Name: _____

Improving Serving

GRADES 3-5

Part 1:

Question: How do you improve your serve?

Hypothesis: Which of the following will improve your serve: position, person serving, serve type or volleyball?

Data Collection: Record the distance and location of each serve.

	Partner 1	Partner 2	Position 1 (1 foot behind line)	Position 2 (on the line)
Underhand Serve				
Torque Serve				
First Touch Ball				
Light Touch Ball				

Conclusion: What variable improved your serve? How do you know?

Name: _____

Improving Serving

GRADES 3-5

Part 2:

Question: How do you improve your serve?

Hypothesis: Will a change in foot position increase the distance of a serve?

Data Collection: Collect distance in feet.

	Trial 1	Trial 2	Trial 3	Average
Both feet forward				
Back foot at 45 degrees & front foot forward				
Both feet at 45 degrees				

Conclusion: Which foot position improved the distance of the serve? How do you know?

What are the similarities and differences between the two experiments?

What would a coach more likely use to change/improve their player's serve? Please explain.

Module 2.1

Name: _____

Probability and Penalty Kicks

GRADES 3-5

X - Shot Made **O - Shot Missed**

	1	2	3	4	5	6	7	8	9	10	Total Made
Partner 1											
Partner 2											

Predict who would win a shootout: you or your partner? Justify it with evidence.

Write a mathematical expression that shows who has a lower chance of winning the shootout.

Name: _____

Probability and Penalty Kicks

GRADES 3-5

Shoot Out

X - Shot Made **O - Shot Missed**

	1	2	3	4	5	Total Made
Partner 1						
Partner 2						

Who won the shootout? How was your prediction different from the actual results?

Write a mathematical expression that shows who won the shootout.

Module 3.1

Name: _____

Properties of a Football and Foam Football

GRADES 3-5

Behaviors

	How does it bounce?	How far can you throw it?	How far can you kick it?	Is it easy to catch?	Is it easy to squish?
Foam Football					
Youth Football					

Properties

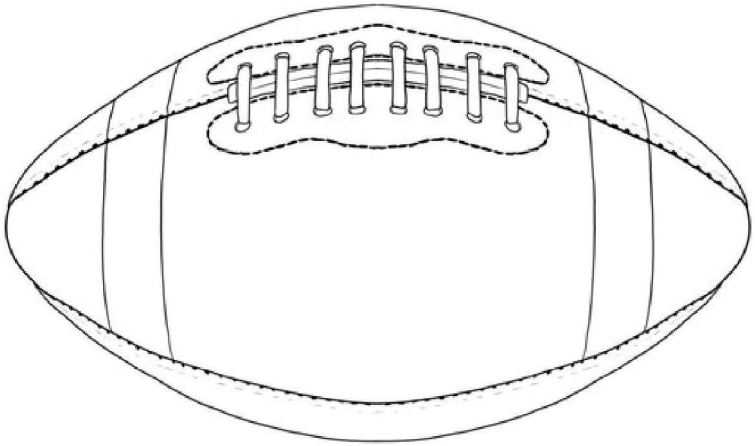
	Color	Shape	Texture	Length, Height and Circumference	Mass	Materials
Foam Football				L- _____ H- _____ C- _____		
Youth Football				L- _____ H- _____ C- _____		

Name: _____

Properties of a Football and Foam Football

GRADES 3-5

Draw dotted lines that divide the football into four equal parts. Bounce the ball 10 times. Put an 'X' on the diagram where the ball hits the ground for the regular football and an 'O' on the diagram where the ball hits the ground for the foam football.



Why do the balls behave differently? Use your data tables to give examples.

Where does the ball bounce the most? Please explain.

