Problem

a) The skin of an orange has a mass of about $\frac{1}{8}$ of the total mass of the orange. If you buy a 3 kg bag of oranges costing $0.99 per kg, about how much are you paying for the peel? For the fruit itself?

b) A school cafeteria uses 8 bags of oranges per month. One month, the price per bag varies as follows: for week 1, it is $0.99 per kg; week 2, $0.97 per kg; week 3, $1.02 per kg, and week 4, $0.95 per kg. For the cheapest total cost, should the manager have bought all 8 bags the first week, or 2 bags per week over the month?

c) What other costs might be involved that would affect the 'best' choice in part b)? Would your answer change?
Hints

Part a)

**Hint 1 -** What is the total cost of the bag of oranges?

Part b)

**Hint 1 -** What is the cost of buying 2 bags per week over the month?
Solution

2 a) The total cost of the bag is $0.99 \times 3 = $2.97. Since \( \frac{1}{8} \) of the total cost is for the peel, the peel costs $2.97 \times \frac{1}{8} = $0.37125 \approx $0.37. Thus the fruit itself costs \( \approx $2.60 \).

2 b) The cost to buy 2 bags per week over the month is

\[
2 \times $0.99 + 2 \times $0.97 + 2 \times $1.02 + 2 \times $0.95 = $7.86.
\]

The cost to buy 8 bags the first week is 8 \( \times $0.99 = $7.92 \). Thus it is less expensive to buy the bags weekly.

2 c) If tansportation costs, and the extra time required for four trips are considered in the decision, then the 6 cents difference is not enough to warrant buying the bags weekly.