

Math 17: Exercise Set 4 – Posted 9/24

Section 3.5: Method of Sealed Bids

1. Suppose four items (dresser, desk, vanity, and tapestry) are to be divided among three people (Ana, Belle, and Chloe). Given the bids below, use the Method of Sealed Bids to determine the final settlement.

	Dresser	Desk	Vanity	Tapestry
Ana	\$150	\$180	\$170	\$400
Belle	\$300	\$150	\$200	\$250
Chloe	\$275	\$165	\$260	\$500

Chapter 4: Apportionment

2. A particular bus company operates six bus routes (A,B,C,D,E,F) and 125 buses in total. The company wants to apportion the buses to the routes so that the number of buses apportioned to each route is based on the average number of passengers riding that route daily. Listed below is the average number of passengers riding each route daily.

Route	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	Total
Ridership	45,300	31,070	20,490	14,160	10,260	8,720	130,000

- (a) Calculate the standard divisor.
 - (b) Explain what the standard divisor means in this context.
 - (c) Find the standard quotas (rounded to three decimal places).
 - (d) Use Hamilton's Method to find the apportionment of buses to each route.
 - (e) Use Jefferson's Method to find the apportionment of buses to each route (**we probably will not cover this before Friday's quiz**).
3. A particular hospital operates five major units: Emergency Care (ECU), Intensive Care (ICU), Maternity (MU), Pediatrics (PU), and Surgery (SU). There are 250 nurses stationed at these units in total. The hospital wants to apportion the nurses to the units so that the number of nurses apportioned to each unit is based on the number of beds in that unit. Listed below is the number of beds in each unit.

Unit	<i>ECU</i>	<i>ICU</i>	<i>MU</i>	<i>PU</i>	<i>SU</i>
Beds	21	19	35	30	25

- (a) Calculate the standard divisor.
- (b) Explain what the standard divisor means in this context.

- (c) Find the standard quotas (rounded to three decimal places).
- (d) Use Hamilton's Method to find the apportionment of nurses to each unit.
- (e) Use Jefferson's Method to find the apportionment of nurses to each unit (**we probably will not cover this before Friday's quiz**).