**2.** [10 points]  The Executive Director of the Go Blue Zoo is managing the zoo's finances. She tracks the following functions:

- $O(n)$ is the number of pounds of fish per day used to feed $n$ otters.
- $P(m)$ is the number of pounds of fish per day used to feed $m$ penguins.
- $F(s)$ is the cost, in dollars, of $s$ pounds of fish.

**a.** [6 points] For each of the following, describe the meaning of the expression or equation in the director's context, or explain why the expression or equation doesn't make sense.

(i)  $O(6) = 70$

*Solution:*  The zoo uses 70 pounds of fish per day to feed 6 otters.

(ii)  $O^{-1}(P(8))$

*Solution:*  The number of otters that can be fed with the same amount of fish used to feed 8 penguins.

(iii)  $P(10) + F(10)$

*Solution:*  This expression doesn't make sense because it doesn't make sense to add pounds of fish to dollars.

**b.** [4 points] For each of the following statements or quantities, write an equivalent mathematical expression or equation, or explain why there isn't enough information to do so.

(i)  To feed its 5 otters and 8 penguins, the zoo uses 86 pounds of fish per day.

**Expression or Equation:**   $O(5) + P(8) = 86$

(ii)  The daily cost, in dollars, of feeding 5 otters.

**Expression or Equation:** $F(O(5))$