Problem of the Week
Problem B and Solution
Care Package Data

Problem

December brings a time when many people feel generous and send care packages to others. Suppose that one community of 35 000 people in Southern Ontario handed out 1400 care packages to families within that community in 2019.

a) If the mass of a care package for one family is 13 kg, what is the total mass of all the family care packages distributed in 2019?

b) If an average household has 4 people in it, how many households are in this community?

c) What percentage of households in this community received a family care package in 2019? Assume that no household receives more than one care package.

d) If the community had a population of one million, how many care packages might you predict the community would hand out to families within that community?

Solution

a) The total mass of family care packages distributed is
1400 care packages $\times$ 13 kg per package $= 18\,200$ kg.

b) The number of households in this community is
35 000 people $\div$ 4 people per household $= 8750$ households.

c) The percentage of households that received a family care package is
(1400 received care packages $\div$ 8750 total households) $\times$ 100% $= 16\%$.

d) This community would have
1 000 000 people $\div$ 4 people per household $= 250\,000$ households.
To determine the predicted number of family care packages, we will use the 16% found in part c).
Since 16% of the households received a care package, for every 100 households we would predict that there will be 16 households that receive a care package.
Now $250\,000 \div 100 = 2500$, so there will be $2500 \times 16 = 40\,000$ households that receive a family care package.
A second way to solve this question is to note that $16\% = 0.16$. Thus, the number of households predicted to receive a family care package is
250 000 households $\times$ 0.16 $= 40\,000$ households.