



Game Day Gourmet Homeschool Lesson Plan

Overview

Raddish is designed by a dedicated team of teachers and chefs who believe the kitchen classroom is the tastiest place to learn. We love watching learning come alive when kids mix math, stir science, and taste culture!

Paired with the materials found in your GAME DAY GOURMET box, this lesson plan divides your box into three 45-90 minute lessons. You can use these lessons for students from pre-K – middle school and adapt them to suit your needs. Depending on your timeframe, child's age, and their engagement, these lessons can be taught together or separated.

Please refer to the curriculum provided in your box: recipe guides, activity card, and introduction card.

Happy cooking! Happy learning!



Lesson #1: BALL PARK PRETZELS
& BASEBALL EXPLORED

Activity Time: 90 minutes

LEARNING OUTCOMES

- Students will **read or listen** to a variety of books relating to baseball.
- Students will **learn** a little about the history of baseball.
- Students will **watch** videos to help understand the game.
- Students will **choose** to either **build** a diorama of a baseball stadium, **create** a piece of baseball inspired art, or **choreograph** a movement piece about baseball.
- Students will be supported in **planning, executing, and editing** their baseball pieces.
- Students will **display, discuss, or perform** their baseball work.
- Students will **read and practice** with **Featured Culinary Skill - Shaping Pretzels**.
- Students will **make and share** Ball Park Pretzels.



BASEBALL EXPLORED

Teacher Prep:

- **Collect Materials:**
 - Recipe guide, tools, and ingredients listed.
 - Materials dependent on chosen activity:
 - Stadium Diorama
 - “Stadium Diorama Worksheet” (included – see page 28)
 - Cardboard, construction paper
 - Popsicle sticks
 - Glue, tape, scissors
 - Paint, markers, crayons
 - Recycled materials (egg cartons, tin foil, etc.)
 - <https://www.ballparksofbaseball.com/ballparks/fenway-park/>
 - Baseball Art
 - Paper and pencil for planning
 - Paint, pastels, chalk, etc.
 - Brushes, water, etc.
 - Magazines, scissors, etc.
 - Baseball in Movement
 - “Baseball in Movement Worksheet” (included – see pages 29-30)
 - Space
 - Videos to show movements
 - (Optional) a video camera/ phone to record the performance
- **Watch**
 - Watch these videos ahead of time to see which is appropriate for your students.
 - Younger Students
 - Baseball Facts- All About the Game of Baseball (3:00)
<https://www.youtube.com/watch?v=vjUHSgdzWJo>
 - Older Students
 - A Brief History of Baseball (10:10)
<https://www.youtube.com/watch?v=uHVS3GGEaW4>
 - Baseball Explained in 5 Minutes (5:45)
https://www.youtube.com/watch?v=l8VGW0C_GO4



Lesson: BASEBALL EXPLORED

- Introduction: READ ALL ABOUT IT
 - Provide students with books about baseball. See the extensive list in the Resources section below or pick a favorite.
 - Read aloud or provide time for students to immerse themselves in baseball stories.
 - Discuss the stories, highlighting baseball terminology, history of the game, and people's passion for the national pastime.
 - Tell students that today they will be learning a bit about the history of baseball in the United States, an overview of how the game works, and the equipment needed for the game. In the activity, they will be able to choose between researching and building a stadium diorama, creating a piece of baseball art, or devising a skit or choreographing a movement piece about baseball.

- Information: HISTORY OF BASEBALL
 - Share:
 - Beginnings
 - Baseball is thought to have started as a game called “rounders” (because you run around the bases) in England, it was inspired by the game of Cricket.
 - The first professional team was formed in 1869, called the Cincinnati Red Stockings.
 - Baseball gained in popularity to become the United States’ “national pastime” in the late 1800’s.
 - Power Hitters
 - The next big thing were “power hitters” like Babe Ruth, Ty Cobb, Lou Gehrig, and Joe DiMaggio.
 - Women in Baseball
 - During World War II, the All-American Girls Professional Baseball League (1943-1954) was founded. The founders feared the men’s baseball may completely stop because the players were leaving to fight in the war and restrictions were placed on team travel due to gasoline rationing.
 - Black Players in Baseball
 - Black Americans had their own major leagues from 1885-1951. Their stars included Satchel Paige, Josh Gibson and “Cool Papa” Bell.
 - In 1946, the Brooklyn Dodgers were the first team to break an unwritten rule and sign a black player, Jackie Robinson, to a contract. He endured lots of racial bigotry and became a star.
 - Jackie Robinson became a very important figure in the civil rights movement in the United States
 - Baseball Today