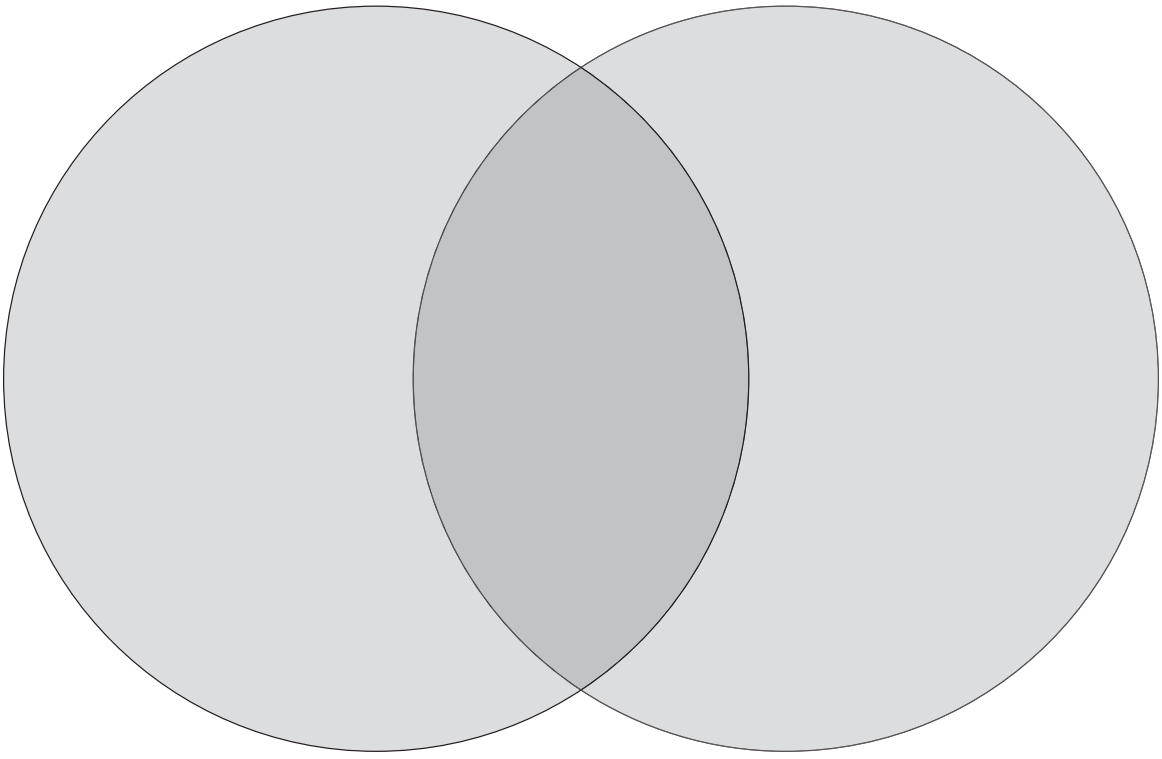
Name: _____

Advancements In Shoe Technology

GRADES 3-5

Diagram your shoe	Measurements of your shoe	Observations (texture, shape, color, etc)

What is the difference between an Inference and an Observation?



Name: _____

Advancements In Shoe Technology

GRADES 3-5

Shoe	Observations with numbers	Observations with words	Inference about why there was a design change
			
			
			
			
			

Module 5.1

Name: _____

Adaptive Technology

GRADES 3-5

Create a device that will help adaptive players retrieve the ball after a play. Brainstorm ways to help adaptive players.

STEM sports

Name: _____

Adaptive Technology

GRADES 3-5

Select a Design (draw in detail, label materials and provide measurements)

Name: _____

Calculating Calories and Heart Rate

GRADES 3-5

Beats per minute (bpm)	Partner 1	Partner 2
Resting Heart Rate		
Maximum Heart Rate		
Heart Rate after 5 minute game (manual measurement)		

Calculating Calories:

Step 1: Convert your weight in pounds to kilograms by dividing by 2. Round to the nearest whole number, if needed.

Step 2: Multiply the MET value by your weight in kilograms. Use the MET value of 8.5.

Step 3: Multiply the product by the time you performed the activity in hours to get the number of calories you burned. (May need to use a fraction if under 1 hour).

Equation: (Weight/2) x 8.5 x number of hours.

Name: _____

Calculating Calories and Heart Rate

GRADES 3-5

	10 minutes (⅙ of an hour)	30 minutes (½ hour)	60 minutes (1 hour)	90 minutes (1 and ½ hours)
Calories burned using MET 8.5 (Soccer)				
Calories burned using MET 1.5 (Sitting)				

Explain how your heart rate and calories burned changes when you are playing compared to sitting.

