## Unit 4 Lesson 12: Piecewise Functions

### 1 Frozen Yogurt (Warm up)

#### Student Task Statement

A self-serve frozen yogurt store sells servings up to 12 ounces. It charges $0.50 per ounce for a serving between 0 and 8 ounces, and $4 for any serving greater than 8 ounces and up to 12 ounces.

Choose the graph that represents the price as a function of the weight of a serving of yogurt. Be prepared to explain how you know.

A



B



C



D

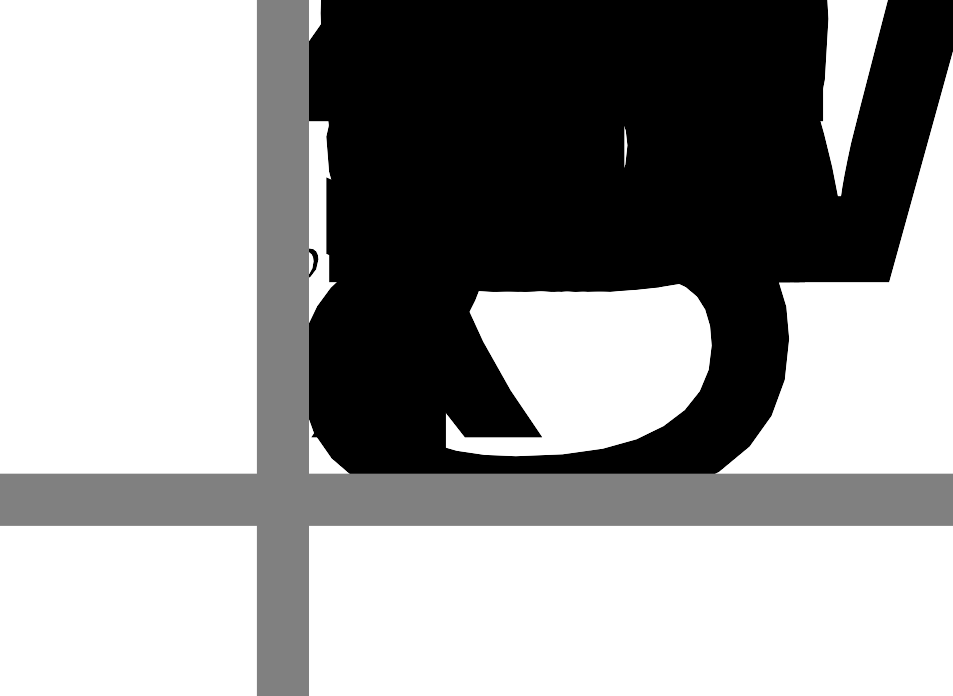


### 2 Postage Stamps

#### Student Task Statement

The relationship between the postage rate and the weight of a letter can be defined by a **piecewise function**.

The graph shows the 2018 postage rates for using regular service to mail a letter.



1. What is the price of a letter that has the following weight?
   1. 1 ounce
   2. 1.1 ounces
   3. 0.9 ounce
2. A letter costs $0.92 to mail. How much did the letter weigh?
3. Kiran and Mai wrote some rules to represent the postage function, but each of them made some errors.

* Identify the error in each person’s work and write a corrected set of rules.

### 3 Bike Sharing

#### Student Task Statement

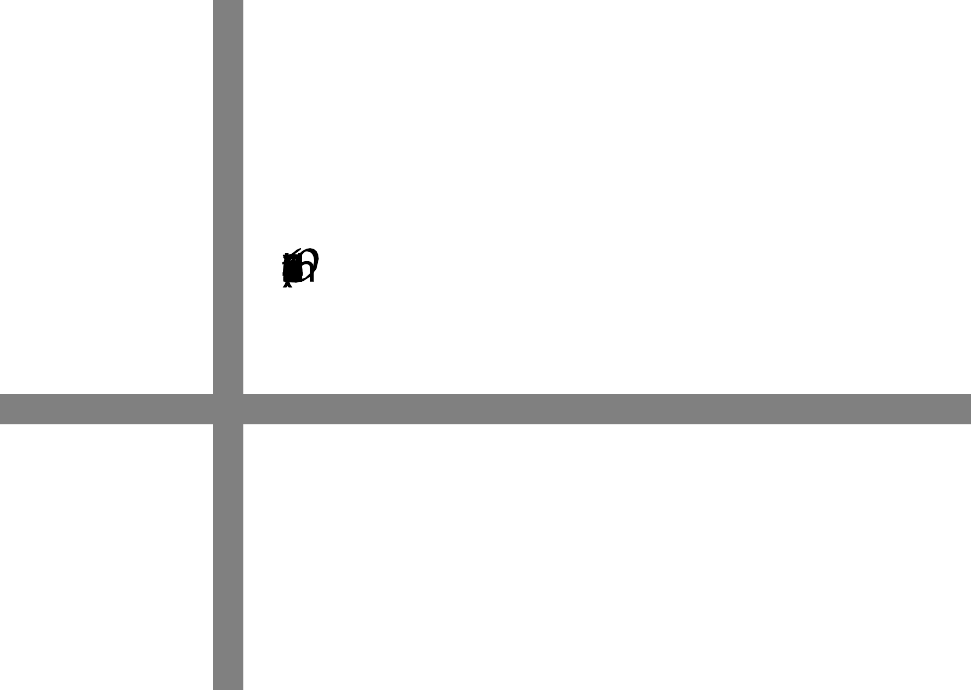
Function represents the dollar cost of renting a bike from a bike-sharing service for minutes. Here are the rules describing the function:

