Name: _____ Class: _____

Calculating Throw-Ins

GRADES 6-8

Ensure all your data is in the same unit (feet or meters)

	Partner 1	Partner 2	Partner 3
Throw-In Prediction			

Distance of Throw	Height Ball was released (a)	Throw 1	Throw 2	Throw 3	Throw 4	Throw 5	Average (b)
Stand Still							
Kneeling							
Step Into							

Calculating Throw-Ins
GRADES 6-8

Calculate the approximate distance the ball traveled: $a^2 + b^2 = c^2$

Stand-Still:

_____

_____

Kneeling:

_____

_____

Step Into:

_____

_____

Questions:

1. Which of the three types of throwing techniques produced the greatest results?

_____

_____

_____

_____

_____

2. Would you select a taller or shorter player to throw the ball the farthest? Justify your answer using the equation.

_____

_____

_____

_____

_____

Name: _____   Class: _____

Heart Rate and Calories
GRADES 6-8

	Partner 1	Partner 2
Resting heart rate (measured)		
Heart rate after 2.5 minutes of play		
Heart rate after 5 minutes of play		
Maximum heart rate (calculated)		

Using the equation C = (MET*weight)*t, complete the data table and graph.

Time of Activity (hours) t	@ Resting Heart Rate (MET 1.5)	@ Heart Rate for Playing Soccer (MET 8.5)
0		
1		
2		
3		
4		
5		
6		

Name: _____   Class: _____

Heart Rate and Calories

GRADES 6-8

Time

Using the graph:

1. How many calories did you burn when you played soccer for 5 minutes? _____

2. How many calories would you burn if you played for 45 minutes? _____

3. How many calories would you burn if you played for 90 minutes? _____

4. How did your calculations compare to those provided by the heart rate monitor?

   _____

   _____

5. How does the MET value change the slope of the line?

   _____

   _____

Name: _____   Class: _____

Effective Ball Travel

GRADES 6-8

Data Collection

	Distance (meters)	Time (seconds)
Kick (in step)		
Kick (laces)		
Throw		

Calculations

	Initial speed	Final Speed (distance divided by time)	Acceleration (initial-final divided by time)	Mass of ball	Force Acting on ball (Mass times Acceleration)
Kick (in step)	0 m/s			0.43 kg	
Kick (laces)	0 m/s			0.43 kg	
Throw	0 m/s			0.43 kg	

Name: _____   Class: _____

Effective Ball Travel
GRADES 6-8

Diagrams: Draw a diagram that shows the amount of force acting on each ball and how it affects the motion.

Kick (in step)	Kick (laces)	Throw

Name: _____   Class: _____

Synthetic vs Natural Materials
GRADES 6-8

Observation:

Soccer Ball	Futsal Ball

Name: _____   Class: _____

Synthetic vs Natural Materials
GRADES 6-8

Reading Questions:

When and where did soccer originate?

_____

How did soccer evolve over time?

_____

_____

List the cultures that developed soccer.
Why do you think the sport developed in multiple places with only slight differences?

_____

_____

_____

What are the similarities and differences between soccer in the past and soccer today?

_____

_____

How has technology changed how the game is played?

_____

_____

Describe the materials used in a soccer ball. Compare the past and present balls.

_____

_____

Summarize the steps of manufacturing a soccer ball.

_____

_____

Name: _____   Class: _____

Pressure and Molecular Motion
GRADES 6-8

Collect data on the bounce back height when the ball is dropped from 2 meters.
[A properly inflated ball will bounce back 115-165 centimeters.]