- Today, Major League Baseball has 30 teams – 29 in the United States and 1 in Canada.
- The teams play 162 games each season, and the top five teams in each league (National League and American League) advance to a post-season tournament which ends in the best team from each league playing in the World Series of Baseball.
- Watch a video:
 - Younger Students
 - Baseball Facts- All About the Game of Baseball (3:00)
<https://www.youtube.com/watch?v=vjUHSgdzWJo>
 - Older Students
 - A Brief History of Baseball (10:10)
<https://www.youtube.com/watch?v=uHVS3GGEaW4>
 - Baseball Explained in 5 Minutes (5:45)
https://www.youtube.com/watch?v=l8VGW0C_GO4
- Learn some new baseball vocabulary
 - <https://www.pbs.org/kenburns/baseball/beginners/glossary.html>
- Instructions for Activity: BUILD, PAINT, OR MOVE BASEBALL
 - Below are three choices for showing your baseball understanding. Choose one:
 - Build a Baseball Stadium (adapted from The Kennedy Center Arts Edge program)
 - Collect building materials and tools as listed in the materials section above.
 - Provide students with the “Build a Baseball Stadium Worksheet” (included – see page 28)
 - Research baseball stadiums together.
 - Look at pictures of stadiums
 - <https://www.ballparksofbaseball.com>
 - Go and visit a local baseball field. Observe closely.
 - Make some drawings or take photographs
 - Build and display your finished diorama.
 - Baseball Art (adapted from The Kennedy Center Arts Edge program)
 - Collect art materials as listed in the materials section above.
 - Explain to students that this option is about creating a painting, collage, or picture about baseball.
 - Tell the students that the first step is to make a plan.
 - Ask students to answer these questions and record their answers:
 - What will you include in your art? (bases, balls, bats, players, etc.)
 - What materials will you use? (paint, crayons, cut out paper)



- What colors will you use? (Will you use your favorite team's colors?)
- What mood will your picture have? (Is your team winning? Are the fans in a good mood or is it a tense play that may end the game?)
- What do you want your art to say about baseball?
- Have students **display** their finished art work.
- Baseball in Movement (Adapted from The Kennedy Center Arts Edge program)
 - **Collect** materials as listed in the materials section above.
 - **Provide** students with the “Baseball in Movement Worksheet” (included – see pages 29-30)
 - Review together to ensure understanding. Offer support as needed.
 - Helpful videos that show baseball moves
 - How to Do a Straight-Leg Slide in Baseball (1:12)
<https://www.youtube.com/watch?v=Mcr6gCZiZs>
 - Umpiring Signals (4:31)
<https://www.youtube.com/watch?v=I9N0O0RzgQ>
 - MLB Tom Hallion Strike 3 Calls (2:00)
<https://www.youtube.com/watch?v=SqUtfb0S1jU>
 - Longest Home Runs Ever- MLB (5:10)
https://www.youtube.com/watch?v=a8_7V4Mtzi8
 - Rob the Peanut Guy (5:41)
<https://www.youtube.com/watch?v=yrCU3K9ISf4>
 - Drew Storen pitching mechanics in slow motion 1000 FPS (0:45) <https://www.youtube.com/watch?v=jZKvJY6gDfg>
 - Pitching Mechanics- Increasing velocity using your legs and hips (3:09) <https://www.youtube.com/watch?v=jZKvJY6gDfg>
 - The First Wave- Documentation- A's Highlight Video- 1981
<https://www.youtube.com/watch?v=sqGxQoORYE>
 - Cubs win World Series with Game 7 win (0:40)
<https://www.youtube.com/watch?v=HOp8w2PgHIM>
 - Greatest Catches in MLB History (8:04)
<https://www.youtube.com/watch?v=UKR2vRj8Xzk>
 - Have students **perform** their finished piece.

Extension:

- **Read** biographies of baseball players.
- **Watch** movies about baseball.
 - The Bad News Bears
 - A League of Their Own
 - Field of Dreams



- Angels in the Outfield
- Go to a baseball game in your neighborhood.
- **Watch** a game on TV with someone that really knows the game and ask lots of questions!
- **Learn** the science behind various types of pitches:
 - <http://www.exploratorium.edu/baseball/activities/throw-for-a-curve.html>



COOKING BALL PARK PRETZELS

Kitchen Prep

- Read the Ball Park Pretzels recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the **Featured Culinary Skill - Shaping Pretzels**.
- Discuss kitchen safety. Specifically, oven safety (Visit Raddishkids.com/pages/safety).

Prepare Ball Park Pretzels

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to measure, knead and shape.
- When the Ball Park Pretzels are ready, eat, taste and share!
- While your friends and family are eating, display your diorama or baseball art or perform your baseball in movement piece.

RESOURCES

- Books
 - Young Readers
 - I Got It! by David Wiesner
 - Amira Can Catch by Kevin Christafora
 - The Berenstain Bears Play T-Ball
 - My favorite Sport – Baseball by Nancy Streza
 - The Kid From Diamond Street- The Extraordinary Story of Baseball Legend Edith Houghton by Audrey Vernick
 - Flat Stanley at Bat by Jeff Brown
 - Play Ball, Amelia Bedelia by Peggy Parish
 - Babe Ruth Saves Baseball by Frank Murphy
 - Round Like a Ball by Lisa Campbell Ernst
 - F is for Fenway by Jerry Pallotta
 - Pete the Cat: Play Ball by James Dean
 - 2nd to 4th Grade
 - Waiting for Pumpsie by Barry Wittenstein
 - Yom Kippus Shortstop by David A. Adler
 - A Big Day for Baseball (Magic Tree house Series) by Mary Pope Osborne
 - Katie, batter Up! By Coco Simon
 - Stolen Bases(Girl Sports Series) by Jake Maddox
 - The Capital Catch (Ballpark Mysteries Series) by David A, Kelly
 - 4th to 8th Grade
 - Baseball Saved Us by Ken Mochizuki



