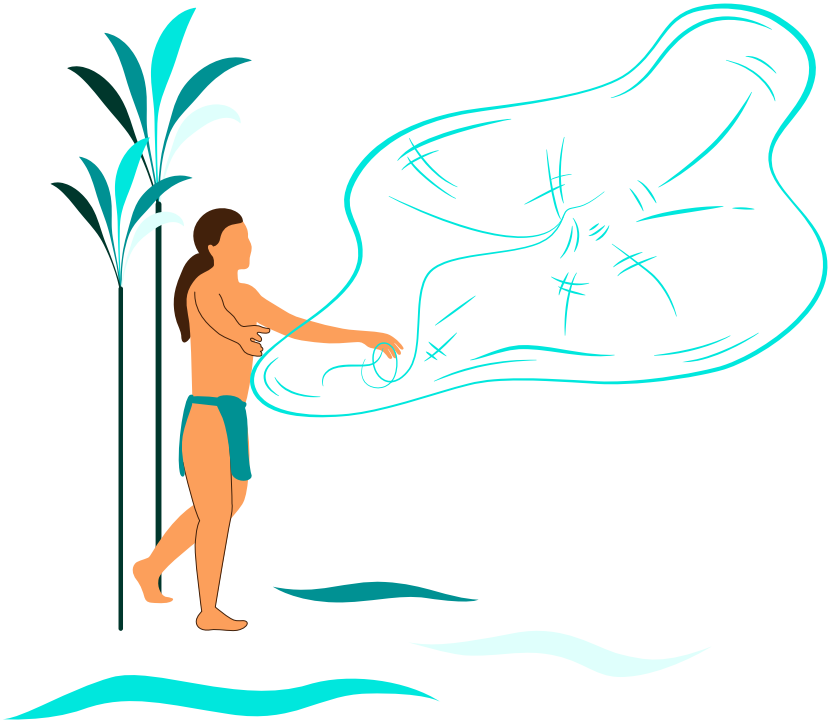
Unit 1: The Number System



Activity 1.1

Grade	08
Claim(s)	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s)	1 B: Work with radicals and integer exponents
Content Domain	Expressions and Equations
Standard(s)	8.EE.A.3, 8.EE.A.4
DOK	2
Activity Key	*Answer should be between 3.5-3.7 times higher.*

Mauna Kea is about 1.38×10^4 feet tall. Yellowfin tuna, or better known as ahi in the islands, have been recorded to reach depths of 3.8×10^3 feet in the ocean. How much higher is Mauna Kea than the recorded depth an ahi can reach?

Activity 1.2

Grade	08
Claim(s)	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Assessment Target(s)	1 B: Work with radicals and integer exponents.
Content Domain	Equations and Expressions
Standard(s)	8.EE.A.1
DOK	3
Activity Key	*See below for the completed table. Robert has the highest ratio.*

You and your friends have kept track of all the hours each of you went fishing for the past 5 years (Y), and how many fish each of you caught (X). Find out who has the highest ratio of *number of fish caught* to *number of hours spent fishing* by filling out the table and comparing their ratios. Keep in mind there are different types of fishing, some people scoop nehu (small bait fish) and count that too.

	Number of fish caught (X)	Number of hours spent fishing (Y)	Ratio $\left(\frac{X}{Y}\right)$
You	3^4	3^5	$3^{-1} = 0.\overline{3}$
Robert	2^2	2^{-2}	$2^4 = 16$
Sara	2	$(\frac{1}{2})^2$	$2^3 = 8$
Mike	$(-5)^4$	$(-5)^6$	$(-5)^{-2} = 0.04$

Who had the highest ratio?

Activity 1.3

Grade	08
Claim(s)	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency. Claim 2: Problem Solving Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.
Assessment Target(s)	2 A: Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. 1 B: Work with radicals and integer exponents. 1 A: Know that there are numbers that are not rational, and approximate them by rational numbers..
Content Domain	Expressions and Equations The Number System
Standard(s)	8.EE.A.1, 8.EE.A.2, 8.EE.A.3, 8.EE.A.4, 8.NS.A.2
DOK	2
Activity Key	$d = 5.9 \times 10^7$ *millimeters*

The area of the island of Oahu can be estimated by looking at its greatest dimensions, which is about 7×10^7 millimeters long and about 5×10^7 millimeters wide. If you wanted to make a square net with *enough area to cover the entire island*, how long should each side be? So if d^2 is the area of the island of Oahu, solve the following to determine the length d. Please round your answer to the nearest million millimeters, then write it in scientific notation.
Hint: Area of net = $d^2 = (7 \times 10^7)(5 \times 10^7)$.

Activity 1.4

Grade	08
Claim(s)	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency. Claim 2: Problem Solving Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.
Assessment Target(s)	2 A: Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. 2 B: Select and use appropriate tools strategically. 1 F: Use functions to model relationships between quantities..
Content Domain	Equations and Expressions
Standard(s)	8.EE.A.4
DOK	2
Activity Key	*See below for completed table.*

The price for fresh poke on the island varies with the supply of fish available. Some of these fish are bought fresh from local fishermen. Unfortunately, today the market's scale was broken and can only weigh things in grams. The worker informs you that today's market price for ahi is $17.64 per kg ($1 \times 10^3 \text{g} = 1\text{kg}$).

The following table shows a great day's catch (4 ahi) and how much you're offered to sell your fish to the market. Wanting to become a more experienced fisherman who sells fish to the market, you would like to calculate the ahi's weight for future reference. Does each fish weigh between 4.219×10^4 and 53.21×10^3 grams?

Fish	Price of fish ($)	Weight of fish (grams)	Between 4.219×10^4 and 53.21×10^3? (Write *Yes* or *No*)
#1	800.00	45351.47	Yes
#2	920.20	52154.19	Yes
#3	760.00	43083.90	Yes
#4	640.00	36281.17	No