	Flat	3 PSI	6 PSI	9 PSI	12 PSI	15 PSI
Futsal Ball						
Soccer Ball						

Based on the data above, answer the following questions:

1. What are some disadvantages of an under-inflated ball?

    _____

    _____

    _____

    _____

    _____

2. What are some disadvantages of an over-inflated ball?

    _____

    _____

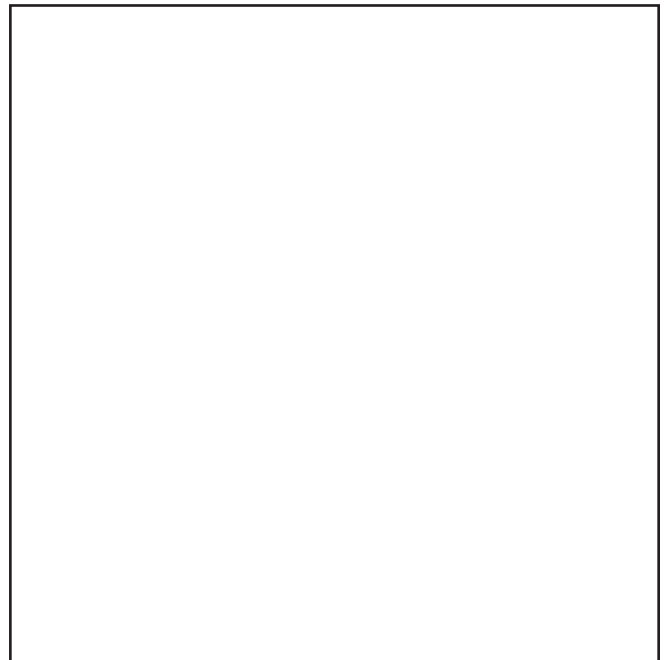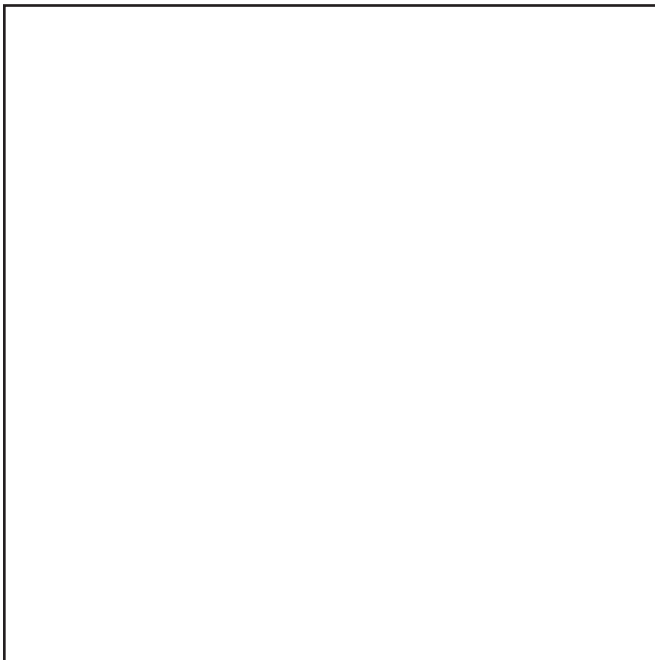   _____

    _____

    _____

Name: _____ Class: _____

Pressure and Molecular Motion
GRADES 6-8

3. Predict what will happen to the bounce of the ball if you continue to increase the pressure past 15 PSI. Use evidence to support your answer.

    _____

    _____

    _____

    _____

    _____

    _____

4. Draw a molecular diagram of the ball at 3 PSI vs 15 PSI.

Name: _____   Class: _____

Area of Shooting Spaces

GRADES 6-8

Shooting Triangle	Person 1	Person 2	Person 3	Person 4
Height				
Base				
Area (calculated)				
Number of goals made (out of 10)				