- Heat by Mike Lupica
- Just like Jackie by Lindsey Stoddard
- Able to Play: Overcoming Physical Challenges by Glenn Stout
- The Girl Who Threw Butterflies by Mick Cochrane
- Soar by Joan Bauer
- Rooting for Rafael Rosales by Kurtis Scaletta
- The Contract by Derek Jeter with Paul Mantell
- Websites
 - <https://www.ducksters.com/sports/baseball.php>
 - <https://www.sportsrec.com/347163-how-did-babe-ruth-change-baseball.html>
 - http://www.softschools.com/timelines/baseball_history_timeline/88/
 - <https://www.pbs.org/kenburns/baseball/beginners/glossary.html>
 - <http://www.exploratorium.edu/baseball/activities/throw-for-a-curve.html>
 - <https://www.pbs.org/kenburns/baseball/beginners/glossary.html>
 - https://en.wikipedia.org/wiki/All-American_Girls_Professional_Baseball_League
 - https://en.wikipedia.org/wiki/Major_League_Baseball
- Videos
 - Baseball Facts- All About the Game of Baseball (3:00)
<https://www.youtube.com/watch?v=vjUHSgdzWJo>
 - A Brief History of Baseball (10:10)
<https://www.youtube.com/watch?v=uHVS3GGEaW4>
 - Baseball Explained in 5 Minutes (5:45)
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 - How to Do a Straight-Leg Slide in Baseball (1:12)
<https://www.youtube.com/watch?v=Mrc6gCZiZs>
 - Umpiring Signals (4:31)
https://www.youtube.com/watch?v=_I9N0O0RzgQ
 - MLB Tom Hallion Strike 3 Calls (2:00)
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 - Longest Home Runs Ever- MLB (5:10)
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 - Rob the Peanut Guy (5:41)
<https://www.youtube.com/watch?v=yrCU3K9ISf4>
 - Drew Storen pitching mechanics in slow motion (0:45)
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 - Pitching Mechanics- Increasing velocity using your legs and hips (3:09)
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 - The First Wave- Documentation- A's Highlight Video- 1981
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 - Greatest Catches in MLB History (8:04)
<https://www.youtube.com/watch?v=UKR2vRj8Xzk>



Lesson #2: SPORTY COOKIE CAKE & ALL KINDS OF BALLS

Activity Time: 60 minutes

LEARNING OUTCOMES

- Students will **learn** what brainstorming is and **use** it as a tool to start discussions.
- Students will work together to **sort and compare** activities.
- Students will **watch videos** about how different types of balls are made and **discuss** the methods, tools, and effort involved.
- Students will **experiment** with different types of balls to **explore** the ideas of bounce, gravity, and directionality.
- Students will **learn** the scientific terms *kinetic energy* and *potential energy*.
- Students will **create** their own bouncy balls by **following** instructions and **evaluating** the results.
- Optionally, students will **make a few attempts** at making bouncy balls and **potentially alter the method** just as we do when testing and creating recipes.
- Students will **read** and **practice** with **Featured Culinary Skill** - Dry Measuring Skills.
- Students will **make** and **share** Sporty Cookie Cake.



ALL KINDS OF BALLS

Notes for the Teacher:

- Creative brainstorming is important because it...
 - improves critical thinking and problem-solving skills as an individual and as a team.
 - encourages collaboration and develops a fearlessness in sharing ideas.
 - includes different perspectives.
- Things to consider for a brainstorming session:
 - Identify the goals and the intent of the brainstorm
 - Set ground rules:
 - All answers are accepted- this is a time to generate (not shut down) ideas
 - Have a moderator
 - Set a time limit
 - Write everything down

Teacher Prep:

- **Collect Materials:**
 - Recipe guide, tools, and ingredients listed
 - Different kinds of balls that you have around
 - Examples: golf, ping pong, tennis, baseball, etc.
 - “Why Balls Bounce” Activity
 - Variety of different ball shapes
 - Examples: football, rugby, tennis, squash, golf, basketball
 - A large container (bucket or planter)
 - Different surfaces to bounce on
 - Optional:
 - measuring tape
 - recording materials – paper and markers
 - “Make Your Own Bouncy Ball” Activity
 - Borax
 - cornstarch
 - food coloring or glitter
 - white glue
 - warm water
 - two bowls or cups
 - stirring utensils (take away chopsticks work well)
 - measuring spoons
 - paper towel
- **Watch**
 - There are many different versions of how to make bouncy balls. Either decide which one you will use or challenge students to try more than one method and compare and evaluate. This is the same thing we do when we are testing recipes!



