

## Water as a Habitat: Episode 5 What's Lurking in the Waters?

### Module 1: If You Can't Beat Them, Eat Them! Teacher Guide: Systems of Inequalities



PUBLIC URGED TO CONSUME INVASIVE LIONFISH   
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#### Module 1 Overview:

Use systems of inequalities to create cost analysis of restaurant offerings, determine optimal conditions using restraints.

Focus: Interpret and use presented information and data to create systems of inequalities with constraints, determine the feasible area, and locate the optimal solutions.

Make reasonable inferences in a mathematical and logical context.

Mathematical Standards: MAFS.912.A-REI.4.10-12, MAFS.912.F-BF.1.1, MAFS.912.F-IF.2.4

Provided Materials: Teacher Guide, Student Handout, and Answer Key

Necessary Materials: Calculator, [simple conversion tables](#)

## Module 1 Lesson Notes:

In this module, students will be asked to place themselves in the restaurant industry as the head chef of a restaurant offering lionfish dishes. The responsibility of the head chef is to determine the amount of lionfish needed to serve the customers, the cost to purchase the fish, how to optimize the use of the fish and how to maximize profits. The responses will be found through a scaffolded activity using linear inequalities and linear programming.

## Module 1 Glossary:

1. **Inequality** – the inequality represents the constraints of the situation
2. **Feasible Region** – When graphing linear inequalities that apply to a situation, the bound shaded region is known as the feasible region.
3. **Optimize** – Finding the optimal conditions, whether it be a minimum or maximum. These are located on the vertices of the feasible region and tested in the object function.
4. **System** – a group of 2 or more equations or inequalities.

Definitions adapted from [www.PurpleMath.com](http://www.PurpleMath.com)