7. [8 points] Freckles and Comet are cats in the same household. Consider the functions F, C, and D which are defined as follows:

- $F(m)$ is the number of ounces of food that Freckles eats in month m.
- $C(m)$ is the number of ounces of food that Comet eats in month m.
- $D(q)$ is the cost of buying q cans of cat food at a time when there are no sale prices.

Assume that D is invertible.

For each of questions below, circle the ONE best answer from among the options provided. If none of the options are correct, circle NONE OF THESE.

Please note: To receive credit, you must clearly circle your choices. (Circle the **entire** *answer. If there is any ambiguity in your answer, you will not receive credit.)*

a. [1 point] What is the total number of ounces of food that Freckles and Comet eat in month m?

$D(m) + C(m)$ $\quad$ $F(m) + C(m)$ $\quad$ $F(C(m))$ $\quad$ $C(F(m))$ $\quad$ NONE OF THESE

b. [2 points] Suppose that there are 3 ounces of food per can. What is the total cost of the food Freckles eats in month 4?

$\dfrac{D(4)}{3}$ $\quad$ $3D(4)$ $\quad$ $D(3F(4))$ $\quad$ $D\left(\dfrac{F(4)}{3}\right)$ $\quad$ NONE OF THESE

c. [1 point] Let $A(q)$ be the average cost per can of buying q cans of cat food. Which of the following is a formula for $A(q)$?

$D^{-1}(q)$ $\quad$ $\dfrac{q}{D(q)}$ $\quad$ $\dfrac{F(q) + C(q)}{2}$ $\quad$ $\dfrac{D(q)}{q}$ $\quad$ NONE OF THESE

d. [1 point] When there are no sale prices, how many cans of cat food can be purchased at a time for \$20?

$D(20)$ $\quad$ $D^{-1}(20)$ $\quad$ $20D^{-1}(q)$ $\quad$ $\dfrac{1}{D(20)}$ $\quad$ NONE OF THESE

e. [2 points] Suppose that Comet eats at least twice as much food each month as Freckles eats. Which one of the following inequalities most accurately describes this relationship?

$C(m) \leq 2F(m)$ $\quad$ $C(m) \geq 2F(m)$ $\quad$ $2C(m) \leq F(m)$ $\quad$ $2C(m) \geq F(m)$

f. [1 point] If cat food goes on sale for 40% off its regular price, what is the cost of buying 20 cans of cat food at one time?

$0.6D(20)$ $\quad$ $1.4D(20)$ $\quad$ $0.4D(20)$ $\quad$ $D(8)$ $\quad$ NONE OF THESE