

Learning 4-6e: to determine the domain/range of functions using function notation

Model: Find the Range

The domain $g(x) = 4x - 12$ is $\{1, 3, 5, 7\}$. What is the range?

x	$g(x) = 4x - 12$	$g(x)$

$g(x) = \{ _, _, _, _ \}$

Now You Help:

The domain $f(x) = x^3$ is $\{-1, -0.5, 0, 0.5, 1\}$. What is the range?

x	$f(x) = x^3$	$f(x)$

$f(x) = \{ _, _, _, _, _ \}$

THINK: Identify a Reasonable Domain & Range

You have 7 quarts of paint to paint the trim in your house. A quart of paint covers 100ft^2 . The function $A(q)$, in square feet, that q quarts of paint cover. What domain & range are reasonable for the function?

THINK	ANSWER	NOTATION
What is the LEAST amount of paint you can use? (in quarts)		$A(q) = 100q$
What is the GREATEST amount of paint you can use (in quarts)		$A(q) = 100q$
How could you write a reasonable domain?	$\{ _ \leq q \leq _ \}$	
How could you write a reasonable range?	$\{ _ \leq A(q) \leq _ \}$	

APPLICATION PRACTICE**Find the range of each function for the given domain.**

Question 1	Question 2	Question 3	Question 4
Domain: $\{-1, 0, 1, 2, 3\}$ $f(x) = -4x + 3$ RANGE:	Domain: $\{-5, -3, -1, 1, 3\}$ $f(x) = x - 6$ RANGE:	Domain: $\{-2, -1, 0, 1, 2\}$ $f(x) = x^3 + 1$ RANGE:	Domain: $\{-4, -2, 0, 1, 3\}$ $f(x) = x^2 - 2$ RANGE:
Question 5	Question 6	Question 7	Question 8
Domain: $\{-2, -1, 0, 1, 2\}$ $f(x) = -3x + 2$ RANGE:	Domain: $\{-6, -3, 0, 3, 6\}$ $f(x) = -\frac{2}{3}x - 1$ RANGE:	Domain: $\{0, 1, 2, 3, 4, 5, 6\}$ $f(x) = -\frac{2}{3}x - 1$ RANGE:	Domain: $\{-4, -2, 0, 1, 3\}$ $f(x) = x^2 + 2$ RANGE:

Find a reasonable domain and range for each function.

Question 9		Question 10	
A high school is having a pancake breakfast fundraiser. They have 3 packages of pancake mix that each feed 90 people. The function $N(p) = 90p$ represents the number of people $N(p)$ that p packages of pancake mix feed.		A tenth grade class is selling granola bars for a fundraiser. They earn \$0.75 for every granola bar that they sell. They have ordered 300 granola bars for the sale. The function $P(b) = 0.75b$ represents the profit P the class earns for each bar b they sell. Find a reasonable domain and range for the function.	
a.) Least packages		a.) Least granola bars	
b.) Most packages		b.) Most granola bars	
c.) Reasonable Domain		c.) Reasonable Domain	
d.) Reasonable Range		d.) Reasonable Range	

Question 11	Question 12
The function $t(x) = 150x$ represents the number of words $t(x)$ you can speak in x minutes. How many words can you speak in 20 minutes?	A charter boat travels at a maximum rate of 25 miles per hour. The function $d(x) = 25x$ represents the distance $d(x)$, in miles, that the boat can travel in x hours. The charter boat travels a maximum distance of 75 miles from the shore. How many hours?
Question 13	Question 14
Reasoning If $f(x) = x^2 - 15$ and $f(a) = 49$, what is the value of a ? Explain.	Reasoning If $f(x) = x^2 - 3$ and $f(a) = 46$, what is the value of a ? Explain.
Question 15	Question 16
Open-Ended What is a value of x that makes the relation $\{(3, 5), (2, 5), (9, x)\}$ a function?	Open-Ended What is a value of x that makes the relation $\{(2, 4), (3, 6), (8, x)\}$ a function?

Name _____ Class _____ Date _____ 4-6NOTES/ACTIVITY