**2CP Rational Functions Applications**

**Part 1: Appliance Costs**

Consider a new refrigerator that costs $550. It costs $92 per year to pay for the electricity to run the refrigerator.

1. Find the yearly cost of running the refrigerator if you own the refrigerator for *x* years:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| # of Years | 0.25 | 0.5 | 1 | 2 | 5 | 10 | 15 | 20 | 40 |
| Yearly Cost of Ownership |  |  |  |  |  |  |  |  |  |

1. Create a graph of the data above.
2. Write a function to match this data table. Write the function two different ways.
3. Explain:
   1. What happens to the yearly cost of ownership as the number of years increases? Explain why this happens. How does the graph show this?
   2. Does the yearly cost of ownership ever reach $0? Explain why or why not. How does the graph show this?
   3. What happens to the yearly cost of ownership if you own the refrigerator for less than a year? Explain why this happens. How does this graph show this?
4. Write two approach statements to describe this graph.

**Part 2: Travel Time**

You are going for a road trip. You plan to drive 40 miles to your destination, spend 3 hours at your destination and then drive 40 miles back home. You will drive at a constant speed, the same speed on the way there as on the way back.

1. Find the total time your trip will take you if you travel at the speeds given below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Speed | 40 mph | 20 mph | 10 mph | 80 mph | 60 mph | 1 mph | 0.5 mph |
| Total time |  |  |  |  |  |  |  |

1. Create a graph of the data above.
2. Write a function to match your graph and data table.
3. Explain:
   1. What happens to the total time the trip takes as your speed increases? Why does this make sense? How does the graph show this?
   2. What happens to the total time the trip takes as your speed slows to a crawl? Why does this make sense? How does the graph show this?
4. Write 2 approach statements to describe this graph.