- <https://kidsactivitiesblog.com/17758/diy-for-kids/>
- DIY Bouncy Balls- How to Make Homemade Bouncy Balls (3:03)
<http://scottsbricks.blogspot.com/2010/07/canvas-painting-sequel.html>
- How to Make a "Bouncy Ball" Super Easy DIY Tutorial (2:49)
<https://www.youtube.com/watch?v=7EXCY9ntJuk>

Lesson: ALL KINDS OF BALLS

- Introduction: BALL BRAINSTORM
 - Read the teacher notes above about brainstorming.
 - Tell students that they are going to begin today's lesson with a brainstorm.
 - Ask:
 - Do you know what a brainstorm is?
 - Add or reinforce understanding of how to create a **safe space** for a creative and inclusive brainstorming session. Especially, that all ideas are welcome and recorded.
 - Assign a timekeeper and recorder.
 - Set the **goal** for the brainstorming session:
 - HOW MANY KINDS OF BALLS DO WE KNOW?
 - Moderate the session, providing reminders of rules and intent, but try to keep interruptions at a minimum.
 - Reflect with students how they felt the session went.
 - Count the number of balls that they came up with.
 - Ask the students what ball is the:
 - biggest
 - smallest
 - most colorful
 - most useful
 - Challenge students to sort their balls into categories of their devising.
 - Examples: bouncy/hard, throw/roll, breakable/unbreakable, air-filled/solid
 - Continue to add more balls to the list. Brainstorming lists never close. Leave the list up and let students keep adding over the next week.
 - Ask:
 - Why do you think balls are used so often in games/sports?
 - Tell the students that today they will learn how different kinds of balls are made and have an opportunity to make their very own ball!
- Background Information: HOW BALLS ARE MADE
 - Ask:
 - Have you ever wondered how a football is made? Or what is inside of a baseball, so that when it is hit so hard it doesn't get squished or just fly apart?
 - Show students one or all of the videos below about how balls are made.
 - Behind Every Bucket: how the Official NBA Basketball Becomes Game Ready (4:14)



- <https://www.youtube.com/watch?v=zi-7Dw4BMqU&t=190s>
 - How Baseballs are Made (3:16)
https://www.youtube.com/watch?v=usnZ_rdRo_M
 - How It's Made Football (soccer) (4:01)
<https://www.youtube.com/watch?v=IFd5JjnC7e8>
 - How NFL Footballs are Made (3:09)
<https://www.youtube.com/watch?v=zGzY0wQHzlg>
 - How It's Made: Golf Balls (4:59)
<https://www.youtube.com/watch?v=xHg6lWMTf2U>
 - Discuss the materials, steps, tools, people skill and speed that the different processes use.
- Activity Instructions: WHY BALLS BOUNCE
 - Collect materials listed in the materials section above. Provide students with a variety of balls.
 - Ask:
 - Have you ever wondered why balls bounce?
 - Do you think that all balls bounce the same? Why or why not?
 - Does it matter where you bounce a ball? (on the grass or the sidewalk?)
 - What do they notice about these balls? (shape, material, etc.)
 - Conduct **experiments** to test bounciness:
 - Experiment #1- Ball Bounciness
 - Bounce the balls on a hard surface (floor, or sidewalk)
 - Ask:
 - What do you notice?
 - Which balls bounced the highest? How do we know?
 - We can **measure!**
 - Experiment #2- Ball Bounce Direction
 - Ask:
 - Which ball do you think will be the hardest to bounce in the direction that you want it to?
 - Can you use any information that you learned in the first experiment to make predictions about ball direction?
 - Set up a large container. Have students experiment by bouncing each ball and trying to get it into the container.
 - Ask:
 - Were you successful in getting each ball into the container? Why or why not?
 - Are some balls harder to get in than others? Why do you think that is?
 - Did you discover any techniques that helped to get the balls to go where you want them to go?



- How might the bounciness of a ball or the ease in directing a ball's bounce affect the type of game they are used for?
- **Bouncing Explained:**
 - As a bouncy ball drops downward it gains speed. This speed is energy. As soon as the ball hits the floor, it slows down quickly and its downward energy needs to go somewhere. A bouncy ball momentarily stores this energy like a spring. It deforms and flattens slightly when it hits the floor, then springs back into its original shape, popping the ball back into the air again.
 - The ball's downward speed or *kinetic energy* as it hits the floor is converted/changed into spring or *potential energy*. Then as it speeds upwards again, it is converted back into *kinetic energy*.
 - Ball bouncing in slow motion: Rubber ball (0:14)
<https://www.youtube.com/watch?v=sVTJNv3-mWk>
 - As a ball continues to bounce, gravity pulls it towards the ground. This slows the ball down, so each bounce is lower to the ground and eventually the ball stops bouncing.
- Activity Instructions: MAKE YOUR OWN BOUNCY BALL
 - Collect materials listed in the materials section above.
 - Review the websites and videos:
 - <https://kidsactivitiesblog.com/17758/diy-for-kids/>
 - DIY Bouncy Balls- How to Make Homemade Bouncy Balls (3:03)
<http://scottsbricks.blogspot.com/2010/07/canvas-painting-sequel.html>
 - How to Make a "Bouncy Ball" Super Easy DIY Tutorial (2:49)
<https://www.youtube.com/watch?v=7EXCY9ntJuk>
 - Decide whether you are doing one method or comparing between two or three.
 - Prepare students to make bouncy balls.
 - **Note: Remind students that Borax is inedible!**
 - Show them all of the materials.
 - Watch the video or explain the steps.
 - Provide choice in color, glitter, etc. so each student can customize their ball.
 - Make bouncy balls!
 - If trying out more than one method, discuss successes and failures of each way.
 - Bounce away!

