MGF 1107   PROBLEM SET 7

1. Suppose we have five items (jewelry, music rights, retail stores, TV show income and designer clothes) and five sisters (Kim, Khloe, Kourtney, Kendall and Kris). Assume that each of the people spreads 100 points over the items (as in the Adjusted Winner Procedure) to indicate the relative worth of each item to that person:

	Kim	Khloe	Kourtney	Kendall	Kris
Jewelry	19	9	5	24	40
Music rights	18	19	46	6	6
Retail stores	31	23	0	25	19
TV show income	30	30	30	19	15
Designer clothes	2	19	19	26	20

Suppose we give Kim the retail stores, Khloe the TV show income, Kourtney the music rights, Kendall the jewelry, and Kris the designer clothes.

a. Is this allocation proportional?

b. Is this allocation envy free?

c. Who does Kris envy?

d. Is this allocation Pareto optimal?

e. This allocation is not equitable. Find a different allocation that would be equitable.

f. Is the allocation you found in part *e* proportional?

g. Is the allocation you found in part *e* Pareto optimal?

2. In class, we used the Knaster inheritance procedure to solve the following problem:

	Art	Betty	Carla	Dave
House	220,000	250,000	211,000	198,000
Rolls Royce	40,000	30,000	47,000	52,000
Picasso	280,000	240,000	234,000	190,000

The answer we obtained was:
Art gets a Picasso a pays the estate $124,000.
Betty gets a house and pays the estate $99,000.
Carla receives $144,000 from the estate.
Dave gets the Rolls Royce and an additional $79,000 from the estate.

a) From Art's point of view, what percent of the total value of the estate did Art receive?
Round off your answer to 2 decimal places.

b) From Betty's point of view, what percent of the total value of the estate did Betty receive?
Round off your answer to 2 decimal places.

c) From Carla's point of view, what percent of the total value of the estate did Carla receive?
Round off your answer to 2 decimal places.

d) From Dave's point of view, what percent of the total value of the estate did Dave receive?
Round off your answer to 2 decimal places.

e) Is this allocation proportional?

f) Is this allocation equitable?

g) From Art's point of view, what percent of the total value of the estate did Betty receive?
Round off your answer to 2 decimal places.

h) From Art's point of view, what percent of the total value of the estate did Carla receive?
Round off your answer to 2 decimal places.

i) From Art's point of view, what percent of the total value of the estate did Dave receive?
Round off your answer to 2 decimal places.

j) Is Art envy-free?