Name: _____

The Evolution of the Football Helmet

GRADES 3-5

No Helmet	Helmet 1 
Helmet 2 	Helmet 3 
Helmet 4 	Helmet 5 
Helmet 6 	Helmet 7 

Name: _____

The Evolution of the Football Helmet

GRADES 3-5

Helmet	Observations	Rating
No Helmet		
H1		
H2		
H3		
H4		
H5		
H6		
H7		

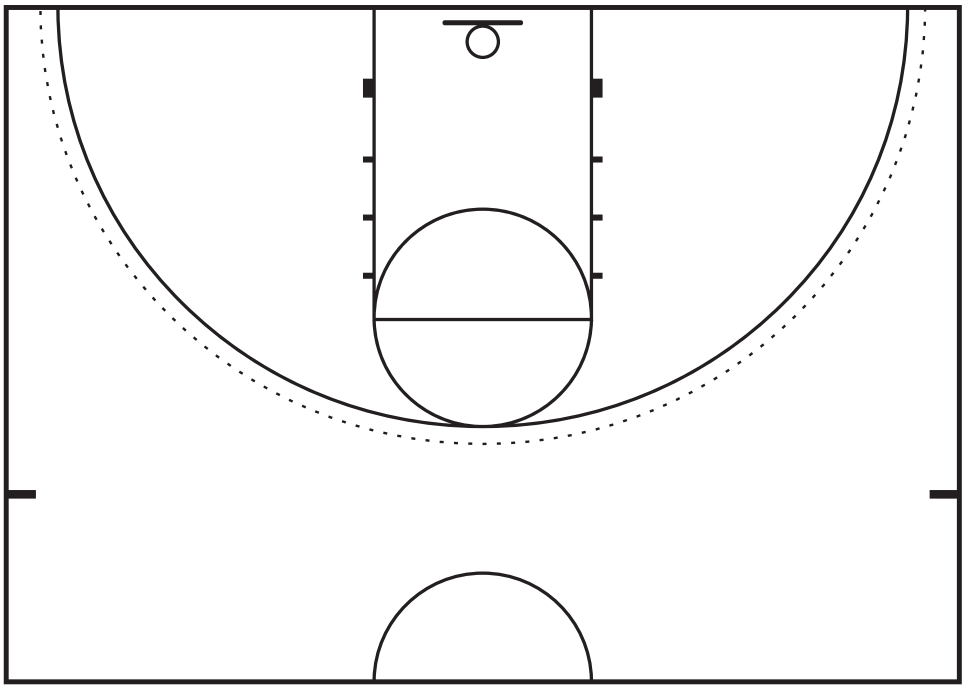
Module 8.2

Name: _____

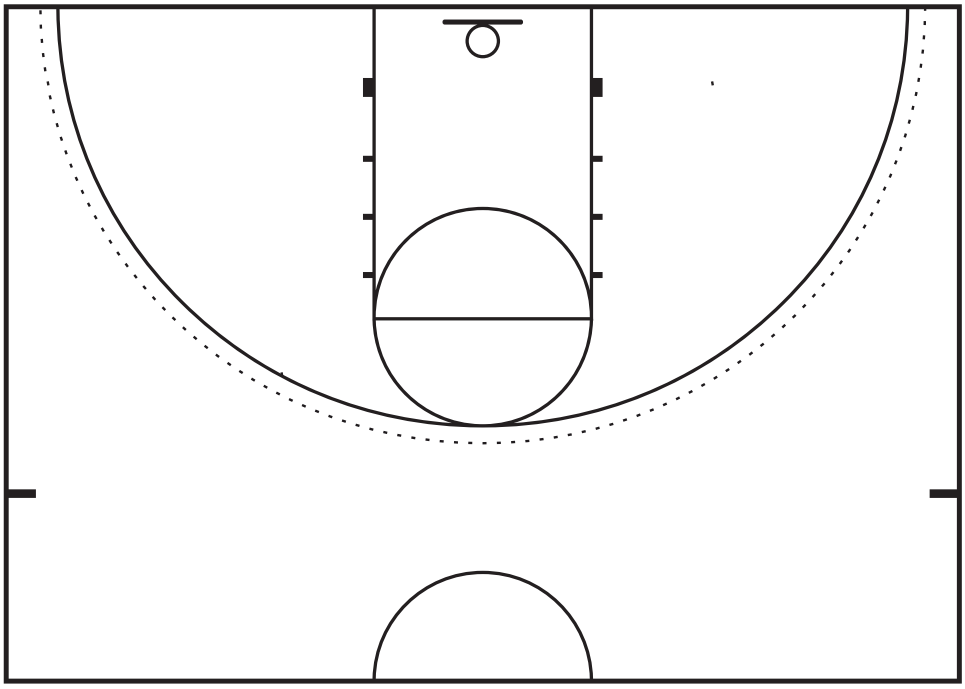
Shot Tracking

GRADES 3-5

O - Shots Made



X - Shots Missed



Name: _____

Shot Tracking

GRADES 3-5

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL Made
Free Throws																
Lay-Ups																

Write a mathematical expression that states if your free throw accuracy is greater than or less than your layup accuracy. Justify it with evidence.