Extension:

- Conduct further ball **experiments**: (Note: keep in mind the conditions that you should control, or keep the same, for each test)
 - Drop a ball using no force. Then apply force. Which one bounces higher?
 - Drop balls from different heights. Does this affect how high they bounce?
 - Which balls bounce straight up and which go off on an angle? Why do you think that happens?
 - Bounce balls on different surfaces: grass, rug, wood, tile etc. Why do you think the surface makes a difference?



- How does this relate to sports fields that are made of real grass vs. astroturf?
- Explore bouncing ball physics :
 - <https://www.real-world-physics-problems.com/bouncing-ball-physics.html>
- **Challenge** students to explain why some balls don't bounce.
 - Why Some Balls Don't Bounce- A Moment of Science- PBS (2:03)
https://www.youtube.com/watch?v=ewDXEpyT-tw&list=PLrMqXQ2J_l3t0aYBN4QIFlrN97pQVMK4Y&index=2
- **Painting** with Balls
 - <http://scottsbricks.blogspot.com/2010/07/canvas-painting-sequel.html>



COOKING SPORTY COOKIE CAKE

Kitchen Prep

- Read the Sporty Cookie Cake recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the **Featured Culinary Skill - Dry Measuring Skills**.
- Discuss kitchen safety. Specifically, handwashing safety (Visit Raddishkids.com/pages/safety).

Prepare Sporty Cookie Cake

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to beat, press, and decorate
- When the Sporty Cookie Cake is ready, eat, taste and share!
- While your friends and family are eating, challenge them to a ball brainstorm, explain to them why balls bounce, and show them your homemade bouncy balls.

RESOURCES

- **Books**
 - [Let's Play Soccer](#) DK Readers L1
 - [The Berenstain Bears Play T-Ball](#)
 - [Pete the Cat: Play Ball](#) by James Dean
 - [Flat Stanley at Bat](#) by Jeff Brown
 - [Play Ball, Amelia Bedelia](#) by Peggy Parish
 - [Babe Ruth Saves Baseball](#) by Frank Murphy
 - [Round Like a Ball](#) by Lisa Campbell Ernst
 - [Dino Basketball](#) by Lisa Wheeler
 - [Goodnight Football](#) by Michael Dahl
 - [F is for Fenway](#) by Jerry Pallotta
- **Websites**
 - <https://www.real-world-physics-problems.com/bouncing-ball-physics.html>
 - <http://scottsbricks.blogspot.com/2010/07/canvas-painting-sequel.html>
 - <https://kidsactivitiesblog.com/17758/diy-for-kids/>
- **Videos**
 - Behind Every Bucket: how the Official NBA Basketball Becomes Game Ready (4:14)
<https://www.youtube.com/watch?v=zi-7Dw4BMqU&t=190s>
 - How Baseballs are Made (3:16)
https://www.youtube.com/watch?v=usnZ_rdRo_M
 - How It's Made Football (soccer) (4:01)
<https://www.youtube.com/watch?v=IFd5JjnC7e8>



- How NFL Footballs are Made (3:09) <https://www.youtube.com/watch?v=zGzY0wQHziIq>
- DIY Bouncy Balls- How to Make Homemade Bouncy Balls (3:03) <http://scottsbricks.blogspot.com/2010/07/canvas-painting-sequel.html>
- How to Make a "Bouncy Ball" Super Easy DIY Tutorial (2:49) <https://www.youtube.com/watch?v=7EXCY9ntJuk>
- How It's Made: Golf Balls (4:59) <https://www.youtube.com/watch?v=xHg6lWMtF2U>



Lesson #3: GAME DAY CHILI
& FOOTBALL MATH TOUCHDOWN

Activity Time: 45 minutes

LEARNING OUTCOMES

- Students will **brainstorm** all sports they know.
- Students will **discuss** why there are winners and losers in sports games.
- Students will **consider** why there is scoring in games.
- Students will **play** “Name that Game” from the Game Day Chili recipe guide.
- Students will **learn** about the history and rules of football.
- Students will **solve** story math problems using addition, subtraction, multiplication, division, and fractions.
- Students will **design** a story problem to challenge their friends and family.
- Students will **read** and **practice** with **Featured Culinary Skill - Stovetop Safety**.
- Students will **make** and **share** Game Day Chili.



