Unit 6: Statistics

Activity 6.1

| 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. 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. Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Assessment Target(s)	2 D: Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). 1 J: Investigate patterns of association in bivariate data. 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. 2 C: Interpret results in the context of a situation. 3 F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions.
Content Domain	Geometry
Standard(s)	8.SP.A.1, 8.SP.A.2, 8.SP.A.3
DOK	2
Activity Key	*Scatter plot is shown below. About 15 more oama is needed to increase the catch by 40 ounces. We got this answer by utilizing the least squares method to find the line of best fit, $y = 2.62x - 7.6058$ where x is the number of oama and y is the weight. Of course it is perfectly fine to "eyeball" the line of best fit and come up with an answer other than 15, as long as the students justify their work.*

The following table shows the amount and weights of catches of oama.

Number of oama caught	Weight of catch (oz)
10	24
15	30
12	23
18	42
22	47
17	34
19	39
25	58
14	26
11	18

Construct a scatter plot of the data in the table on the graph below:
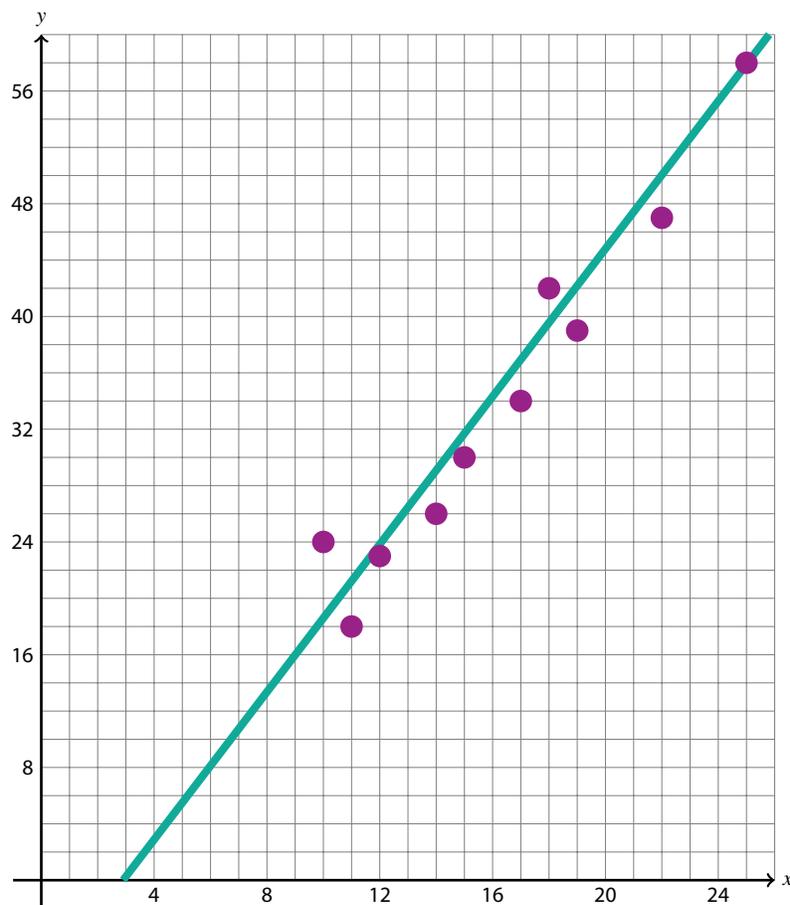
Draw a line of best fit on the graph for the data. Use this line to find how much more oama is needed to increase the weight of a catch by 40 more oz. Explain how you found your answer.

Activity 6.2

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. Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Assessment Target(s)	3 E: Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. 1 E: Define, evaluate, and compare functions. 1 A (Gr 7): Analyze proportional relationships and use them to solve real-world and mathematical problems. 3 F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions.
Content Domain	Equations and Expressions
Standard(s)	8.F.A.3
DOK	2
Activity Key	*Answers will vary for the table and an example is included below. The table data cannot be an example of a linear relationship.*

The price of fish changes a lot with "supply and demand." For example, in winter, ahi is normally not biting, so they're hard to catch and the *supply* is low. People want to eat more fish during the holiday season so the *demand* is high. So fresh ahi can get really expensive in the winter months. The "grade" or quality of the fish can also affect its price.

Let's assume that for each higher quality grade of fish, the price increased by 10%. Fill out the table below to create an example of how fish prices could depend on grade, with five star (★★★★★) fish being the best, and one star (★) being the worst. Start by choosing a cost for the one star (★) fish and work your way up.

Fish grade	Cost per pound of fish ($)
⭐	100
⭐⭐	110
⭐⭐⭐	121
⭐⭐⭐⭐	133.10
⭐⭐⭐⭐⭐	146.41

After you have finished filling out the table, determine if prices are changing linearly with grade. Please explain why or why not.

Activity 6.3

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 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Assessment Target(s)	3 E: Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. 1 E: Define, evaluate, and compare functions. 1 A (Gr 7): Analyze proportional relationships and use them to solve real-world and mathematical problems. 3 F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions.
Content Domain	Equations and Expressions
Standard(s)	8.F.A.3
DOK	2
Activity Key	*Answers for the table are below. The other answers are open ended.*

Summer fishing trips are always a fun way to spend time with family and friends. As a reward for all your hard work during the school year, you can camp out, fish, and relax before heading back to school. Catching and eating fresh fish makes the experience all the more memorable. As much fun as fishing trips are, there can be a lot of planning that goes into it.

Let's plan a week-long fishing trip for your family of five (including you). You are asked to shop for delicious food and to pick a fun fishing location.

There's a store nearby that sells "meal packs." Three meal packs feed one person for one day.

Meal pack	Description	Price	Total cost for your family
I Stay Broke	Canned beans. Great for saving money!	$2.00	$210.00
Makaʻāinana	Spam and rice. The classics!	$2.50	$262.50
Mouth Stay Broke	Kalua pig, salmon, and more. A local favorite!	$3.50	$367.50
Fat Like Wallet	Everything. Never go hungry or unsatisfied. Eat like an aliʻi.	$5.00	$525.00

1. What are some interesting things that you see about the prices of the "meal packs"?

2. For each meal pack, find out the total cost(s) to feed your family for the week. Fill out the table above. Explain how you found your answer.

The following fishing spots are all around the island, and we have to consider the quality and cost of each location. Your family decides to take your family's truck to transport everything for the trip, and the truck gets *20 miles per gallon*. The gas price is *$3.25 per gallon*.

Here's some information about each fishing spot.

Fishing spot	Description	Distance away	Travel cost
1	Far and hardest to get to, but is full of fish and small wildlife. Secluded and very pretty.	76 miles	$12.35
2	Far, but has a good amount of fish. Clean and not too crowded.	43 miles	$6.99
3	Not too far. The fishing activity is okay. But a little crowded.	22 miles	$3.58
4	Closest spot, but doesn't have a lot of fish. Crowded, a little noisy, and a little dirty.	5 miles	$0.81

Keep in mind that the travel time will affect your fishing and camping time.

3. Calculate how much it will cost to travel to each of the different fishing locations. Fill out the previous table. Explain how you got your answer.

4. Which meal pack(s) and which fishing spot would you choose? Justify your answer and find the cost of your fishing trip.