​​​​​​



1. Complete the table with the costs for the given lengths of rental.

|  |  |
| --- | --- |
| * (minutes) | * (dollars) |
| * 0 |  |
| * 10 |  |
| * 25 |  |
| * 60 |  |
| * 75 |  |
| * 130 |  |
| * 180 |  |

* Sketch a graph of the function for all values of that are at least 0 minutes and at most 240 minutes.
* 
* ​​​​​​

1. Describe in words the pricing rules for renting a bike from this bike sharing service.
2. Determine the domain and range of this function.

### 4 Piecing It Together (Optional)

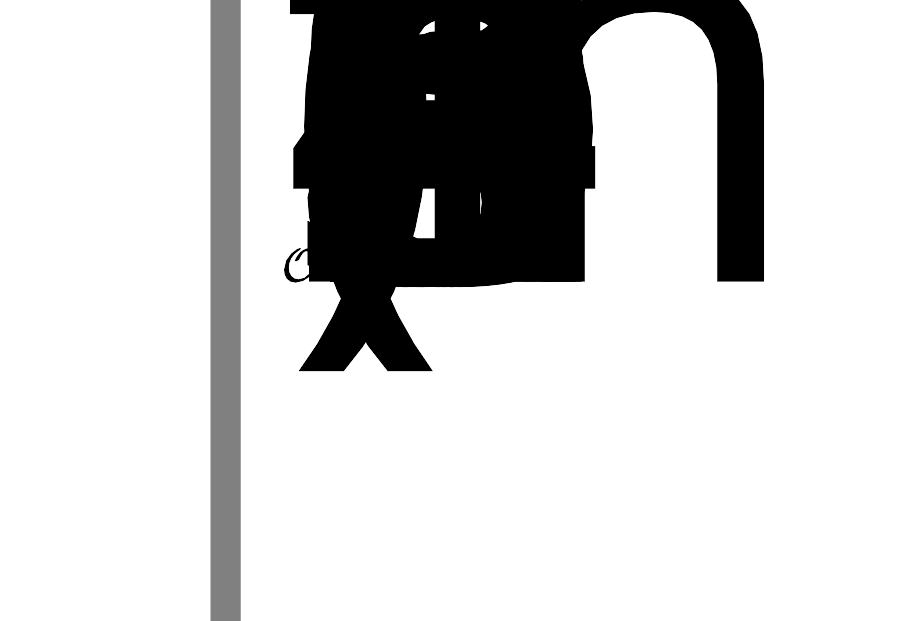
#### Student Task Statement

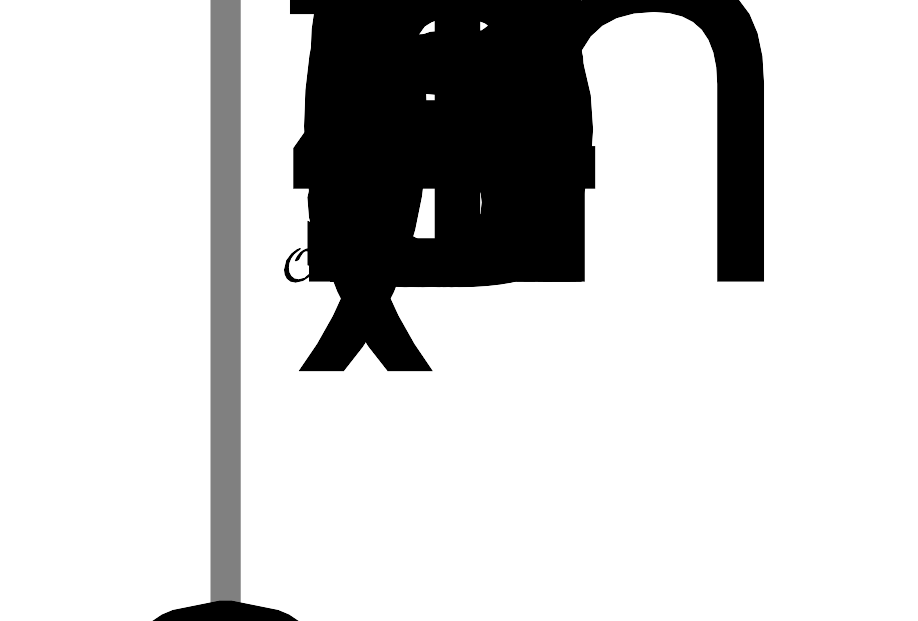
Your teacher will give your group strips of paper with parts of a graph of a function. Gridlines are 1 unit apart.

Arrange the strips of paper to create a graph for each of the following functions.

To accurately represent each function, be sure to include a scale on each axis and add open and closed circles on the graph where appropriate.

#### Images for Activity Synthesis







© CC BY 2019 by Illustrative Mathematics®