FOOTBALL MATH TOUCHDOWN

Notes for the Teacher:

- While today's lesson is about scoring and math in sports, it is also a wonderful opportunity to talk about winning and losing and how children can learn in each situation.
- Winning and losing is important for children because life is competitive:
 - In Kindergarten some children are faster or know how to write their name.
 - In second grade some are better spellers or are reading books at a higher level.
 - In middle school some students are creating original experiments for science fairs and some are coming in first place in 100 yard sprints.
- While it is important for parents to teach children to try their best, to encourage setting high expectations, and to support them in reaching their goals, teaching children how to lose is just as important.
- Showing children that losing is not the end of the world demonstrates that there are second chances and losing is full of opportunities to learn!
- What do kids learn from winning?
 - Winning gives them a good feeling about themselves and builds self-confidence.
 - The experience of winning can increase motivation to achieve even bigger goals.
 - Competition can be helpful in inspiring children to do more than what is required.
 - Wanting to win a board game while following the rules is a catalyst for thinking more strategically.
 - Every competition is also a socializing experience for children. It allows them to focus on teamwork, commitment, cooperation and respect for opponents.
 - Every game is an opportunity to learn to play by the rules.
 - Especially for young children, rules may seem arbitrary, but they need to learn that rules serve a particular purpose. Competitions are a good way to demonstrate the reasons behind the rules and help children understand and follow them.
- What do kids learn from losing?
 - The feeling of losing and being able to move on is a particular life skill for children to develop in order to deal with negative experiences in life.
 - Losing allows children to develop a sense of fairness.
 - Children learn that everyone has different talents, weaknesses, and strengths. It is impossible to be good at everything!
 - Losing games teaches children how to show empathy and cope with the experience of losing.
 - Losing is a way to learn from mistakes and think about strategies of how to improve.
 - When children improve their skills and win the next time, they learn something new and increase their own confidence and self-belief.



- Losing shows children that they need to work hard in order to have success, good things are not just handed to them.

Teacher Prep:

- **Collect Materials:**
 - Recipe guide, tools, and ingredients listed
 - Chart paper or white board, markers
 - Math manipulatives (hands on things to count, group, and move around to help with understanding)
 - Coins, buttons, dried beans, etc.
 - Pencil and paper for drawing pictures to help with solving
 - Football Math Touchdown Story Problems
 - “Vocabulary and Scoring in Football” Information sheet (included – see page 31)
- **Read**
 - How to approach teaching Story Problems for addition, subtraction, and comparing:
 - <https://www.whatihavelearnedteaching.com/teach-your-students-to-solve-word-problems/>
- **Watch**
 - A Beginner’s Guide to American Football- NFL (1:19)
 - <https://www.youtube.com/watch?v=3t6hM5tRlFA>

Lesson: FOOTBALL MATH TOUCHDOWN

- Introduction: SPORTS – WINNING, LOSING, AND SCORING
 - **Review** the Teacher Notes above.
 - Ask students to brainstorm all the sports that they can think of in 2 minutes.
 - **Record** the answers (draw simple pictures to help pre-readers)
 - **Ask:**
 - Have you ever played any of these games? If so, which ones?
 - What did you like/dislike about playing?
 - Do you watch any of these games in person or on television? What is that like? (exciting, boring, confusing)
 - What is the purpose of playing these games? (to have fun, to bring pride to your school, town, or state, to win)
 - How do you figure out which team or person is the winner? (scoring)
 - What can you learn from winning? From losing?

WHAT I CAN LEARN FROM WINNING	WHAT I CAN LEARN FROM LOSING
<ul style="list-style-type: none"> ● Knowing that I am strong, fast, clever ● Etc. 	<ul style="list-style-type: none"> ● Remembering what it feels like to not win ● Etc.



- Play “Name that Game” from the Game Day Chili recipe guide.
 - **Ask:**
 - How many matches did you get?
 - Why do you think that different games have different scoring systems?
- **Tell** students that today they will learn about the history of football in America and how the game is scored. Then they will use this knowledge to solve fun football story math problems and even design their own story problem to challenge their friends and family!
- Information: HISTORY OF FOOTBALL AND HOW IT IS SCORED
 - **Share:**
 - Many people believe that the first official football game in America happened in 1869 – Rutgers University challenged Princeton to a match.
 - Official rules were developed in 1873, and a Yale University player named Walter Camp helped change those rules into the ones used today.
 - He helped to set the field of play into a set of 10 sections that are each 10 yards long.
 - He also introduced the idea of downs (the number of tries that you get to move the ball 10 yards down the field).
 - He changed the number of players on the field to 11.
 - The National Football League (NFL) was formed in 1920.
 - The length of the football field is 100 yards and the width is 53.5 yards.
 - **Ask:** Why do you think a touchdown in football is called a touchdown?
 - Because football has its roots in Rugby, originally you had to “touch down” the ball in the end zone to score. The score was not counted until the ball touched the playing surface in the end zone.
 - **Show** students a video to explain football scoring:
 - A Beginner’s Guide to American Football- NFL (1:19)
<https://www.youtube.com/watch?v=3t6hM5tRlFA>
 - Talk through the idea of the huge number of people on the team and that they all have different jobs to do but have to work together.
 - **Discuss** scoring
 - **Review** the “Vocabulary and Scoring in Football” Information sheet (included – see page 31)
 - **Watch** the video over again if that is helpful.
 - **Show** students this visual of football players’ equipment:
 - <https://www.dkfindout.com/us/sports/football/>



- Activity Instructions: FOOTBALL MATH TOUCH DOWN!
 - Tips for teaching students to solve story problems:
 - Create story problems with blanks where the numbers should go.
 - This keeps students from jumping to solving before they understand what the problem is.
 - This also allows you to differentiate problems for your students.
 - **Develop** story problems based on your student's abilities:
 - Below are explanations about story problems for different math operations. Use these as ideas for creating your own in advance of the lesson.
 - Provide **students with**:
 - Math manipulatives (listed in the materials section above)
 - "Vocabulary and Scoring in Football" Info sheet (included – see page 31)
 - **Create** and **model** problem solving strategy with students.

