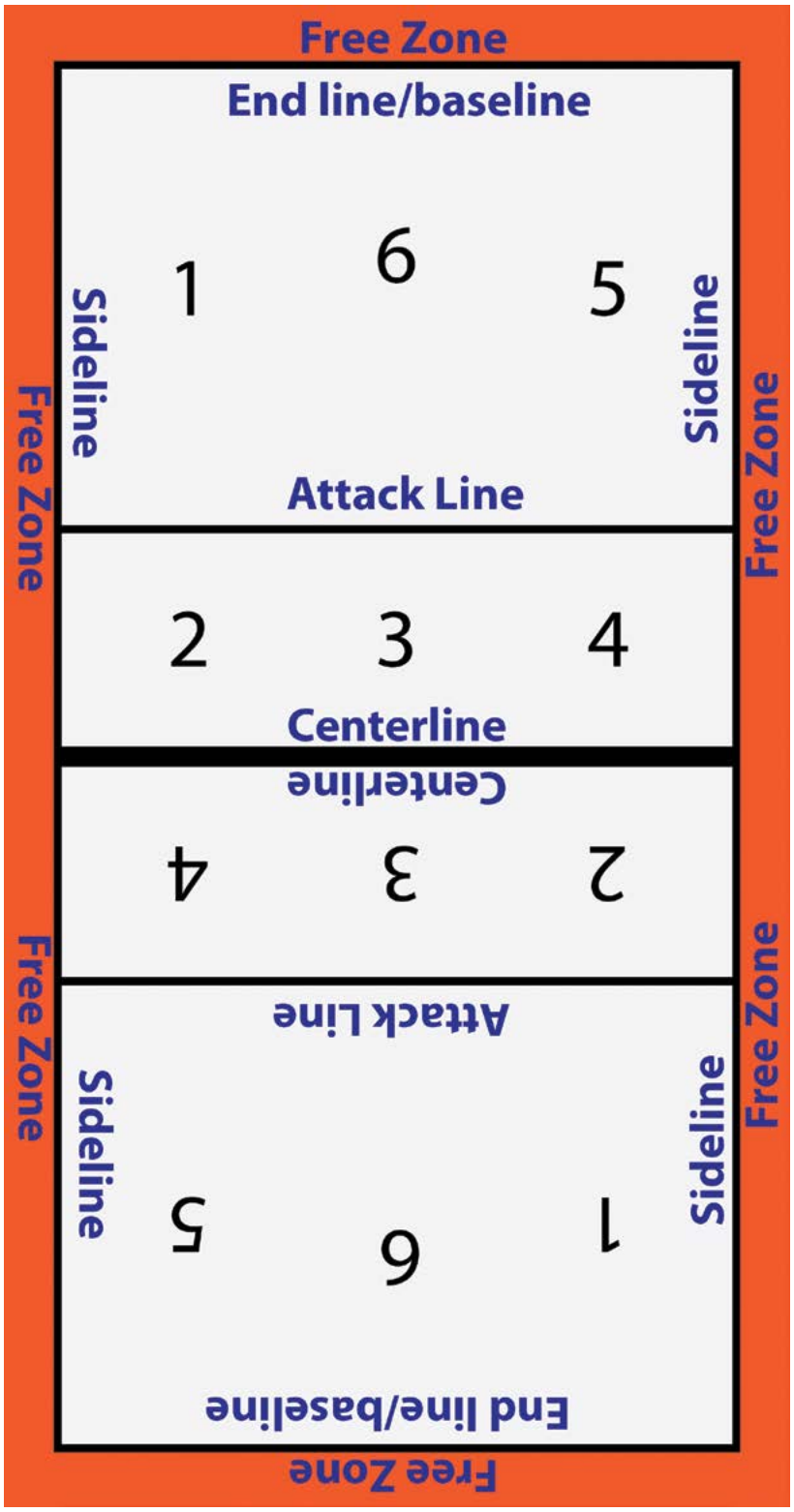
Module 1.1

Name: _____

The Volleyball Court

GRADES 3-5



STEM sports science • technology engineering • math • sports

Name: _____

The Volleyball Court

GRADES 3-5

1. What is the perimeter of the volleyball court?

_____

2. What is the perimeter of the endline to the attack line?

_____

3. What is the perimeter from attack line to attack line?

_____

4. What is perimeter from attack line to the centerline?

_____

5. What is the area of the volleyball court?

_____

6. What is the area of the polygon from the endline to the attack line?

_____

7. What is the area from the attack line to attack line?

_____

8. What is the area of the polygon from the attack line to the centerline?

_____

Name: _____

Volleyball Properties

GRADES 3-5

Bump Test

	Trial 1	Trial 2	Trial 3	Range
First Touch Volleyball				
Light Touch Volleyball				
Recreation Volleyball				
Balloon				

Name: _____

Volleyball Properties

GRADES 3-5

Observations	First Touch	Light Touch	Recreation	Balloon
Differences				
Similarities				
Durability (1-4)				
Mass				

Name: _____

Calculating Total Force

GRADES 3-5

Questions:

How does a volleyball move? How does a volleyball stop moving?

Hypothesis: What do you think will make a ball move and why?

Scaffolding Experiment

	Is it moving? (Y or N)	How long does it take before it stops moving?	What speed is it traveling at?
Ball on the ground			
Ball after a serve			
Holding the ball			
Dropping the ball			
Ball after a bump			

Name: _____

Calculating Total Force

GRADES 3-5

Force Diagrams:

How does force create motion (Answer using evidence from your experiment)?

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? Explain.

Name: _____

Speed of the Volleyball

GRADES 3-5

Hit Type	Bump	Set	Serve (Underhand)	Serve (Torque)
Labeled drawing of the hit and motion				
Distance				

Name: _____

Speed of the Volleyball

GRADES 3-5

Using the radar gun measure speed of each type of volleyball hit (bump, set, serve) and record the data.

Hit Type	Trial 1	Trial 2	Trial 3
Bump			
Set			
Serve (Underhand)			
Serve (Torque)			

Write a mathematical expression putting each hit in order from fastest to slowest. Support your expression with a written justification.

Name: _____

Successful Serving

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Place an X when the serve is completed (hits the wall).

Serve	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	Fraction
Underhand Serve											
Torque Serve											

Write a mathematical expression using the greater than or less than symbols. Put the serve in order of most successful to least successful.

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.

Module 8.1

Name: _____

Adaptive Technology

GRADES 3-5

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

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