Sketch each group member's shooting triangle. Label each side with the correct measurement and include the area in the center.
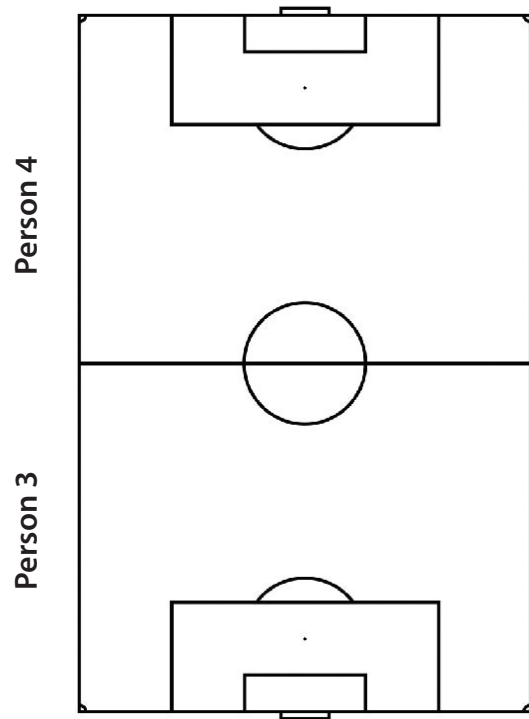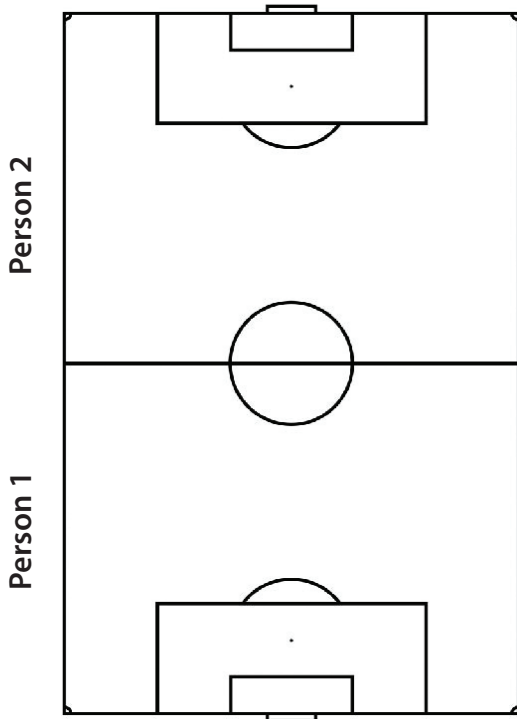
Name: _____ Class: _____

Area of Shooting Spaces
GRADES 6-8

Claim: What is the relationship between the shooting triangle area and number of goals made?

_____

_____

_____

_____

_____

Evidence: Using your data, explain why your claim is supported.

_____

_____

_____

_____

Reasoning: Justify your response.

_____

_____

_____

_____

Name: _____   Class: _____

Goal-Line Technology
GRADES 6-8

Problem: The youth community league needs a low cost option to ensure the entire ball crosses the goal line.

Brainstorm multiple designs

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

Name: _____   Class: _____

Goal-Line Technology
GRADES 6-8

Build, Design and Test It: Your test should be a controlled experiment; the table is provided to support your data collection.

	Test 1	Test 2	Test 3

Communicate: Did it work? What evidence supports that it works? Would you make any changes?

_____

_____

_____

_____

_____

Name: _____   Class: _____

Probability and Penalty Kicks
GRADES 6-8

Collect Data

	Shots Made	Total Kicks	Probability (calculated)
Partner 1: Right Foot			
Partner 2: Right Foot			
Partner 1: Left Foot			
Partner 2: Left Foot			

Based on your dominant foot probability	Predicted Outcome	Actual Outcome	Error (absolute value of actual subtracted from predicted)
12 Kicks			
15 Kicks			
100 Kicks			
1,000 Kicks			
2,000 Kicks			

STEM sports

Name: _____   Class: _____

Probability and Penalty Kicks
GRADES 6-8

Explain how probability can be a helpful tool to make predictions.

_____

_____

_____

_____

Explain how probability can have limitations in predictions.

_____

_____

_____

_____