The winning team scored 3 touchdowns and 2 extra points. What was their final score?

PROBLEM SOLVING STRATEGY	
UNDERSTAND	<ul style="list-style-type: none"> • Read the problem • Find the important facts/relationships between them. <ul style="list-style-type: none"> ○ The team had a bunch of points and then a couple more points. • Restate the problem <ul style="list-style-type: none"> ○ How many points do they have altogether?
PLAN	<ul style="list-style-type: none"> • Choose a strategy <ul style="list-style-type: none"> ○ Draw a picture ○ Use a number line ○ Build with manipulatives <ul style="list-style-type: none"> ▪ I'm going to use a button to show each point that the team got.
SOLVE	<ul style="list-style-type: none"> • Count <ul style="list-style-type: none"> ○ I'm going to count each button • Write an equation <ul style="list-style-type: none"> ○ $6+6+6+1+1=20$ ○ $3 \times 6 = 18 + 1+1=20$
CHECK/EXPLAIN	<ul style="list-style-type: none"> • I made three groups of 6 buttons and counted them up. Then put two more buttons for the extra points and counted two numbers higher.



- Support students in working through problem solving strategy. Make sure they explain their thinking.
- Story Problem Types
 - Skip counting (precursor to multiplication)
 - The New England Patriots scored 5 field goals in the game. How many points do they have?
 - 3, 6, 9, 12, 15 - They have 15 points.
 - Addition
 - Look for clues in a story problem that adding is necessary:
 - add, altogether, both, combined, in all, join, together, total, increase, etc.
 - The Dallas Cowboys scored ____ touchdown(s) and ____ extra point(s) How many points did they have **altogether** at the end of the game.
 - ____ + ____ = ____
 - The Oakland Raiders played their best game all season yesterday with a victory over the Denver Broncos. The Raiders scored only ____ points in the first half, but came back strong in the 4th Quarter with ____ touchdowns, ____ conversions, and ____ field goals. What was their **total** score?
 - ____ + ____ + ____ + ____ = ____
 - Subtraction
 - Look for clues in a story problem that subtraction is necessary:
 - decrease, difference, fewer, how many more, less than, take away, minus, etc.
 - Last night the Kansas City Chiefs lost to the New York Jets by a score of ____ to _____. **How many fewer** points did the Chiefs have than the Jets?
 - ____ - ____ = ____
 - The Buffalo Bills ran ____ offensive yards in the first quarter but only ____ in the 2nd quarter. What was the **difference** in offensive yards between the 2 quarters?
 - ____ - ____ = ____
 - Multiplication
 - Remember that multiplication is the same thing as repeated addition so students may revert to adding. This is fine but take opportunities to remind that they can use the short cut of multiplication!
 - Look for clues in a story problem that multiplication is necessary:
 - There are **groups of the same size**
 - double, twice, triple, product of ____ and ____, ____ groups of ____.



- There are ____ teams in each conference and 2 conferences. How many teams would there be if there were **double** the number of conferences in the NFL?
- The quarterback of the Pittsburgh Steelers threw ____ ____-yard passes in today's game. However, the quarterback of the opposing team, the Los Angeles Rams, threw **triple** that amount. How many yards did he throw?
 - ____ × ____ = ____ (or ____ + ____ + ____ + ____ = ____)
 - The answer from above ____ × 3 (triple) = ____
- Division
 - Remember that division is the same thing as repeated subtraction so students may revert to subtracting This is fine but take opportunities to remind that they can use the short cut of division!
 - Look for clues in a story problem that division is necessary:
 - There are **groups of the same size**
 - how much/many in each, per, divide by, separate equally, etc.
 - Last month the New Orleans Saints scored ____ points. Amazingly, they scored the same number of points each week. How many points did they score **per** game?
 - Total ÷ 4 weeks = ____
 - A football game is officially 60 minutes long. How many minutes **in each** half of the game?
 - 60 ÷ 2 = ____
- Fractions
 - Fractions are equal parts of a whole.
 - Fractions used in football:
 - yards on the field
 - parts of the game
 - minutes played in the game
 - number of players on the field
 - distance covered or yet to go
 - An NFL Football game is divided into quarters. If ____ quarter(s) have been played, how many quarters are left?
 - $(4/4) - (\text{____}/4) = \text{____}$
 - 4 quarters - ____ quarters = ____
 - The Baltimore Ravens have the ball on the 70 Yard line. How many tenths of the field are they...
 - a) from scoring a touchdown?
 - b) from their own end zone?
- Now that the students have had practice with story problems, **challenge** them to create their own.



- Guide them to use the math language you have highlighted and the “Vocabulary and Scoring in Football” Information sheet (included – see page 31) to find data to help create their problems.
- Have students challenge one another or their friends and family with these problems!

