



Exercises on "What Is Fair?"

- 1) Residents of two small adjoint towns, Mapleton (population 40,000) and Oakville (population 10,000), have for years obtained water from individual wells. Both towns have now decided to construct water distribution systems. The low bid received by Mapleton was for \$11 million and the best bid received by Oakville was for \$7 million. The town fathers have gotten together and have received a bid of \$15 million for a system that would service both towns as efficiently as the individual systems. They must only decide how the two towns will share the \$15 million cost.
- 2) You have been called in to help four siblings who have inherited equal shares in their parents estate. The division of the money and return from the sale of objects they all wished sold was easily accomplished and amounted to \$200,000 each. There are however five objects with great family value that they would not wish to sell. They have turned to you for your advice on the disposition of these objects. You have asked each in confidence to tell you their "walk away" value for each of the objects. The values put on the objects by the four heirs are:

Objects	<u>Walk Away Value for Each Individual</u>			
	Adam	Beverly	Charles	Doris
Cottage	\$50,000	\$20,000	\$20,000	\$40,000
Painting	10,000	5,000	12,000	20,000
Dinner Service	3,000	7,000	8,000	10,000
Furniture	4,000	10,000	15,000	6,000
Library	13,000	18,000	9,000	12,000

Professors Paul A. Vatter and Howard Raiffa prepared these exercises as the basis for class discussion.

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Dividing an Encyclopedia

- 3) Professor Brown taught physics and was an avid collector of scholarly works on modern history.¹ His friend Professor Gerschwin taught modern history, but forbore from trying to get his personal library to rival Brown's collection of outdated physics texts.

One day Brown and Gerschwin were walking to the university together through the streets of the town, when they both saw a few books strewn across the sidewalk in front of a small house. Nearby stood a medium-sized van, overflowing with material possessions of its owner. The books seemed to have come out of the back of the van. Brown stopped and picked up one of the volumes. "It's an *Encyclopedia Britannica*, Dick," he said. "Dated 1914."

"Whoever owns it must be a very careless person," said Gerschwin severely. "Those books must be of considerable value."

The front door of the house opened, and two young men came out carrying a brand new refrigerator, which they tried to put into the van. "Those damned books!" exclaimed one as he peered inside. "We have to get rid of the, or else there won't be space for the important things."

"Excuse me, sir," said Gerschwin eagerly. "Are you proposing to dispose of those books?"

"Yes," said the man. "I'm moving, and I have no use for those moldy old books."

"Could we then take them?" said Gerschwin.

"Certainly," said the owner of the van cheerfully, as he flung out another armful of *Britannica* volumes. Gerschwin and Brown decided to give up their walk. They called a taxi for the purpose of transporting their treasure home. The question was, whose home?

"You take it, Tom," said Gerschwin sadly. "You found it."

"No, no, Dick. It's yours. Just think of what a fine addition the 1914 edition would be to your library!"

"No, Tom. You must take it."

The discussion continued along these lines for several minutes, until the driver of the taxi, tired of circumnavigating the block, demanded to be told where to go.

"Let's take it to your place, Dick," said Brown. "We'll decide later how to share it."

"Why not toss a coin now? It's the only way I can think of to divide up this collection. We can't split the books in half. Whoever gets it must get the whole set."

1. Based on a case prepared by Professor Kalyan Chatterjee.

"All right," said Brown, a trifle unenthusiastically.

Gerschwin tossed the coin; Brown called "heads" and won.

Later that day, at lunch, Gerschwin met his friend Professor Reif, who taught at the business school. Gerschwin described the incident to Reif.

"You tossed a coin?" asked Reif in disbelief. "Tossed a coin to decide the ownership of a valuable object?"

"Well, what would you have done?" asked Gerschwin, nettled. It had been his idea, after all, to toss the coin.

"That must wait until later," said Reif rising. "I have a class to teach. But surely, Dick, you could have thought of a better method of division. Tossing a coin, indeed!" Professor Reif left behind one puzzled and slightly displeased modern historian.

Later, Professor Reif, in order to explain his proposed procedure, talked separately to Professors Gerschwin and Brown. He asked each what would be his maximum bid for the set in an auction. Gerschwin said "I would hope to get it for less but I would not drop out unless the auction went over \$1000." In answer to the same question Professor Brown said his walk-away price would be \$600.

If this had been done before the original coin flip what would you have proposed to the two professors?