?
  - \* How are they different?
  - \* What might you do differently, next time?

