

Names:

Joe, Moe and Bo inherited a spitting camel and a hand-woven tapestry from their Uncle Zanzibar, with the stipulation that they must divide these items fairly, without either item leaving the family. The table below shows what each of these is worth them.

	Joe	Moe	Bo
camel	\$3000	\$2400	\$1700
tapestry	\$600	\$1000	\$900

1. Find the total bids b_{Joe} , b_{Moe} , b_{Bo} and also compute what each of them thinks is a **fair share**.

2. Consider the following settlement: Joe gets the camel and pays \$1200, Moe receives \$1200, Bo gets the tapestry (and doesn't pay or receive any cash). **Is this settlement fair?** Explain and show work.

3. Suppose the brothers decide to use **Knaster's method of sealed bids**.
 - a. Find the **first settlement**: which goods will each person receive, and how much cash will they pay or receive?

 - b. Find the **surplus**, the total paid – total received.

 - c. Find the final settlement (divide the surplus equally among the three players.) Give one sentence for each person: which items they have, and the total cash they pay or receive.

4. From your final settlement above, find the **net value** of their perceived winnings (value of items plus/minus cash receive/paid), also called their **compensation**: x_{Joe} , x_{Moe} and x_{Bo} .

5. Find the **XB ratios** for Joe, Moe and Bo. (For each player, compute $x_{\text{Player}}/b_{\text{Player}}$.)

6. Next use **the Equitability method** to divide the surplus you found in problem 3b instead of Knaster's method. **How much of the surplus** will each player receive? (First, find the total of all the players' bids.)

7. Give the final settlement using the **Equitability Method**: which goods each person receives, along with the net cash they pay or receive. (Begin with your settlement in 3a, and add the surplus amounts you found in problem 6 above.)

8. Find x_{Joe} , x_{Moe} , x_{Bo} and the XB ratios for each, based on the settlement you found in problem 7.