Extension:

- Try out more math inspired by sport
 - <https://www.scholastic.com/teachers/articles/teaching-content/math-games-every-sport/>
- Play some football related PE activities
 - <https://physedgames.com/category/football/>
- Read about the 10 Greatest NFL players of all time
 - <https://www.sportscasting.com/nfl/10-greatest-nfl-players-of-all-time-2/>



COOKING Game Day Chili

Kitchen Prep

- Read the Game Day Chili recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the **Featured Culinary Skill – Stove Top Safety**.
- Discuss kitchen safety. (Visit Raddishkids.com/pages/safety).

Prepare Game Day Chili

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to dice, smash, and add
- When the Game Day Chili is ready, eat, taste and share!
- While your friends and family are eating, share some of your new knowledge about football and challenge them to solve your Football Math Touch Down Story Problems.

RESOURCES

- **Books**
 - [Goodnight Football](#) by Michael Dahl
 - [MVP #3 Football Fumble](#) by David A. Kelly
 - [A Running Back Can't Always Rush](#) by Nate LeBoutillier
 - [The Everything Kids Football Book: All-time Greats, Legendary Teams, and Today's Favorite Players—with Tips on Playing Like a Pro](#) by Greg Jacobs
- **Websites**
 - <https://www.learningliftoff.com/math-in-sports-multiple-ways-to-bring-arithmetic-to-life/>
 - <https://plus.maths.org/content/teacher-package-mathematics-sport>
 - <https://www.brighthubeducation.com/teaching-methods-tips/128765-using-football-to-teach-math/>
 - <https://www.mathgoodies.com/Webquests/sports>
 - <https://www.dkfindout.com/us/sports/football/>
 - <https://sports.stackexchange.com/questions/2021/history-of-nfl-scoring-format>
 - <http://mentalfloss.com/article/52626/where-did-tennis-get-its-scoring-system>
 - <https://www.scholastic.com/teachers/articles/teaching-content/math-games-every-sport/>
- **Videos**



- Science Xplained: Football Physics (2:21)
https://www.youtube.com/watch?v=H5TNkGC4p3Q&list=PLrMqXQ2L_I3t0aYBN4QIFlrN97pQVMK4Y&index=7
- A Beginner's Guide to American Football- NFL (1:19)
<https://www.youtube.com/watch?v=3t6hM5tRlFA>

Stadium Diorama Worksheet

Create a diorama of your very own baseball stadium! Plan your design below.

- What elements need to be on the field?
 - Review: <https://entertainment.howstuffworks.com/baseball2.htm>
 - Create a checklist of important things to include.

- What else needs to be in a stadium?
 - Drinks and snacks?

 - How will fans get around the stadium?

 - What kind of seating will you have?

- What shapes are part of a baseball field and stadium? List them below.

- What size will you make your field and stadium? Why? How will you measure?

- What materials will you use to build your stadium?

Baseball in Movement Worksheet

Create a skit, dance, or movement piece that uses the moves you see players, fans, coaches, and umpires do in a baseball game.

Plan your piece:

- What is the theme?
 - a playoff game in the last inning?
 - a power hitter at bat against a curveball throwing pitcher?
 - a runner at first base stealing second and being called safe/out by the umpire?
 - your choice!
- Write your ideas down here.

- What do you want to express in movement about baseball?
 - excitement of the fans?
 - speed of the players?
 - tension waiting for the pitch?
 - communication between the catcher and the pitcher?
 - your choice!
- Write your ideas down here.

- If you want to use words in your skit what would they be?
 - Fly ball, strike, going going gone, safe, out, etc.
- Write your ideas down here.

- Will you have any music or sounds in your piece? Where will you find/make these sounds?
 - Take Me Out To The Ballgame?
 - a ball landing in a glove?
 - the crack of the bat connecting with the ball?
 - cheering fans?
 - your choice!

- Write your ideas down here.

- How many people will be in your movement piece? What roles will they play?
 - batter, short stop, homeplate umpire, peanut seller, team's biggest fan, etc.
- Write your ideas down here.

Here is the place to bring your ideas together into a plan. Write down the moves you are going to do, in the order you think they should happen, and who will do what.

Practice, make changes to improve your piece, and then perform for friends and family or even record it to share with others!

Vocabulary and Scoring in Football

Scoring:

Touchdown (TD): A TD is scored when a player catches a pass in the opponent's end zone or runs with the football into the end zone. A TD is worth **6 points**.

Extra Point: After scoring a touchdown the scoring team can attempt to kick the ball through the goal posts for **1 extra point**.

Two-Point Conversion: After scoring a touchdown the scoring team can run/pass the football into the end zone for **2 extra points**.

Field Goal: A team may kick the football through the goal posts for **3 points**.

Safety: When the defence tackles an offensive player with the football in the offensive team's end zone. A safety is worth **2 points**.

Facts and Figures

- The length of the football field is 100 yards and the width is 53.5 yards.
- The NFL is a professional league made up of 32 teams, divided equally between the National Football Conference (NFC) and the American Football Conference (AFC).
- The football season is a 17 week season that runs from September to late December
- Each team plays 16 games and has one week off.
- Playoff season includes 6 teams from each conference. They compete so there is one winning team from each conference. These two teams compete in the Super Bowl, which is played the first Sunday in February.